

Digital Media Asset Management: Universities Choosing to Learn in a Knowledge Economy

Kathleen Gray and Garry Allan

Faculty of Life Sciences

RMIT University,

AUSTRALIA

kathleen.gray@rmit.edu.au

garry.allan@rmit.edu.au

Helen McLean

Library

RMIT University, AUSTRALIA

helen.mclean@rmit.edu.au

Abstract

This paper describes the potential of a digital media asset management system to enable educational design and related work to proceed within a knowledge economy paradigm in a university setting. An action learning project at RMIT University in Melbourne during 1999 and 2000 took an institution-wide knowledge management approach to assess the feasibility of implementing a Web-database-driven system for managing a wide range of media objects used in teaching and learning and other core university operations. The project also assessed the implications of working with such a system for the professional practices of academics. The RMIT project canvassed the requirements of key stakeholders, worked out the major elements of system design, and built several iterations of a functional model for further testing. A media asset management system may help to resolve some serious issues associated with present patterns of use of educational media in diverse electronic formats. As part of an overall knowledge management system, it can assist the university to evolve and thrive as an educational enterprise.

Keywords

*Digital media asset management, Media asset management system,
Multimedia, Knowledge economy, Knowledge management*

Introduction

One of the impacts of technology on managing higher education has been to require that universities give close attention to their "cross-institutional systems, standards and cost-effectiveness", according to Coaldrake and Stedman (1999:11). These authors cite Goddard's (1999) assertion that many drivers of change in higher education "... reinforce the need for a more corporate approach in the adoption of information systems... many bottom-up attempts to realise the virtual university fade away because they are not mainstreamed and systematised across the institution... [there is] the need for more integrated institutions with an enhanced capacity for internal knowledge management."

This paper describes the potential of a digital media asset management system to enable educational design and related work to address such changes, and proceed within a knowledge economy paradigm in a university setting. An action learning project at RMIT University in Melbourne during 1999 and 2000 took an institution-wide knowledge management approach to assess the feasibility of implementing a Web-database-driven system for managing a wide range of media objects used in teaching and learning and other core university operations. The project also assessed the implications of working with such a system for the professional practices of academics.

This paper sets out the findings of the project in terms of the current status of educational media use in academic settings, and the need for recognition of media as assets to the organisation. It describes the dimensions of digital media asset management, and the features of a system for managing digital media assets. It outlines the model system developed during the RMIT project, and how working with this model led to the conceptualisation of media asset management as knowledge management.

The Current Status of Educational Media Use in Academic Settings

Marketable higher education programs need to be supported by a diverse range of professionally produced learning resources in new media formats. As well, they increasingly need to be available for flexible delivery online. An analysis of the present position of education media use at RMIT University revealed a multiplicity of needs and practices in teaching programs. The diverse digital media formats required to support teaching in one faculty alone might include:

- spoken word

- charts and diagrams
- video clips
- graphic designs
- sound recordings
- slide shows
- digital images
- simulations

The educators surveyed during this analysis consistently associated the use of such media with good pedagogy. These media were considered essential to provide relevant and authentic learning environments, motivate self-directed learning, develop problem-solving skills and cater for multiple learning styles. The importance of these media was not matched by the approach to managing them, however. In practice, many teaching programs were found to be reliant on resources such as:

- academic staff members' private collections, or legacy collections of unclear attribution
- previously published materials reproduced digitally without revisiting copyright permissions
- materials commissioned for production, at considerable expense, on a one-off, single-purpose basis

This infrastructure for managing media was idiosyncratic, difficult to draw upon, and potentially chaotic.

Recognition of Media as Assets to the Organisation

"Higher education is moving toward a head-on collision with today's emerging knowledge economy - a collision that will forever alter its landscape." So says a study released by the consulting firm KPMG in 1999. In order to avoid being a fatality in this collision, we were prepared to reorient our thinking about many aspects of what universities do, not the least how they manage their learning resources.

Taking a strategic approach to the way we manage digital media assets in universities, given the potential of digital media technologies, aligned our investigations firmly with the emerging knowledge economy. The characteristics of the knowledge economy, as outlined by KPMG, are very different from those of an industrial economy:

- It is global, information intensive and networked.
- Ideas, not capital or labour, are the key resources.
- Products are intangible and measurable in new ways.

- The more available and used a product is, the more value it has.
- Success comes from innovation and marketing, not from working 'hard' or identifying uncritically with traditional ways of doing things.

We came to the view that educational media are assets to the university, in a knowledge economy. Therefore they require the same serious attention as property assets, for example, with regard to:

- their maintenance and refurbishment
- securing them, and preventing related loss and litigation
- appraising their value, and leveraging this as much as possible

Dimensions of Digital Media Asset Management

The systematic management of media assets for such purposes is facilitated by a relatively new genre of software, known as digital media asset management systems software (Grimes, 1998). The contribution of a media asset management system to a large enterprise is described thus by Dennis (1999: *n.p.*):

Finding content might not be as easy as it could... if the person who created or maintains the system leaves, your company's access to the information itself is jeopardized, and the continuity of your systems is lost... the marketing department may have one system for cataloguing product images for brochures and the like, while the sales force stores and retrieves product shots in a completely different manner from a completely different server. There might be redundancy of multiple versions of images or graphics, some of which haven't been cleaned up the by art department or met corporate branding guidelines. True corporate asset management considers not just a singular department's needs but rather those of the whole company. It is collaborative, integrating departments within a company, or clients with partners, from corporate relations to distribution to sales to production... You get to market faster, so you have reduced costs, which increases profitability, which makes you more competitive, which increases the overall value of your company.

Initial demand for media asset management has been strongest among broadcast news agencies, media production houses and publishing houses. However, as the capabilities of Web database systems have increased, interest in media asset management has expanded from these specific users to others concerned with related forms of content, including research

and education organisations such as museums and universities. Indeed, such organisations increasingly share interests –we have recently seen the formation of alliances among global media organisations and consortia of universities –and the potential of such alliances is greatly facilitated by interoperable systems. More widespread use of media asset management is forecast to occur in many different types of organisations in the near future, in tandem with two changes –a shift in the balance of content types that will be stored in databases, from predominantly text storage to predominantly media object storage; and the expansion of Web-based media broadcasting.

Features of a System for Managing Digital Media Assets

Characteristically, a digital media asset management system has several key features:

β an object-oriented relational database with a Web interface

This needs to be capable of handling the variety of formats in which media may be captured - gif, jpeg, mp3, wav, etc.

β a security system

Breakthroughs in ‘digital watermarking’ of electronic files have been announced and commercialised in the past twelve months, allowing improved methods of tracing their ownership and use.

β metadata cataloguing

There are many different schemas (such as the Dublin Core, IEEE, GEM, LOM/IMS) appropriate to educational materials; when the educational materials are also representative artefacts of fields of professional practice, they are likely to require mapping onto discipline-oriented classification schemas as well.

β data mining capabilities

File storage and retrieval functions need to be augmented by capabilities to interpret the content, status and usage of media assets, in order to provide decision support functions.

Major commercial systems vendors include Bulldog, Canto and Weblogixx. An industry association for vendors of such software now exists to promote the implementation of these systems and interoperability among them; and a multi-vendor trade show, said to have been the first of

its kind, was held at the American National Association of Broadcasters convention in 1999 (Media Asset Management Association, 2000).

The Model System Developed at RMIT University

The media asset management system (MAMS) project at RMIT originated in 1999 within the University's Distributed Learning System, a corporate IT framework for the management of online learning resources. In addition to representatives from this system, stakeholders from every Faculty, as well as the Library, the Media Production Service, the IT Service and the University Press were included in initial concept development and routine consultations as the project unfolded.

Interest in a MAMS within the Distributed Learning System arose from a recognised need to extend the text-handling capabilities in the IT framework to accommodate flexible handling of multiple media resources. These resources needed to be readily available to be associated with many different configurations of learning resources, both resources already in existence and also those yet to be developed.

Faculty teaching staff in disciplines as diverse as biomedicine and fine arts could see the potential of a MAMS to aid them to work more productively. These staff wanted a way to organise their existing collections of media and build these more systematically into their teaching programs. The prospect of being able to draw upon a large database of media objects in developing programs was also attractive to them. Other University-wide service providers wanted to determine appropriate conventions for managing media objects, and understand the aspects of a MAMS that were compatible with managing other information systems and resource collections already in existence. They were also interested in the potential of a MAMS to enable them to enhance their service-related interactions with internal and external clients.

The project had a dual focus in the exploration of MAMS specifications: On one hand, it was intent on purposefully accounting for media assets which are the intellectual property of the university. As well, it was also designed for responsibly managing licensing in and licensing out arrangements for media use. The analysis of media use in the University had clearly shown the need to bring more awareness and sophistication to existing practices.

The project approach was to work incrementally, from a small but scaleable design, always keeping in view the pragmatics of the core university activities which it was intended to facilitate. The feasibility of a University-wide MAMS system was seen to depend critically on attending to each feature of the MAMS: It had to have an appealing, easy-to-use Web interface. It had to offer a reliable repository with controlled access on an anytime, anywhere, any number basis. It had to contain the most concise and versatile metadata schema possible to support both courseware production and asset management requirements. It was understood that only under these conditions would academics be prepared to expand their sense of ownership –from ownership of their personal system of media use in particular programs, to shared ownership of a corporate system for producing and licensing media in all the University's programs.

The first version of the MAMS, which was developed at the start of 2000 basically for concept demonstration purposes, consisted of :

- β a Microsoft Access database for storage of media files, with a Web interface providing simple input and output screens
- β password-protected, back-up storage on a corporate server for a small sample of media files indicative of media use within the university
- β an extensive metadata set for each asset - including content descriptors, technical details, life cycle and rights elements - and a thumbnail file, linked to the actual file

Different views of this first version of the MAMS can be viewed at the project Web site (<http://www.mams.rmit.edu.au>).

The next iteration of the MAMS specification, in mid-2000, placed greater emphasis on functionality, foreshadowing the ability to produce routine reports and search results. The functions specified were that the MAMS be able to:

- β build, describe and maintain a categorisable collection of media assets, so that, for example, all of RMIT's images of the human form, or all of its streamed video products, could be identified
- β provide media objects in a format that could be drawn upon in collaborations and product development, such as within the Australian Technology Network or the national Learning Resources Exchange (formerly the National Teaching & Learning Database)

- ß organise compliance with copyright and licensing conditions, for example to streamline the work of maintaining permissions, or to negotiate commercial deals
- ß offer increased accessibility to users (for extending on-campus-quality media access to off-campus program participants) and generate usage status reports (for quality assurance carried out by course and program managers)

The focus of MAMS development activity from mid-2000 to date has concentrated on prototyping a database that meets the first of these specifications. This focus was determined by the identification of common interests between the MAMS project and a major initiative for the refurbishment of the University's Web publishing system. This prototyping required considerable groundwork –to determine the appropriate metadata set to describe the variety of anticipated media objects and uses in the MAMS; to align the metadata schema with other simultaneously evolving schemas nationally and internationally; and to find a balance between inputting data into a minimum number of metadata fields and creating a rich metadata base for optimal searching and reporting performance.

In this prototype, a set of media objects was selected from a broadly representative cross-section of teaching programs, to test the widest possible range of media file types, under several conditions –including bulk uploading of a subset of media objects and their metadata, significant levels of calling upon a subset of media objects from within a working online program, and business-like accommodation of a subset of media objects licensed from a commercial source.

The next of several possible priorities for development of the MAMS will be determined according to feedback from teaching staff, service unit staff and corporate system developers –the project stakeholders –after demonstrations of the concept and workability of media asset management in its latest iteration. The direction taken by the project needs to respond to strong demand from some stakeholders for immediate large-scale media storage solutions, while at the same time planning for the strategic adoption of MAMS use by many other prospective users. Also at this point, the project needs to assure reliable performance of the specified storage and retrieval functions to a high standard, while at the same time conducting further prototyping to meet the last two specifications, that is, those which enable exchanging media objects, manipulating rights and transactions records and providing decision-support functions.

Ultimately, the MAMS project is expected to accomplish two main aims. First, it is expected to contribute to a model for planning media-rich course renewal and innovation, and allied academic staff development activities within the paradigm of a knowledge economy. Second, it will contribute to a refined understanding of the university's specific requirements for media asset management, both in relation to the state-of-the-art of a range of commercial software solutions which are currently available for this, and also in terms of how media asset management may be designed into the larger systems architecture intended for the university.

Media Asset Management as Knowledge Management

Media asset management is more than just another database. The changed work orientations and institutional productivity that it enables are best understood within a knowledge management context. According to Skyrme (1999), organisations at the forefront of intellectual capital management quickly gain a competitive advantage through exploiting of their intellectual capital in the marketplace and through development of models and techniques for 'best practice' in knowledge management. Working dynamically with the concept of media assets will be a distinguishing feature of educational institutions that prosper in the future.

The implementation of digital media asset management systems may offer academics at many universities new and different ways to work in the very near future. More importantly, the concept media asset management allows us to rethink the way we have created and used media resources in our educational designs, to expand our horizons in theoretical and applied research, and to ask ourselves key questions about the educational enterprise:

What is our rationale for the effort we expend on media creation, and what return can we expect on this investment?

How satisfied are we that our use of others' intellectual property observes current global conventions, and that others' use of our own property is likely to do so?

How can we take advantage of new technology to make a proper valuation of our media assets, and how can we use them to generate distinctive and effective designs for learning?

From a knowledge management perspective, the capacity of academics to generate new educational products rapidly, through the selective creation and repurposing of multiple media assets, is an increasingly important part of the intellectual capital of the university. By providing a quality-assured, intellectual-property-protected logistical system for digital media objects, a MAMS can support the rapid composition and updating of online learning environments, and expedite the design and development of new and improved programs for emerging markets for higher education. It can thus improve the competitiveness of teaching and learning operations in individual universities, and also enhance the ability of universities to prosper through collaboration.

Moreover, enhancing the capacity of academics to design and execute research projects that produce new expert knowledge about electronic media forms and functions is also a most appropriate strategic aim for universities. A MAMS can allow academics to gain insights into new phenomena, as they manipulate and analyse media objects and their metadata on a significant scale. In many respects Marshall McLuhan's powerful idea that 'the medium is the message' has yet to be fully addressed in higher education. The way is open for academics to create pathways through the current chaos of networked digital information and communication, by engaging in research and teaching that is oriented toward discovering and refining knowledge about new media-based modes of skill and expertise in every disciplinary and professional area.

References

- Coaldrake, Peter & Stedman, Lawrence (1999) *Academic work in the twenty-first century: changing roles and policies*, Canberra: Commonwealth of Australia, Department of Education, Training and Youth Affairs, Higher Education Division (Occasional paper series 99H).
- Dennis, Anita (1999) A guide to implementing media asset management, *The Seybold report on Internet publishing*, 3(12), August, 11 pp.
- Goddard, J. (1999) Signs point to the learning corporation, *Times higher education supplement*, July 30, p.13.
- Grimes, Brad (1998) Digital asset management 101, *TechNews*, 4(6), November-December. [Online]. Available: <http://www.naa.org/technews/tn981112/editorial.html> [accessed 15 September 2000]

- KPMG LLP (1999) *Transforming higher education: at the gateway to the knowledge economy*, July, 45pp. [Online]. Available:
<http://www.us.kpmg.com/ps/highered/> [15th September 2000]
- Media Asset Management Association Web site [Online]. Available:
<http://www.mamgroup.org> [accessed 15 September 2000]
- RMIT University Distributed Learning System Media Asset Management System development site [Online]. Available:
<http://www.mams.rmit.edu.au> [accessed 15 September 2000]
- Skyrme, David J. (1999) *Knowledge networking: creating the collaborative enterprise*, London: Butterworth-Heinemann.

Copyright © 2000 Kathleen Gray, Garry Allan and Helen McLean

The author(s) assign to ASCILITE and educational non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The author(s) also grant a non-exclusive licence to ASCILITE to publish this document in full on the World Wide Web (prime sites and mirrors) and in printed form within the ASCILITE 2000 conference proceedings. Any other usage is prohibited without the express permission of the author(s).

