MANAGEMENT PRACTICES IN THE ELECTRONIC RECORDS ENVIRONMENT

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The adoption of technology within organisations has resulted in the creation of electronic records which are managed in varying degrees dependent upon the professional background of the manager responsible for them. Organisations need a common approach to the management of electronic records to satisfy good information management as well as to meet basic accountability requirements and specific legislative concerns.

This article describes three management approaches to electronic records and assesses if archival interests are addressed in each. It suggests utilising Information Management methodology to devise an organisation-wide Information Management Plan, incorporating records management and archival requirements, to facilitate the identification of records of value to the organisation to be managed as any other corporate asset.

When developing policy for the management of electronic records it is of value to step back and examine where electronic records are being created in an organisation and also to examine current management practices being applied to those records.

Organisations ideally want a common approach to the management of electronic records but, on examination, often find that three distinct management approaches have evolved. The first management approach is adopted by records managers, archivists or librarians who manage electronic records created to support their professional functions. The second management approach is adopted by Information Technology (IT) professionals who manage large database holdings according to computing science principles. Thirdly, there is a rapidly growing group of electronic records that are largely unmanaged because they do not fall under the responsibility of a professional group. The minimal management practices that are applied to these records have not been drawn from a professional body of knowledge as in the first two approaches mentioned. This stream is typified by the Personal Computer (PC) user who creates, manages and destroys electronic documents independent of any formal management regime.

This paper will examine the three management approaches in practice at present and assess if archival interests are being addressed adequately in each.

APPROACH 1 — ELECTRONIC RECORDS MANAGED ACCORDING TO THE RECORDS MANAGEMENT/ LIBRARIAN BODY OF KNOWLEDGE

Over the last ten years both libraries and organisational registries have been automating their intellectual control and dissemination functions and are continuing to do so. Initially card catalogues were replaced with sophisticated on-line catalogues and registries adopted automated file management systems.

In each case the paper-based indexes and control mechanisms were converted into electronic records, whilst the books and the records themselves managed by these automated indexes, remained firmly paper-based. The electronic records created underpinned the processes of indexing, allocation of file numbers, file titles, file locations, the recording of distribution information and the whole myriad of library descriptions associated with bibliographic and location control.

Advances in automation led on to the digitising of the paper records and books by scanning the paper-based information onto optical discs. Management justifications for converting both the paper records and their associated intellectual control mechanisms into electronic records were based on the advantages this process gave, namely

reduced storage costs, increased time responsiveness for retrieval, and provision of greater searching and report generation facilities.

As automation increasingly has converted the records managed by these professions into another format, the traditional management practices inherent in the paper-based indexes have generally been transferred into the automated intellectual control systems. Therefore, the practices drawn from a traditional body of knowledge are still being utilised and applied to records though they are now in electronic form and on a different medium. Archival concerns applied to paper records are generally incorporated into the automated systems when record managers or archivists have responsibility for converting records from one medium to another.

APPROACH 2 — ELECTRONIC RECORDS MANAGED ACCORDING TO THE COMPUTER SCIENCE BODY OF KNOWLEDGE

Another set of management policies, practices and procedures that have developed arise from computer science principles and are applied in the management of large transactional database holdings held in mainframe or midrange computer environments. IT professionals generally operate in a structured manner and apply a range of well established management techniques to the electronic records under their control. The management techniques used to design systems include system analysis, system design and data modelling. Additionally, by creating data dictionaries and system documentation, IT professionals ensure that the data held on systems and the management practices that apply to them are described.

Associated with these management techniques are well defined lines of responsibility resting on personnel trained in this profession. This scenario is similar to that in Approach 1. In both streams staff who have been trained in a particular information profession, are given clear responsibilities and draw on their training and the body of knowledge of their chosen profession to manage electronic records in their control. In neither case are policy decisions and development of management practices affecting a corporate asset left to the individual staff member.

Though a management discipline has been applied to electronic records in the mainframe environment, often managers have been responsible specifically for the data held in discrete databases or computer systems. Previously the individual managers may not have needed to utilise a common management approach. However, with information technology advances and the pressure on organisations to exchange data internally and externally, a more common management approach across all computer systems becomes necessary.

It is strategic for organisations to develop management philosophies that relate to all of their data holdings, irrespective of the computer system in which they reside. Such philosophies usually call for a rationalisation of data management techniques and give system managers guidance on the extent to which computer systems need to be compatible. All organisations need to avert embarrassment or damage resulting from the release, exchange or use of inaccurate data and this has furthered the requirement for a co-ordinated approach to data management and hence to electronic records management.

This rationalisation of data management techniques has resulted in some organisations developing data management principles or philosophies which outline the organisation's overall management direction towards its data.

The data management principles developed are fundamentally similar and are drawn from the computer science body of knowledge. The principles in general state:

- Know Your Data
- Share Your Data
- Maintain Data Integrity
- Secure Your Data
- Promote System Flexibility.

While these principles to a certain extent integrate records management requirements, they do not usually address archival requirements so there needs to be included the principle **Preserve Your Valuable Electronic Records**. This principle emphasises the need to migrate long term value records as technology changes and to provide access to those records over time.

APPROACH 3 — ELECTRONIC RECORDS NOT MANAGED ACCORDING TO A PROFESSIONAL BODY OF KNOWLEDGE — THE PC ENVIRONMENT

Electronic records in this stream are distinguished by the fact that they are unlikely to be managed by a set of practices and principles arising from either the records management or computer science body of knowledge. The records falling into this category are the PC generated word processing documents, spreadsheets, complex compound documents linking text, graphics and voice, electronic mail and electronic document interchange transactions. A collective term for these records in common use is 'electronic documents'.

The volume of records falling into this category is increasing rapidly as organisations introduce PCs into the workplace and staff become increasingly dependent on office automation for creation,

manipulation, storage and dissemination of their documents. Additionally, many organisations have linked their PCs and mainframes forming complex networks that allow documents to be interchanged, down loaded, up-loaded, transferred, stored or reused anywhere across the network.

Staff are operating increasingly in this type of environment and therefore increasingly are having to face the decision of how to manage, on their PC-based networks, the electronic documents they create and transfer. At present staff can manage their documents in one of three ways: the electronic documents created can be converted to paper printout and transferred to the registry for management; electronic documents can be managed by the creating officer on removable storage media such as floppy discs or on local hard disc repositories; or electronic documents can be transferred for management onto a computer file server. The management consequences of each option will now be examined.

PC Documents Converted to Paper

Creating paper printouts of electronic documents for registry management is the current response to the management of electronic documents. This approach is being used to ensure that an organisation has an authoritative record of its business operations available for later retrieval and use. The practice of printing and filing paper versions of PC generated documents of ongoing value has been, and still is, encouraged by Australian Archives for Commonwealth agencies as a means of ensuring documents are preserved. Present Australian Archives policy is documented in the publication *When it's Gone it's Gone!!!*[1]

While the practice of 'printing and filing' is still, at present, a suitable management practice, it is dependent upon the presence within an organisation of an effective registry system, either centralised or decentralised. It is certainly dependent on staff being aware of and accepting and implementing the records management practices formulated by their organisation.

The trend within Commonwealth agencies has been to devolve their records management function, firstly from centralised to decentralised registries. Now, in a number of cases, agencies have devolved this even further and the responsibility for managing one of its major corporate assets — its records base — has been given to the creating officer.

The logic of devolving the responsibility for records management to officer level is not being questioned. However, it must be stated that devolution of this responsibility has not been accompanied by training for staff in basic records management practices for either paper or electronic records. Without organisational encouragement staff will

develop their own disciplines, usually degenerative derivatives of management practices once in place rather than apply those set by the organisation. This could result in organisations having undescribed, unclassified, unindexed corporate documents stored on individual floppy disc backup repositories.

PC Documents Stored and Managed on Removable Storage Media

Staff generally adopt this option for the management of electronic documents they create if their organisation has not issued or enforced organisation-wide electronic document management practices. This option's attraction for staff is that minimal management requirements are placed on them. However, if an organisation wants to maintain control over its information, the practice of staff keeping records stored on private collections of floppy discs or local hard disc drives needs to be discouraged.

If staff create individual indexing and filing systems or rely on their word processing packages to manage the documents they create, record retrieval and monitoring of documents will be hindered. Word processing packages were not designed to emulate records management systems; neither are they designed to capture the contextual information traditionally captured by registry systems. On a PC, file titles may be limited to eight characters, with a three character extension. While external and internal labels can be attached to the document, and the use of sub-directories can help to go some way towards eliminating this deficiency, such facilities are still very limited as a means of recording information about the document.

The practice of storing corporate documents on PC hard discs and removable storage media may serve as an adequate personal management practice but should not be adopted as an organisation's practice for storage and management of vital corporate business records. Organisations need to give staff clear instructions on their responsibilities for management practices relating to the documents they create and the appropriate use of removable storage media and local hard drives.

Unfortunately, it appears that as organisations are increasing their use of office automation, the use of records management disciplines is waning. Organisations are not compensating for this loss of control over paper by gaining control over their electronic records. Until this is done, both records management and archival considerations are not addressed. No other major organisational asset is left in such an unmanaged condition. Hopefully, government, business and public accountability demands will pressure organisations to revise or implement more stringent records management procedures that will apply to all of their records.

PC Documents Stored and Managed on a Computer File Server

Organisations have invested heavily in information technology including the provision of PCs and they appear to be positioning themselves to increasingly operate in an automated environment. This has led to investigating the use of computer file servers combined with groupware[2] software packages to aid project management, and additionally, document management, as they see the practice of maintaining duplicate paper copies as redundant. Organisations do not anticipate operating in a completely paperless environment, as paper will still flow into organisations and be created internally to a degree. However, they see no value in maintaining parallel control systems for both a paper and electronic version of the one document. Official documents will exclusively reside on a computer file server and such organisations will have to address records management and archival concerns when developing management policy or purchasing software to manage electronic documents. Sometimes these concerns have not been addressed and instead a technology solution has been sought.

How should documents placed on computer file servers be managed given that PC generated documents potentially have highly complex linkages and minimal contextual information? One option is using the PC software that created the document to manage the document. Another option is to examine whether the records management software packages, traditionally used in registries to manage information held on paper or optical disc, can be applied to electronic documents on the server. Both approaches are likely to be inadequate as neither can, to date, cope with the complex linkages required to retain the entity of compound documents as they are created, used, reused and disseminated.

Records management computer systems are generally not designed to deal with the links between the document and its attachments, or the maintenance of those links as compound documents get broken up, disseminated and reformed. Neither is it easy to track changes or additions to documents, or maintain version control or manage the contextual information associated with electronic documents. Hence there is an increased interest in PC groupware software that can accommodate compound document management. In response to this market shift some vendors are re-examining their records management products to accommodate the management of compound documents in a file server environment.

It should be emphasised that computer systems developed or purchased to manage electronic documents need to be more than just systems for tracking the physical location of the documents. They should manage documents over their complete life cycle, based on

their value to the organisation. Complex compound documents should be able to be managed as a logical entity now and in the future and even if they are migrated through many changes in technology. This requires that a number of document attributes are selected that best describe the document content and the context in which the document was used, and that these attributes are managed along with the document.

In a computer file server environment the management of document attributes would need to be automated as much as possible. Auditing of document changes may also need to be automated. The complexity of any electronic document management system will depend on user requirements and the mix of records of differing value that the system needs to manage.

Additionally, organisations positioning themselves into an increasingly electronic environment will need to do more than acquire a suitable document management computer system. They will also need to define the management structures required to control the electronic environment and they will need to state clearly what levels of responsibility each officer must take when creating, using, transferring or storing electronic documents.

Unlike the two management approaches discussed above where structures existed which ensured that suitable common practices were utilised to manage electronic records under the control of records managers or archivists and computer professionals, no such management structure exists in the PC environment to ensure that an organisation's electronic documents are managed uniformly. Staff create, control and manage their own electronic documents without knowledge of the organisation's overall information management objectives or desired records management practices.

The degree to which such documents are managed is usually determined by the functions built into the technology purchased. Organisations usually have clear lines of responsibility for determining policy associated with PC purchasing, installation, user support, software training, network and communications but not for management of the corporate asset that is created with that technology.

Most organisations have not fully addressed the issue of electronic document management. Within the Commonwealth, however, the Electronic Data Management Subcommittee of the Information Exchange Steering Committee (IESC) has investigated best management practices for this environment and has published a booklet[3] addressing the management of electronic documents through the record life cycle. The publication recommends that organisations group their documents according to personal, work group and corporate categories and assign record attributes to electronic documents in order to preserve the context of the documents.

An expanded list of the IESC document attributes that emphasise archival concerns is grouped as follows:

- Electronic Record Identification
  - Unique identifier
  - Title
  - Author
  - Owner/Manager
  - Controller/Controller Code/Organisation Code
- Electronic Record Description
  - Date of Creation/Modification
  - Version Control
  - Draft/Final
  - Document Template
  - Compound Document
  - Keywords
  - Security
- Electronic Record Categorisation
  - Record Security Category
  - Access Levels
- Electronic Record Archiving and Disposal
  - Record Disposal.

These record attributes represent the transfer of records management criteria as originally used in card registries or file management systems, into the PC environment. Whereas in paper file systems contextual information was inbuilt in the registry file, such as file title, classification number, folio number and date order, these criteria have had to be translated into discrete attributes for monitoring in the electronic document environment.

The IESC Data Management Subcommittee will next pilot the management guidelines advocated to test their implementation. Part of the investigation should include examining electronic document management computer systems to see if they can accommodate monitoring such a range of document attributes, and to what degree the allocation of values against attributes can be automated.

INFORMATION MANAGEMENT METHODOLOGY

Since most organisations will have to develop policy positions on how to manage their electronic documents, it seems an opportune time for them to take stock of their total information holdings, irrespective of the technology employed, to identify their valuable records and to set best management practices that can be applied to them. In the electronic records environment it is becoming increasingly difficult to identify what constitutes a record as evidence of a business transaction. This is due to the increasing volume of electronically held

information and the difficulty in recognising the record as a distinct entity apart from information. What is required, therefore, is an understanding of the total information environment to ensure effective identification of the business record. This is most appropriately done by utilising an information management methodology that encompasses all forms of media, with the decisions reached documented in an information management plan.

Within the Commonwealth such a need was identified in 1991 by the IESC. In its publication *Developing a Business Driven IT Strategy* it stated:

> Ideally, all forms of information, whether in written, image, spoken or electronic form should have a common planning framework. Developments in Total Information Management methodology are still in their early stages and considerably more research and discussion are needed before a practical framework with general application can be developed and specified.[4]

Little has been done, however, within the Commonwealth to develop understanding of what constitutes a 'Total Information Management methodology' or address the problems of general information management. Some work has been done at the State Government level to address information management concerns. In 1992 the Western Australian Information Policy Committee published *Managing The Information Resource*[5]. This paper was presented as an overarching paper, and recognised that further work was required to amplify the discussion of the management perspective presented, to set future strategic directions and to discuss ways and means of implementing those directions.

The term 'methodology' is familiar to most IT professionals in relation to techniques and processes applied to the development life cycle for computer systems. William Davis writing his book in 1983, *Systems Analysis and Design — A Structured Approach,*[6] recognised that systems analysis was a new profession, that the methodology was still evolving and that many different versions of the 'correct' approach existed. That is still the case today. Similarly, the information management methodology expounded in this paper is just one possible approach to managing information and identifying the records of the organisation. The methodology was developed by the authors as part of their examination of electronic records management issues for the Australian Archives. The methodology consists of the process of applying six information management principles to produce an information management plan with the purpose of maximising the effective use of information and records within an organisation.

Key Components of an Information Management Methodology

For an organisation to quickly re-establish control of its information

environment and to ensure that it is meeting its strategic information needs it needs to tackle two key areas. These are:

- establish clear lines of responsibility for the management of information, and
- develop an information management plan based on information management principles.

In the past there were clear lines of delineation between the disciplines associated with different media. The way technology is being used today, however, is changing the roles of professionals such as the archivist and the records manager. The divisions between the technology disciplines such as those associated with mainframe/ midrange computing and the personal computing environments also are no longer clear.

To ensure that information and records are being appropriately managed across these changing environments, it is essential that a management position or committee be established within an organisation to consider the organisation's total information requirements. Such a position or committee should develop an information management plan that addresses the organisation's information needs in fulfilment of its business vision, goals and objectives. The plan should be supportive of the organisation's business plan and provide the foundation for corporate IT strategic, tactical and contingency plans. Indeed, the establishment of an information management plan will ensure that the IT plans are focussed on business issues.

In most organisations, responsibilities for areas such as registry, library, PC management, PC user support, electronic document interchange systems and electronic mail are dispersed across organisational sections, branches and divisions. Without clearly defined lines of responsibility an organisation loses overall control of its information. Organisation-wide policy and management procedures are required to maximise the use of information resources, to achieve effective communication, for decision making and to maintain accountability. Otherwise, as described earlier, different management approaches evolve within organisations. The development of this policy and these procedures needs to be coordinated by a person or committee that has ultimate responsibility for all information management requirements including registry, library, and the management issues relating to electronic records.

Information Management Plan

An information management plan should cover both the long term strategic directions for information management within an

organisation as well as the requirements for short term policy, standards and procedure development. It should be driven by user defined needs and priorities and it should identify information of value and why it is considered to be of value.

The IESC report *Developing A Business Driven IT Strategy*[7] asks four questions which are equally applicable to information management:

- where are we now?
- where do we want to be?
- how do we get there?
- what do we need to get us there?

These questions can be addressed by applying six information management principles.

Information Management Principles

Identify Your Information

Critical business dependencies on internal and external information sources need to be identified and documented in an information management plan. The plan should point to existing information listings and catalogues and provide information on volume, source, age etc. and the ownership and management responsibilities for the information.

In relation to the organisation's overall business requirements important business records should be identified and their links to organisational functions examined. An organisation must know of its record holdings in order to meet basic accountability requirements such as audit, freedom of information, privacy and archives as well as specific legislative concerns.

The information management plan should identify all general and specific record disposal authorities relevant to the organisation. One approach to determining the value of an organisation's records is to examine record holdings from a business and functional perspective. A valuable tool in this functional analysis is a high level diagrammatic representation that identifies the organisation's information holdings. Such a diagram should be included in the information management plan and would be similar to those developed by IT areas to represent logical computer record holdings.

Standard procedures need to be developed that notify an information manager when new sources of information have been created and when information holdings have been archived. The information collected on each of these activities should be communicated to relevant staff and identified in the information management plan.

Ensure Information Quality

As part of managing information quality, an organisation should have guidelines that help minimise the duplication of information. For Commonwealth agencies this process can be aided by identifying what records can be destroyed as part of 'normal administrative practice' in accordance with the *Archives Act 1983*. Destruction as a 'normal administrative practice' usually occurs because information is:

- duplicated (e.g. a draft or information copy);
- unimportant (e.g. telephone message slips); or
- of short term facilitative value (e.g. compliments slips, or some computer test data).

In most cases, the practice will be routine and as a general rule unimportant records which can be destroyed as part of 'normal administrative practice' are the equivalent of records that would not be placed on a registry file. Guidance on what constitutes 'normal administrative practice' is outlined in Australian Archives' publication *Just for the Record*.[8] Unnecessary retention of records is costly and can hinder the effective retrieval of other information.

Accuracy and confidence in the stated level of accuracy of information are fundamental to information quality. Accuracy can be as simple as knowing that you have identified the authoritative version of a record. Particularly in its electronic form, multiple copies of a record can exist and be widely dispersed over an organisation's communication network. It is important, therefore, to be able to identify the authoritative source of information especially where information has been through a drafting stage or has been distributed throughout the organisation for comment prior to becoming the accepted record of a business activity. Management and system procedures should be in place to address the issue of identifying the authoritative business record.

For business-critical information sources, the information management plan should identify required accuracy levels for the information and identify the procedures and associated costs estimated to achieve the targeted levels of accuracy. Procedures should ensure that there is consistency between different information sources (especially across different media), common terminology is clearly defined and terminology definitions widely distributed within the organisation. Procedures should ensure that the accuracy of information is verified as close to the source of its creation as possible.

Organisation-wide standards for the collection and maintenance of information are essential for the achievement of information quality. Up-to-date procedure manuals and ongoing training programs for the collectors and maintainers of information are critical in ensuring information quality. The relationships between various information

environments should be identified and procedures developed to address the migration of information from one environment to another. Redundant information should be identified and documented. In the electronic environment procedures and standards should be developed to cover the movement of information within that environment. Responsibilities for capturing the business record when records are transmitted by electronic mail or migrated across file servers should be clearly identified. Relationships with traditional records management systems need to be clearly understood.

Critical to information quality is the establishment of standards for the collection and maintenance of associated contextual information so that consumers are able to understand the relevance and the value of the information they are processing. In relation to electronic records this contextual information is captured through metadata and electronic document attributes.

Share Your Information

An important requirement of information management within an organisation is to increase the effectiveness in the use of information that is available. Information is a costly asset to produce and manage and it is in the organisation's interest to get the most out of its investment in its information. To do this an organisation needs effective strategies to communicate to staff what information is available, the quality of the information, the quantity of information, the context in which the information was collected and the context in which it is intended to be used. In this way the information management plan can be one tool that is used to communicate and raise awareness of an organisation's information holdings.

Information should be easy to exchange within the organisation and between organisations. Appropriate technology and standards should be in place to ease the movement of information from one technical environment to another with clear identification of redundancy where appropriate. The information management plan should identify the standards for all media used by the organisation and identify dependencies and links between information holdings including those to external organisations.

Secure Your Information

To manage security issues it is necessary to know what information the organisation has in the first place and to be able to identify which information is sensitive, Organisational procedures and guidelines need to address how information should be handled in terms of security for all forms of media. Security guidelines apply equally to microfilm as they do to paper or electronic documents. Sensitivity

issues can only be properly handled if the total information environment is being managed effectively and security issues are being addressed across all areas. Effective security requires an organisation to be in control of its information holdings.

An information management plan should identify an organisation's sensitive information, those responsible for its management, and the procedures and guidelines to be followed for sensitive information for all types of media.

The keystone of effective information security is training and education. Staff need to be regularly reminded of their legal and business obligations. Organisation specific information security requirements should be identified in the plan.

An information management plan should also identify contingency procedures for important information. Procedures need to be in place for recreating critical information that has been lost or inadvertently destroyed. Alternatively, a program for copying and off-site storage of vital information should be in place for information that cannot be recreated. A risk analysis to identify threats in relation to important information holdings is a necessary requirement for developing appropriate contingency strategies.

Plan For Change

One of the most disruptive elements to effective information management is organisational and technological change. Change can result from organisational restructuring, business functional changes, the implementation of new systems or the requirement to upgrade to new technology. Such change is inevitable and should be considered in any information management plan. Information management procedures should ensure sufficient flexibility to be able to accommodate change.

Procedures should exist to target information management needs that require consideration during a period of change. Security and quality requirements are critical as it is during change that adherence to standards can drop. Ownership and management responsibilities need to be clearly attributed in relation to all information holdings during and at the conclusion of change.

Technological change can involve high information conversion and migration costs both in terms of human resources and technical resources. Information quality and accuracy levels need to be clearly specified before the commencement of conversion along with the associated risks and costs. Major information conversion or data capture can often introduce high levels of 'unclean' information into information systems. The consequences of 'unclean' information need

to be identified and the effect on other systems considered as the implications of an inappropriate decision can be felt for many years. The information management plan should identify long term plans and strategies for information migration and the associated costs.

Preserve Your Valuable Records

The information management principle of 'Preserve your Valuable Records' applies to the business records of an organisation. What constitutes the business records should be identified in the organisation's information management plan and those records managed in accordance with legislative requirements and organisation objectives. Commonwealth and State agencies additionally need to manage their records in accordance with authorised disposal authorities as approved by the governing archives, or in accordance with 'normal administrative practice'.

A proportion of an organisation's business records may be assessed to be of long term value to the organisation. In addition there may be records which are required to be kept permanently. All such records require special consideration to ensure that they are preserved over time and are able to be accessed.

To preserve electronic documents in a PC environment may mean that a number of document attributes need to be monitored in order to retain contextual information about the records, whereas in a mainframe computing environment it may require that certain data set changes are audited.

CONCLUSION

The adoption of technology within organisations has resulted in the creation of electronic records that support differing business functions. As has been outlined, electronic records are managed to varying degrees dependent upon the professional background of the manager responsible for them. While electronic records managed by records managers or IT professionals have certain levels of control applied to them (though archival requirements need to be readdressed) it is the PC generated documents that require urgent attention. Organisations at present are in a period of transition from the creation of paper records to dependency on electronic documents. Unless corporate management practices, incorporating records management and archival requirements, are applied to these records, organisations place themselves in a vulnerable position in terms of business and government accountability.

An ideal way of developing such corporate management practices is for an organisation to adopt an information management methodology

and to identify its business records which together will enable it to address management requirements across all its diverse media, including those holding electronic records, and to specify the business practices it requires in an information management plan.

The information management methodology outlined in this paper is an attempt to identify one approach that has practical application and will promote the development of information management as a corporate issue and an area for further research. If these issues are not adequately addressed then the chance that suitable management regimes will be implemented in the fast evolving information technology environment is slim and it is unlikely that a suitable body of archive material will be preserved and be accessible for future generations.

ENDNOTES

1. It is vital that Commonwealth agencies apply this practice until they have developed in-house policy, practices and procedures for the maintenance and management of electronic records in a fully automated environment and by doing so they are complying with the Archives Act. The publication *When it's Gone it's Gone!!!* is available from Australian Archives.
2. Groupware applications allow multiple users to access compound documents, communicate effectively, and take advantage of business process automation over geographically dispersed, or even remote locations.
3. Electronic Data Management Subcommittee, *Management of Electronic Documents in the Australian Public Service*, Information Exchange Steering Committee, April 1993.
4. Information Exchange Steering Committee, *Developing a Business Driven IT Strategy*, Information Technology and Systems Group, Financial Management Division of the Commonwealth Department of Finance, October 1991, p. 1.
5. Western Australian Information Policy Committee, *Managing the Information Resource*, Government of Western Australia, 1992.
6. William S. Davis, *Systems Analysis and Design: A Structured Approach*, Addison-Wesley Publishing Company, 1983.
7. Information Exchange Steering Committee, *Developing a Business Driven IT Strategy*, Information Technology and Systems Group, Financial Management Division of the Commonwealth Department of Finance, October 1991, p. 16.
8. Australian Archives, *Just for the Record ... How to Destroy Records as a Normal Administrative Practice.*