

**Capture, Create, Manage: The experiences of New Zealand
government departments in meeting the requirements of
the Electronic Recordkeeping Metadata standard.**

by

Annabel Dorothy Tupou Snow

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Abstract

Research problem: One of the key challenges for electronic recordkeeping is the creation, capture and ongoing management of metadata. The Electronic Recordkeeping Metadata Standard establishes minimum requirements for the New Zealand public sector in accordance with the Public Records Act 2005. This research examines how the recordkeeping systems used by government departments meet the requirements of the metadata standard and what factors influence compliance.

Research methodology: This qualitative research surveyed all twenty-nine public sector agencies classified as government departments in the State Sector Act 1988. This was followed up with interviews with seven participants from six departments.

Results: This paper found that departments are harnessing the capability of their systems to create, maintain and manage metadata with the resources available. Interviewees showed they look for opportunities to influence the design of new systems and to enhance functionality. Technological factors greatly impact on the extent to which a department can meet the requirements of the standard. A focus on business processes and user needs has resulted in purposeful departures from the standard and a move beyond recordkeeping metadata.

Implications: The development of innovative tools and practices by departments has the potential to meet the business/user needs of the organisation and comply with the requirements of the standard. Suggestions have been made as to how the standard could better serve departments dealing with these multiple priorities and technological factors.

Keywords: electronic recordkeeping; metadata; public sector; recordkeeping systems; New Zealand

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1. Research Problem

“One of the key challenges for recordkeeping in digital and network environments is the establishment of sustainable frameworks for the creation, capture and on-going management of the metadata” (Evans, Reed, & McKemmish, 2008, p. 116).

In line with this statement, the broad topic of this research is the status of New Zealand public sector compliance with the Electronic Recordkeeping Metadata Standard (ERMS) introduced in 2008 (Archives New Zealand [Archives NZ], 2008a).

The ERMS establishes ‘minimum requirements for creating and managing recordkeeping metadata in electronic environments, in accordance with the Public Records Act 2005’ (Archives New Zealand, 2008a, p.1). Metadata is important because it describes ‘the context, content and structure’ of a record (ISO 23081, 2004, as cited in McKemmish, Reed & Piggott, 2005, p.185) which can affect its integrity and reliability as evidence of activity. The importance of metadata to government recordkeeping is reflected in the fact the standard became mandatory for all public offices and local authorities from 1 July 2010 (Archives New Zealand, 2008a, p.5).

Archives New Zealand [Archives NZ] runs surveys across the public sector to assess the state of government recordkeeping, to track indicators of improvement (Archives New Zealand, n.d., What are the government recordkeeping surveys?, para.1) and to identify issues across government (Archives New Zealand, n.d, How do we use the survey results?, para.1). As the wider literature has shown compliance with standards can be challenging. Some of the Archives New Zealand survey data demonstrates there are similar issues within New Zealand government department recordkeeping, warranting further research.

In 2010, the government recordkeeping survey showed that 76% of government departments were using an electronic recordkeeping system, such as an Electronic Document Records Management System (EDRMS), but only 37% reported having an ‘organisation-wide metadata schema’ (Archives New Zealand, 2010, p.17). These figures

suggest that although an electronic system may be used it does not necessarily mean that records are being managed in a way that would be considered compliant with the ERMS.

At the end of 2012, Archives New Zealand ran a survey as part of the project to review the mandatory recordkeeping standards. Only 64% of survey respondents, across all of the public sector, reported as having used the ERMS, making it the least used of the mandatory standards (Archives New Zealand, 2012, p. 2). Overall the ERMS was also rated as the mandatory recordkeeping standard participants were least satisfied with (Archives New Zealand, 2012, p.7). Why respondents are dissatisfied or have not yet used the ERMS is not explored as a specific question leaving room for further, more in-depth, research.

Another factor is the impact of government-wide restructuring resulting in the merger of some departments. Since 2010 the number of New Zealand government departments has gone from forty-one (Archives New Zealand, 2010, p.64) to twenty-nine (as at March 2013) (State Sector Act, 1988, Schedule One). The merging of organisations and their recordkeeping systems may have negatively affected some departments' level of compliance with the standard and possibly the ability of recordkeeping staff to facilitate organisation-wide adherence to systems procedures and policies that comply with the standard.

In light of these statistics and organisational changes, and the fact that capturing and managing metadata is key to good recordkeeping, it is essential to gain a clearer understanding of what systems and practices are in place to meet the requirements of the standard and why the public sector is dissatisfied or not using the standard.

1.1. Definitions

The definitions for key terms in this research include:

Government Department – Public offices specified in Schedule One of the State Sector Act 1988 as being a government department. There are currently twenty-nine (See Appendix

One for list). 'Government Department' does not include tertiary institutions, Crown Research Entities, District Health Boards or State Enterprises (Archives New Zealand, 2010).

Recordkeeping metadata – 'Data that enables the creation, management and use of records through time. Recordkeeping metadata can be used to identify, authenticate and contextualise records and the people, processes and systems that create, manage and use them' (Archives New Zealand, 2008a, p.29).

Electronic recordkeeping system – Software products designed specifically to manage records. Includes: EDRMS, ECM, EDMS. Referred to in this research as 'EDRMS'.

Non-EDRMS – Systems which create and keep records but are not solely designed to manage records according to recordkeeping principles. For example, shared drives or core business systems such as Human Resources systems, finance systems, case-management systems.

Compliance – Recordkeeping practices that meet the 'requirements for creating and managing recordkeeping metadata in electronic environments' (Archives New Zealand, 2008a, p.1) in accordance with the principles and requirements of the Electronic Recordkeeping Metadata Standard.

1.2. Delimitations

Due to the limited scope of this research project and the time available, this study is confined to public sector agencies classified as 'government departments' in the State Sector Act 1988 (1988, Schedule One) (refer to Appendix One).

It is worth noting that the ERMS is currently under revision as it is being integrated with the three other mandatory standards into one document. This is still in a consultation phase; therefore the standard in its current form (Archives NZ, 2008a) was used in this research.

2. Literature review

2.1 Introduction

The major themes of this research project are:

- recordkeeping standards
- recordkeeping systems use (both EDRMS and non-EDRMS)
- recordkeeping metadata and its use
- the public sector recordkeeping environment.

The literature shows that all four aspects of this research are key topics within the study of records management but that very little in-depth study is conducted into how systems are actually used once implemented or whether metadata capture remains standards-compliant.

2.2 Recordkeeping Standards

The literature on recordkeeping standards is heavily focused on the development and implementation stages rather than the empirical assessment of recordkeeping practices against a specific standard.

Since the introduction of ISO 15489:2001 *Information and Documentation – Records Management* in 2001, the literature has reflected the records management community working through the value of the standard (Connelly, 2001; Healy, 2010; McLeod & Childs, 2005), relationship with other standards (Pember, 2006; Swan, Cunningham & Robertson, 2002) and how best to implement it within organisations (Oliver, 2007).

The international standard on metadata for records, ISO 23801:2006 *Information and Documentation – Records Management Processes – Metadata for Records* is not as frequently written about as ISO 15489 and is rarely the sole topic of any in-depth case studies.

The metadata standards that are more widely referenced in the literature are those that assist at a more practical level e.g. MoReq, Australian Recordkeeping Metadata standard,

Dublin Core. This may support Frank McKenna's argument that standards like ISO 15489, 'are written for academics' and 'are extraordinarily difficult to read and understand' (McKenna, 2009, p.44).

When writing about the precursor to ISO 16175 - Principles and Functional Requirements for Records in Electronic Office Environments, Cunningham also stated that digital recordkeeping standards were not implemented by organisations because they have been made "unnecessarily complex and prescriptive" (2011, p.29).

In just over a decade, articles on metadata in relation to standards have broadened from traditional electronic recordkeeping to include;

- interoperability (Henttonen, 2009; Lim & Liew, 2011; Park, Lamontagne, Perez, Melikhova & Bartlett, 2009);
- semantic metadata (Alemu, Stevens, Ross, 2012);
- discoverability for e-government (Barham, 2002; Cunningham, 2001);
- digital preservation (Caplan & Guenther, 2005; Day, 2003).

While web discoverability is of concern to the New Zealand public sector, hence the NZGLS metadata standard (Department of Internal Affairs, 2004), it is not the focus of this research project.

Standards have been critiqued for not providing sufficient guidance for recordkeepers (Bettington, 2004, p.56) and for promoting the view that recordkeeping processes should fit into existing business processes rather than 'proactively integrating recordkeeping into business activities' (Bettington, 2004, p. 61).

Some research suggests that no one standard can provide everything an organisation may need but that a combination is necessary (Henttonen, 2009; Park et al, 2009, p.147).

Alongside suggesting that organisations adopt one or more standards that suit, Cumming (2005, p.42) talks about developing a metadata strategy (rather than a standard) that suits the specific organisations' business requirements and issues.

Reed (2010) views standards like ISO 23081 as a tool for recordkeepers to inject established recordkeeping practices into emerging technologies, such as service-orientated architecture built on web services. Technologies influenced by recordkeeping standards should ensure recordkeeping functionality is integrated and consistent (Reed, 2010, p.132).

Reed's more dynamic approach to the role of standards is explored by Joseph, Debowski and Goldschmidt (2012) who look at the paradigm shift in the responsibilities of recordkeeping professionals and what this means for the relevance of established international standards such as ISO 15489. This study argues standards need to evolve along with the profession, the growth in social media technologies, Web 2.0 and the 'more fluid institutionally-driven' (2012, p.58) recordkeeping environment.

In the case of New Zealand's ERMS, it is presented by Skelton and Jones as 'the pragmatic path' (2008, p.7) with requirements that are minimal enough to enable broad application across all government recordkeeping but which still ensure records are 'created and managed over time' (Skelton & Jones, 2008, p. 7). They caution that if only the minimum amount of metadata outlined in the ERMS is implemented then defence against threats to authenticity may not be strong enough (Skelton & Jones, 2008, p.7). This statement alone justifies the need for investigation into whether New Zealand government agencies are achieving more or less than what the standard requires.

For recordkeeping governing bodies, it appears drafting standards is a balancing act between standardisation (which enables interoperability, migration and access over time) and flexibility (which allows organisations to adapt their approaches to fit new technologies, records formats and user needs), while still being compliant.

2.3 Systems Use

EDRMS implementation is well-researched, most often using case studies to discuss the successes and learnings from the implementation process (Bidmead, 2008; Gregory, 2005; Wilkins, Swatman & Holt, 2009). Here the research into the best way to establish the system organisationally and gain 'buy-in' from staff is favoured over studying on-going system use or standards compliance, the focus of this research.

McLeod, Childs and Hardiman (2011) also noted as one of the headline findings of their AC+erm project that there are few 'post-implementation system evaluations' or 'in-depth critical case studies with lessons learned' within electronic records management literature (2011, Headline 7: Lack of critical case studies, para.1). Gunnlaugsdottir's study of EDRMS use across four Icelandic organisations (2008) fails to draw any strong conclusions about metadata application but is one of the few examples of a post-implementation study into records management systems use.

Within the literature about electronic recordkeeping systems, metadata application and capture is usually discussed as a sub-topic in the context of what capabilities the system has and what decisions were made during the development phase. For example, O'Donnell briefly discusses mapping the National Archives of Australia's Recordkeeping Metadata Standard to a TRIM EDRMS in a broader article about digital preservation (2010, p.48).

Cunningham (2011) identifies the fundamental problem with an EDRMS as being that it is disconnected from core business processes and systems. He usefully makes a distinction between *record-making* systems and *record-keeping* systems and explains that the ideal system (for both users and records professionals) would be a seamless integration of the two (2011, p.27). However it is wrong to assume that business systems that can also 'keep' records necessarily have the functionality to do this in a way that meets recordkeeping standards. Evans, McKemmish and Bhoday suggest the way forward is to ensure metadata is created so it can be used and re-used by both kinds of systems and can 'cross technical, spatial and temporal boundaries in automated ways' (2005, p.22) which would be in line with a records continuum approach to recordkeeping metadata.

While there is limited applied research focused on the use of alternatives to an EDRMS there are guidelines and a growing number of references within the literature. For example, the National Archives UK's guide to 'Managing digital records without an electronic records system' (2010) sets out a best practice framework that is particularly useful for organisations using existing office software to manage records. Although the guide is developed to assist organisations to keep records without an EDRMS, it states that

metadata in an EDRMS is 'more functional' compared to use in a file system, like Microsoft Windows, where 'it is essentially user-generated' (2010, p.9) and 'cannot be used for active records management' (2010, p.26). It goes on to highlight the limitations of metadata capture in file systems such as Microsoft Windows programmes. For example, only a few metadata elements are captured under 'properties' and there is not a true audit-trail captured when documents are moved or altered (National Archives UK, 2010, p.26).

2.3.1 Rise of the new approaches

McLeod and Hare (2006, p.109) discuss embedding recordkeeping within workflows rather than treating records management as external to business activity. If implemented well, this may in fact be closer to the ideal post-custodial records approach than an EDRMS.

The recordkeeping possibilities offered by the developments in service-orientated architecture is supported by Oliver, Evans, Reed and Upward as a positive move to 'process rather than application-centric information systems' (2010, p. 44).

While discussing the potential role of web services in recordkeeping, Barbara Reed argues that if metadata sits in a service external to a specific recordkeeping system it means when migration occurs, the only thing that needs to be updated is the 'mappings of the metadata scheme' (2010, p.135).

As new types of systems, like the web-based services Reed discusses (2010), are developed and implemented, the use of standardised metadata will be critical. Critical not just to the new systems themselves but also to enable interoperability and migration across and between a variety of interconnected technologies.

2.4 Recordkeeping Metadata

Recordkeeping metadata, as defined in section 1.1, is structured or semi-structured data attached to a record at the point of capture (e.g. 'date created') and during the process of managing the record (e.g. 'edited by').

Metadata 'identifies and describes the record' (Archives NZ, 2008a, p.1) and can be used to 'authenticate and contextualize records' (Wallace, 2001, p.255) as reliable evidence of business activity.

It is important to note that recordkeeping metadata is an 'ongoing and active concern' (Evans, Reed & McKemmish, 2008, p.116) especially in an electronic environment and therefore needs to 'continually accrue' to track changes to a record's 'content, structure and context through space and time' (Evans, Reed & McKemmish, 2008, p.116).

The role of recordkeeping metadata has been advanced by a number of projects including:

- *the SPIRT recordkeeping metadata project* which developed a standardised set of structured recordkeeping metadata elements in the form of a metadata schema. The schema then became part of the Australian metadata standard (Records Continuum Research Group, 2012). From the project's original 'one entity' focus (Evans, 2007, p.66); multi-entity schemas have been developed to allow richer descriptions of a record's relationships and context to be represented.
- *the Clever Recordkeeping Metadata project (CRKM)* which addressed the problem of metadata being resource intensive and application specific (The Clever Recordkeeping Metadata project, 2012, The context, para. 3) by developing prototype tools such as metadata registries (for interoperability) and management technologies that would enable automated re-use of metadata.

2.5 Metadata use

There are only a few examples of quantitative and qualitative research into the ongoing attribution and capture of metadata once a recordkeeping system is implemented.

Wilkins et al (2009, p.44) noted that although staff would prefer all metadata to be optional, some mandatory metadata is required to ensure recordkeeping complies with metadata standards.

This finding was backed up by a rare longitudinal study (Kettunen & Henttonen, 2010) which asked: once organisations implement an EDRMS, what kinds of metadata are actually created and what affects this? The ISO 23081 standard and the Finnish national metadata standard (SÄHKE) were used as analytical tools to categorise the use and non-use of metadata elements and sub-elements.

Almost half of the main elements were not used which the paper suggested was not because of the type of metadata or whether it was input by users, but whether it was optional under the SÄHKE standard. The study found that metadata elements are more likely to be used if they are obligatory under the standard and that a higher degree of automation (including controlled vocabulary) may result in better metadata use. The study suggested that further qualitative investigation was needed to determine whether the statement 'records management metadata specifications are too broad and complicated compared to their actual use' was true (Kettunen & Henttonen, 2010, p.51).

2.6 Records Continuum model

Reed's (2005) dynamic application of the records continuum model to a complex case study is an example of how to 'use the model in analysing actions' (2005, p.40).

Troselius and Sundqvist (2012) used a comparative case study design to examine how two government agencies use metadata schemas. The study used the records continuum model as an analytical framework. The dimensions of the continuum in which an organisation functioned in reflected how and to what extent the metadata schema was successfully utilised. The method of mapping metadata elements from each case study to the requirements of the ISO 23081 standard is a good example of how to approach the quantitative measurement of compliance with a standard. The study found in favour of the schema that linked metadata to processes, activities and transactions and provided context, rather than elements that supported a life-cycle approach to records management.

Evans, McKemmish and Bhoday (2005, p.20) identified the ability to create metadata once but then re-use it across not only systems but applications, environments and domains, as a 'distinguishing feature' of the records continuum approach. The key to enabling this

interoperability, or 'clever use' of metadata, is standardisation, whether using protocols, registries, schema or standards.

Because the ERMS is based on the principles of the records continuum, it could be expected that to be compliant in a New Zealand context, metadata needs to be "clever" (Evans, McKemmish, Bhoday, 2005) meaning, re-useable, exchangeable and interoperable across the multiple realities of the record. Exploring the concept of clever metadata with New Zealand government departments assisted this study to evaluate compliance with the principles of the ERMS.

2.7 Public sector recordkeeping

The final theme within the research topic is public sector recordkeeping. Nguyen, Swatman, Fraunholz and Salzman (2009) conducted a survey of Australian public sector EDRMS implementation. Of interest in this study was the suggestion that future research was needed into the question 'How can those organisations with no intention of implementing an EDRMS abide by laws and regulations?' (2009, p.925). In line with this question, investigating non-EDRMS use and compliance with standards is one of the objectives of this research project.

In a local context, Archives New Zealand survey results, particularly those questions related to the metadata standard (Archives New Zealand, 2010; Archives New Zealand, 2012) provide insight into the public sector recordkeeping.

Although Dorner's survey of public sector readiness (2009) was focused on the topic of digital preservation practices, (in which metadata is a subtopic), it is a useful example of analysing New Zealand public sector records management using an existing theoretical model.

The study used Rogers' Diffusion of Innovations model to:

1. translate survey responses into a measurement of the state of an organisation's recordkeeping, and

2. assess why the adoption of new practices may be slow or non-existent.

Some research design considerations within Dorner's study, such as the tone of the questions, informed this study's research methods (discussed further in Section 7.2).

Rankin (2006) explains the measuring of public sector performance as a balancing act. He gives the example of a UK government department's quantitative approach to measuring EDRMS use (a numerical target for records saved) which backfired because this approach resulted in large volumes of low-quality records being saved. Rankin suggests qualitative targets which are 'more difficult to set but will ultimately be more successful' (2006, p.39).

The key piece of literature at the core of this research project is the Electronic Metadata Standard and the accompanying Technical Specifications document (Archives New Zealand, 2008b) as these are the documents which set out 'the principles relevant to creating and recording metadata' and the 'requirements for measuring compliance' (Archives New Zealand, 2008a, p.10) for New Zealand government departments.

2.8 Summary

The importance of metadata to good recordkeeping is strongly conveyed in the body of records management literature, as are the role standards and standardisation plays in the implementation and connectivity of systems.

While all four themes of this research (recordkeeping standards, systems use, metadata use, public sector recordkeeping) are well represented within the literature, there are very few examples of qualitative research into standards-compliant recordkeeping metadata and no examples in a New Zealand context. To what extent government departments' systems are standards-compliant may be addressed within the Archives New Zealand audit programme results. However those are not readily available to the public.

Therefore the research in this paper contributes to filling a part of this gap by producing a New Zealand-based piece of qualitative research into public sector metadata management analysed through the lens of compliance with the Electronic Recordkeeping Metadata Standard.

3. Research objectives

The main objective of this project is to find out about the electronic recordkeeping systems used by New Zealand government departments, EDRMS and non-EDRMS, and whether they are meeting the requirements of the Electronic Recordkeeping Metadata Standard.

Given the results of the 2012 Archives New Zealand survey, the second objective of this research is to look at the role of the standard in departmental recordkeeping and to explore whether records managers use the standard to inform their practice and if so, does it influence the design of their recordkeeping systems?

The final objective of this research is to discover any innovative practices employed by government departments to create, capture and manage metadata particularly those departments that are not using an EDRMS. For example, Archives New Zealand noted a rise in departments looking to 'service-oriented environments' (Archives New Zealand, 2009, Scope, para 1.3) which potentially support quite different methods of capturing, creating and storing metadata.

By looking at the range of strategies and systems used by government departments, as well as the challenges they face in meeting the metadata standard, this research will be of interest to other public offices that do not have an electronic recordkeeping system (56% of the overall sector in 2010) (Archives New Zealand, 2010, p.17) or that reported low levels of satisfaction with the standard (Archives New Zealand, 2012, p.7).

4. Research questions

To address the identified research objectives, this study will endeavour to answer the following questions:

- How are the systems (EDRMS and non-EDRMS) which are used by government departments meeting the requirements of the Electronic Recordkeeping Metadata Standard (ERMS)?

- From a systems perspective, what are the factors that influence a department's ability to comply with the ERMS?
- How do records managers view the relationship between the requirements of the standard and the reality of how metadata is managed within their systems?
- What, if any, innovative strategies and tools are being used by government departments to manage recordkeeping metadata or to meet the requirements of the metadata standard?
- While the use of an EDRMS is not compulsory (Archives New Zealand, 2009, Scope, para 1.3), where a department is not using such a system, is the lack of a fit-for-purpose system a barrier to compliance with the ERMS?

5. Research design & methodology

This qualitative research employs a two-phase design of both quantitative and qualitative data collection methods. The first phase was used to “identify an appropriate and informative subsample” (Leedy & Ormrod, 2011, p.265) for the second phase of qualitative research.

Although researching the recordkeeping experiences of government departments lends itself to a qualitative approach rather than a mixed-methods approach, the addition of a survey was necessitated by the fact that there was no official list available of what recordkeeping systems were used by each of the government departments. Archives NZ was contacted but could not provide a current list.

The list was needed so a purposive sample could be selected to ensure the study included departments using a range of systems – both EDRMS and non-EDRMS - in relation to recordkeeping. The rationale was to enable a study of metadata management in different situations with the aim of the findings being more applicable to the wider public sector and to provide insight into the realities of meeting the standard.

5.1 Population

Because of the limited scope for this research project, it was decided to focus only on public sector agencies defined as 'government departments' in the State Sector Act (1988, Schedule One) rather than all public sector agencies covered by the Public Records Act [PRA] and the ERMS. The total population for the study was therefore twenty-nine government departments (refer Appendix One).

6. Quantitative data collection

A five-question survey was developed using Qualtrics online survey software (refer Appendix Two) and was distributed to all twenty-nine departments via an email sent directly to the key individuals responsible for recordkeeping in each department.

The purpose of the survey was to identify what system(s) each department primarily used for recordkeeping (both EDRMS and non-EDRMS) and whether the records/information manager would be prepared to be interviewed as part of further research. The survey provided, in both the EDRMS question and the non-EDRMS question, a check-list of possible systems as well as a free text-box for respondents to identify the recordkeeping system they used.

Because there is no list of government department records managers publicly available, the name and email address for each person was found using a combination of the departments' websites, LinkedIn, the online archive of the NZRecords Listserv and phoning departments directly to request the relevant contact details.

In some instances where it was unclear who the best contact was, the survey was emailed to two people within the same department, making the total distribution to thirty-six people across the twenty-nine departments. Two departments did not have a 'records manager' so the survey requests were sent to, in one instance, the office manager and another, the IT manager.

The survey was open from 3 July 2013 until the 14 July 2013 and a reminder to complete the survey was posted on the NZRecords Listserv. An incentive was offered in the form of a chance to receive a \$40 Unity Bookshop voucher; the recipient was randomly drawn from the respondents.

6.1 Results

Fifteen responses were received, but one was submitted with only one question answered and therefore was discarded from the final results. The overall valid response rate was fourteen responses from twelve different government departments resulting in 41% of the population being represented in the survey. For the purposes of selecting a sample with a range of recordkeeping approaches this was a sufficient response rate.

In question 1, the majority of respondents identified an EDRMS (twelve of the fourteen respondents) as the primary recordkeeping system which is in line with the Archives NZ survey which found that 76% of the overall public sector had an EDRMS, (2010, p.17).

Depending on how a respondent answered question 1 (EDRMS or non- EDRMS), they were taken to a follow-up question about the specific recordkeeping system they used. Not giving respondents the option to indicate both EDRMS and a non-EDRMS was to force them to indicate what their *primary* recordkeeping method is. However, some respondents may have felt this restricted their ability to answer in full. To address this issue, a free text-box was provided below both questions 2 and 3 so respondents could manually write the name of the system they used if it was not on the list they could see. For example, in one instance a respondent selected 'non EDRMS' to question 1, but in the follow-up question selected a range of non-EDRMS approaches as well as writing the name of an EDRMS in the free text-box.

In question 2 and 3 departments were able to indicate more than one approach, therefore the total number of answers to the following questions could exceed the number of respondents.

EDRMS products used by government departments

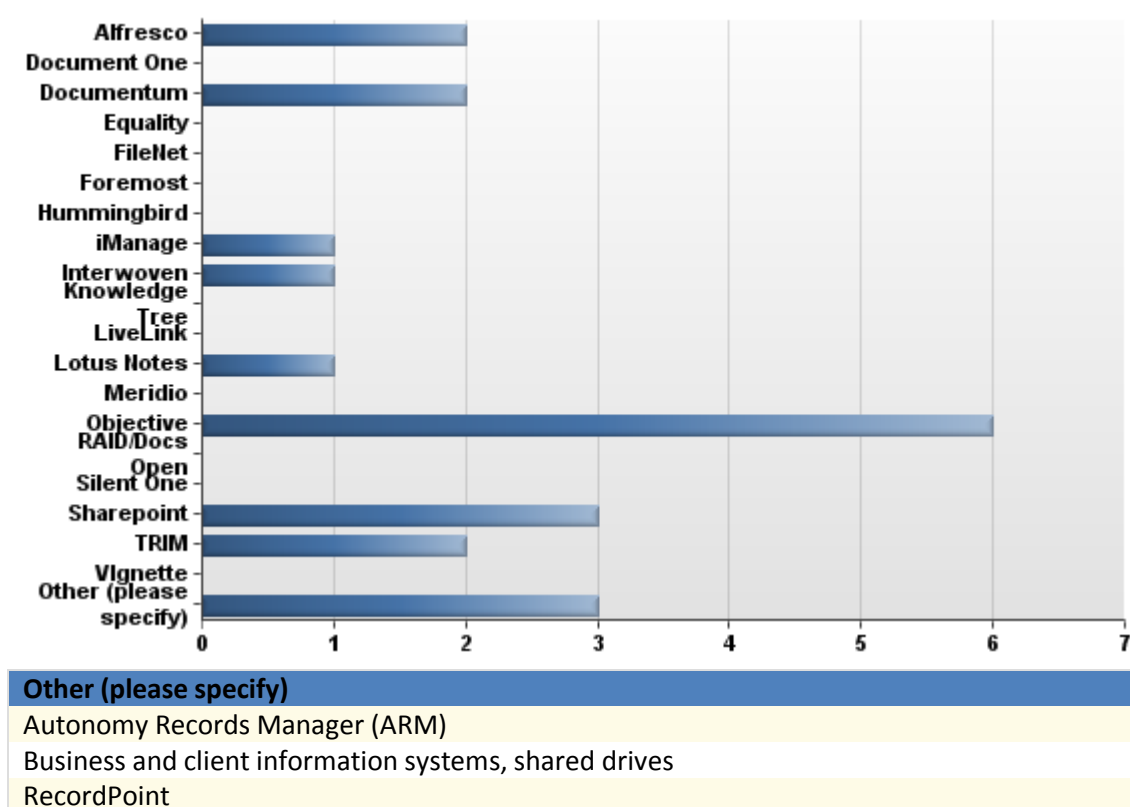


Figure 2 – Electronic records management system use (by product)

Non-EDRMS approaches used by government departments

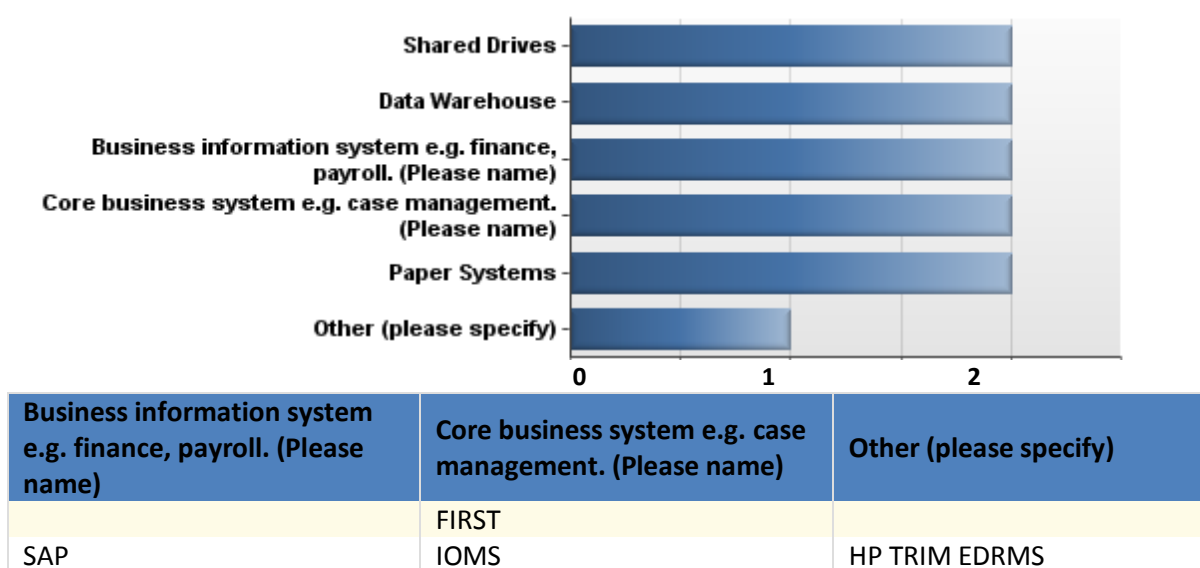


Figure 3 – Non-EDRMS use (by system)

7. Qualitative data collection

To understand how departments view metadata management in relation to the ERMS and their system use, semi-structured interviews were conducted with records management staff. From the fourteen respondents to the survey, eleven people from across ten government departments said they were willing to be interviewed (four of those agreed but requested more information first).

7.1 Population sample

An initial purposive sample of five departments was selected to be part of the qualitative phase of the study. Selection was made on the basis of their recordkeeping systems and the fact that the respondent indicated they were willing to be interviewed. By selecting departments with different recordkeeping systems, this study used theoretical replication (Yin, 2003, p.53) as it was predicted there would be contrasting results across the departments.

The interviewee from the sixth department did not respond to the survey but was recommended by another interview participant. Interviewees were initially contacted by email to invite them to participate. Once agreed, a confirmation email was sent with a participant information sheet and consent form attached (refer Appendix Three).

The final qualitative data collection was six interviews with individuals at six different government departments. One interview involved two staff members. All seven interviewees had senior levels of responsibility for Information Management, Records Management or Knowledge Services within their department. Three of the interviewees were Managers, one was a Principal Advisor, one was a Team Leader, one was an Information Architect and one was a Lead Information Management Advisor.

The primary recordkeeping systems used by the departments interviewed:

- Objective
- Objective
- Autonomy Records Management (ARM)

- SharePoint/RecordPoint/OnePlaceMail
- Non-EDRMS –shared drives, a core business system
- Information Management Platform (under development)

7.2 Interview Design

The interview questions were based on the four principles of the ERMS:

- metadata management framework
- metadata creation
- metadata maintenance
- metadata disposal

and the requirements within the standard and were formulated to answer the research questions set by this study.

Interviews were semi-structured and conducted on a conversational basis to allow subjects to explain and describe as much as possible rather than restricting answers to a pre-determined basis only. Similar to the Dorner study of the New Zealand public sector (2009, p.343), questions were of a positive tone to elicit how systems are currently meeting the standard although some discussion of potential improvements was necessary.

Interviewees were sent a list of interview questions ahead of time (refer Appendix Four). This was to give participants an opportunity to seek advice or information ahead of the interview to mitigate poor recall about the current system use or technical metadata capture/creation.

7.3 Pilot Interview

A pilot interview was conducted with the manager of Information and Knowledge Services and a Senior Analyst from a Crown Agency. Although not a government department, it is a public sector agency covered by the PRA and therefore the ERMS. All the pre-determined questions were asked and the interview ran to fifty-three minutes which gave an indication of the time that would be required. The agency did not have an organisation-wide EDRMS; therefore it was useful practice in eliciting information about metadata management where

the recordkeeping approach was less straightforward than a fit-for-purpose recordkeeping system.

7.4 Limitations

Except for during one interview, the systems discussed were not shown to or used by the researcher meaning all findings about the systems were sourced from interviewees' descriptions.

Apart from Objective, which is used by two of the departments interviewed, only one example of each recordkeeping system was researched which means it is not possible to generalise the findings about each system.

8. Ethical considerations

Prior to data collection, the necessary Victoria University Human Ethics Committee approval was sought and granted.

As part of obtaining interviewees' written informed consent (refer Appendix Three), they were specifically asked to confirm they had gained the necessary permission from their manager to participate or that they did not require any additional permission.

The main ethical consideration in this study was the undertaking that information used in the report would be non-attributable to specific departments. Care has been taken in writing up the data analysis and results of this research to ensure participants and their department are not identifiable.

Confidentiality was also crucial to the success of this project as it enabled participants to speak frankly while upholding the Public Sector Code of Conduct regarding their work (State Services Commission, 2007).

All data is in password-protected storage and identifying information is stored separately from the data. A code has been allocated by the researcher to each participant so their

name and the name of their department are rarely used on any documents. All information will be destroyed two years after the completion of this project.

9. Data Analysis

Interviews were transcribed and then the data was grouped into three broad categories that related to the three research objectives:

- compliance
- use and role of the standard
- innovative practices

Categories were 'identified to help cluster the data into meaningful groups' (Leedy & Ormrod, 2011, p. 142) and was a way to 'reduce and combine data' (Corbin & Strauss, 2008, p. 159) from six interviews.

The exercise of grouping the raw data into the three high-level categories was an opportunity to start identifying concepts or themes that would help explain what the data means. Analysis of the data in this manner also allowed for findings to emerge from the categories that were not necessarily expected (Thomas, 2006, p.238).

The concepts that emerged within each category were assigned to the interview data manually using codes (refer Appendix Five). It is important that continual links are made between the concepts and the research objectives in order to answer the research questions set by this study.

During the transcription and the coding processes, early analysis and insights were written down in the form of brief memos to help later to develop the data into findings. Memos are a form of note taking 'that force the analyst to work with concepts' (Corbin & Strauss, 2008, p. 120). Then, by arranging the data again, but by code, similarities and differences in the cases also became more apparent.

9.1 Analysis Framework

The focus of this research is to study the use of recordkeeping systems by government departments against the requirements of the Electronic Recordkeeping Metadata Standard (ERMS) therefore the four principles of the standard have been used as a framework of analysis.

The interviews provided information about departments' activities in relation to their systems, information culture and users. The findings from the interviews, when mapped onto the four principles of the standard

- metadata management framework
- metadata creation
- metadata maintenance
- metadata disposal

enabled the analysis of a department's compliance with the ERMS and assisted with answering the research questions. At a more detailed level, within the four overarching principles are fifteen requirements which are outcome-focused.

This framework provided strong evaluation objectives and this enabled an inductive approach to be taken when analysing the qualitative data. Where the predominant research strategy is qualitative, Bryman states a case study 'tends to take an inductive approach to the relationship between theory and research' (2012, p.69).

The basis of Archives NZ's standards is the records continuum model (Stapleton, 2005, p.21). Under this model, the ERMS was developed by Archives NZ to ensure records 'continue to be useable over time' (Archives NZ, 2008a, p.1). The records continuum as envisaged by Frank Upward, is a way of 'conceptualising the nature of recordkeeping' (Upward, 1996, Dimensions, para. 9) and underpinned the analysis of the findings in this research.

10. Findings

In this section, findings from the six interviews are grouped under the three broad categories, and then by the concepts that emerged during analysis. The three categories are:

- Use of the standard
- Compliance with the standard
- Innovative Practices

In the reporting of findings that follows, care has been taken to disguise the department and the respondents as much as possible so that individuals cannot be identified. However each of the seven interviewees has been given a code, (RK1) through to (RK7) which has been assigned as a superscript to any direct quotes to indicate when different interviewees' are speaking.

Included are references to the relevant parts of the standard as this was the framework for analysis. This section is followed by a discussion of the implications of the findings.

10.1 Use of the Standard

All seven interviewees were conversant with the standard with all but one discussing the new draft standard that was out for consultation at the time of the interviews. A common response was that, as government departments, they want to be "good archival citizens"^(RK7) or acknowledged they have obligations as a result of being covered by the Public Records Act.

All the interviewees said they used the ERMS to some extent in their work but the spectrum of use was broad. At one end of the spectrum, an interviewee said that it was not relevant to what they do operationally from day to day because it was too simple and that the only time it was used was in preparation for the audit. They felt the department had moved beyond the basic requirements of the standard and was concerned with more than just recordkeeping metadata.

The majority of the interviewees were in the middle and said they integrated the standard into their work but interpreted it or incorporated it in a way that suited the organisation's needs or the type of system they are using. One felt, having gone through the audit process, that as long as you can explain why you have done it in that way, and show you have incorporated as much as possible, then that could (and should) meet the requirements of Archives NZ. They gave as an example, implementing a metadata model as opposed to the traditional metadata schema.

At the other end of the spectrum, the most extensive use was a department that, as part of an IT Governance Process, gave formal consideration to the standard. They said they assessed the business and functional requirements against the ERMS's checklists in order to conduct a gap analysis which they then applied to not only current systems but legacy systems (systems implemented before 2008) as well. How to assess legacy systems against the standard was something another department said they were unsure how to do.

Where systems did not or could not meet the standard, most individuals seemed comfortable with doing a risk profile or impact analysis to weigh up and/or justify the non-compliance. One described it "as assessing the level of risk the department is willing to accept" ^(RK3) in not complying.

Where the opportunity arose, there was a commitment by all interviewees to influence new systems and business processes with a recordkeeping perspective but there was more than just the metadata standard to consider. Examples included the digitisation standard, international standards and best practice and one department raised the requirement of having to meet the XBRL standard for financial metadata as well as the ERMS.

Use of the Technical Specifications for the ERMS (Archives NZ, 2008b) was unanimous but mainly for use by the Information Technology department (IT) or developers. This was seen as a document that records managers could more readily give to people such as enterprise architects than the main standard.

When it came to the language and content of the ERMS itself, interviewees gave a range of opinions. One interviewee described how it was contradictory to the PRA in some of its definitions, making complete compliance impossible. One interviewee said “The standard, from our point of view, should be more prescriptive, it should be stronger so we can use it as a spur to good information management behaviour.”^(RK7) This links with Skelton and Jones’ findings about metadata standards which was ‘Stakeholders desperately want specific information about how to achieve compliance with the requirements outlined in the standards within their own organisational environments and systems’ (2008, p.9). A number of interviewees raised the need for a document that could be handed to solution architects and systems developers to give clear guidance on what they needed to do to comply. One department had suggested to Archives NZ that a “metadata translation toolkit that is directed specifically at IT developers”^(RK5) would be useful. Along those lines, another interviewee said it was a “good reference guide”^(RK6) but that they had to interpret it to suit their systems.

Interviewees from half the departments mentioned the cross-over between what most new systems can or are designed to do and the requirement of the standard as occurring organically. What also achieved compliance was relationship-building with IT and the “demystifying”^(RK5) or translating of the standard. This meant conveying that incorporating the requirements of the standard were unlikely to derail the project or were naturally covered in the system design already.

One interviewee preferred to focus on user needs and “what’s important to the agency”^(RK3) (e.g. efficiencies or a people-focus), rather than the standard, to leverage good practice or influence the management of metadata.

10.2 Compliance with the standard

Although interviewees raised that the standard is in parts contradictory, or that they make purposeful departures from its focus, this section outlines how interviewees meet the requirements of the standard. The key parts of the standard that were discussed in the interviews are metadata schema, disposal, documentation and creating point of capture

metadata and process recordkeeping metadata. In the course of the interviews other factors involved with compliance with the standard emerged, such as legacy systems, business and user needs and the information culture. These are also reported as part of the findings.

Creation of Metadata

Of the four principles of the ERMS, creation of metadata was described by the all interviewees in the most detail. One interviewee said modern systems are creating metadata automatically adding, “It’s really about deciding what you keep, not necessarily what you create.”^(RK2)

A common theme was automating as much point of capture metadata as possible. All interviewees captured more than the standard’s minimum requirement of the six point of capture elements (Archives NZ, 2008a, p.18). Some interviewees, including the department primarily using a shared drive structure and the Microsoft Office suite, said their systems are capturing hundreds of metadata elements in the background.

Departments most commonly reported the only user-inputted field was a title for the document although this could also be auto-populated. The user then had to choose where to save the document which assisted with metadata creation as additional elements (e.g. access control, retention and disposal) were then inherited from the location in the file structure. For the department using SharePoint, the only mandatory field was classification; the title was discretionary as it was seen as a “common sense piece of metadata”.^(RK1)

Interviewees did not focus on making metadata fields mandatory but instead used auto-population as much as possible to ensure metadata was routinely filled out. Some of the system-generated metadata comes from people having information attached to their log-in (e.g. job title, business unit, security clearance) which is then automatically attached to their activity as metadata.

Most interviewees were fairly confident about the creation of the required recordkeeping process metadata, giving examples of event logs, audit trails and metadata stubs. A couple

of individuals said that they would like to be capturing more process metadata to determine who is interacting with the documents at any point in time, for example.

The work in progress for most departments was related to file structures and file plans. A number of interviewees were looking at reducing the number of levels or wanted to implement a consistent structure more widely across the organisation. A maximum of “three clicks” ^(RK6) was the rule of thumb for one department in organising their file structure.

In the shared drive environment, having file-naming protocols was seen as particularly important because the file path is a key piece of metadata. An enterprise file classification structure was to be developed and “imposed” ^(RK2) to help keep the layers of folders under control.

Consistency and standardisation of metadata is something interviewees from two departments mentioned they were keen to achieve. One said that business systems don’t capture fields consistently leading to “poor data quality”. ^(RK5) They identified “a proper metadata schema and how you control the infill of metadata is really critical.”^(RK5) Another interviewee said they have a lot of internal standards but that they are often applied business unit by business unit. As a result of this lack of overall metadata control they had eighteen different date formats.

One interviewee felt that not having a department-wide naming convention wasn’t really a problem as business-level or unit-level naming conventions were actually the best kind of metadata. “As long as it is consistent and it’s in the system” ^(RK1) they were happy to monitor it from afar.

Metadata schema

The standard requires that all business critical systems are mapped to the metadata schema in the Technical Specifications (Archives NZ, 2008a, p.16) citing the main purpose is to enable the migration and transfer of records. Out of the six departments, two were

developing a metadata schema from scratch; two were re-developing new, more integrated, department-wide schema; one department had a schema and one had a metadata model.

The reason one of the departments had a number of concurrent metadata schema was because systems were “either legacy systems or they have evolved over time. We definitely have documented in different architecture documents what the schema is for different systems.”^(RK4)

Another department is also running three separate metadata schema across three instances of their system but the recent sign-off of an all-department disposal authority was the first step in integrating it. “We got a sort of base level functional analysis done to inform it [the disposal authority] but that will inform other things as well.”^(RK3) Having completed twelve migrations, the interviewee mentioned the key metadata for all the systems was also documented separately in tables.

One interviewee was upfront in saying their lack of EDRMS was limiting in that, “We have a metadata schema but to be honest, with shared drives it’s quite difficult”.^(RK2) They went on to say “although you can have a really fantastic detailed metadata schema it’s only appropriate to employ a certain amount of that in most contexts.”^(RK2)

The metadata management environment

It was interesting that the focus of all the interviewees seemed to be on managing records to serve the needs of the organisation, the users and the work that they are trying to achieve, while the preamble for the standard is very focused on metadata being essential for records to be reliable evidence. The standard contains some references to recordkeeping being essential for consistent business practice and service delivery (Archives NZ, 2008a, p.13) but primarily it promotes the maintenance of metadata for defending the authenticity of the record (Archives NZ, 2008a, p.18) not for user-focused needs, such as search.

One interviewee simply stated compliance with the standard was not a driver for the work they do around metadata. “We are much more focused on how can metadata help users

work....How can it contribute to the business and the things I'm here to do rather than worrying too strictly about compliance per se.”^(RK3) Another interviewee said “business process is the focus of information management decisions.” ^(RK6)

For the interviewees, business systems are first and foremost “there to undertake a process or a set of business activities or transactions”^(RK2) therefore any input or advice around records is made is to assist that work. Even an interviewee whose department uses an EDRMS said metadata should “be created as part of the business process rather than having to be a separate thing. Certainly as much as possible.” ^(RK4)

This focus on the business need or the “purpose of the content” ^(RK2) also drove the level of context required around a record. One interviewee said they ask “how much metadata do we need for the purpose of the record?” ^(RK2) Financial records were an example of a record type needing good levels of metadata. This is in line with Requirement 7 of the ERMS (Archives NZ, 2008a, p.17) which says the amount of metadata applied to records must be determined according to risk assessment strategies.

Decisions about metadata management are usually determined by other decisions about other processes, two interviewees revealed. This has led to these decisions being primarily documented at a business level not in records management policies as per Principle 1 of the ERMS (Archives NZ, 2008a, p.15). Monitoring was also conducted “more as part of business processes than us explicitly going ‘let’s keep track of metadata’.” ^(RK3)

Risk analysis was another driver discussed (along with cost). One interviewee viewed the metadata standard as being reasonably simple to meet but said that conversations focused around compliance and costs and the question “how much risk do you want to accept?” ^(RK3) While the standard suggests this analysis should be used to then mitigate the risk (Archives NZ, 2008a, p.11), departments commented that that was where cost came in as a factor.

The other factors interviewees said were important included “Save and search” ^(RK1) and designing systems to deliver the three values of “findability, access control and retention.”^(RK7) Only two interviewees specifically mentioned the capturing of records in

order to provide actual evidence of business activity. Managing metadata to enable records 'to be managed according to recordkeeping principles' (Archives NZ, 2008a, p. 9) was not mentioned by anyone as a major driver of their practices although this may occur inadvertently.

System suitability

Technological factors were identified by all interviewees as influencing their department's ability to meet the standard. For example, where one system was considered not very user-friendly or intuitive and had lost integration with the Office Suite – resulting in a laborious process to save a document – user-inputted metadata was purposefully kept to a minimum to compensate for the existing barriers.

On the other hand, one interviewee perceived a work platform tool like SharePoint, – where "it is just what they use" ^(RK1) to save, find, receive and use documents – combined with RecordPoint – a "fit for purpose" ^(RK1) records management system – as having a positive influence on metadata management. This was important given the interviewee felt SharePoint "on its own installation would struggle to meet the metadata standard." ^(RK1)

In response to whether or not having an EDRMS was a barrier to compliance with the standard, the interviewee commented,

"...in some ways *because* we don't have an enterprise tool that we can say 'oh we meet the metadata standard because it's done in an EDRMS' it means we do have to think about it more broadly. I think agencies do do that 'box ticking' thing where they think, 'Well we've got Objective and we've done the metadata standard in there so that's it ...We don't necessarily have that fig leaf of respectability that we can kid ourselves that we've done it. We do recognise that it needs to be done across the range of probably tens if not hundreds of products.'" ^(RK2)

Individuals at two departments mentioned a level of drop-off, one quantifying it at about 5% per year based on obsolescence. Both said the records were not generally high-value stuff so it was not of concern.

The importance of having influence on systems development was discussed by individuals at five of the departments. One interviewee recognised “Some siloed IT projects occur and they are not necessarily compliant or aware of the requirements.” ^(RK6) One interviewee described the things that slip through the cracks are “not necessarily because people are trying to dodge their responsibilities”, ^(RK2) although this happens. Interviewees at two departments made the point that there was reluctance to hold up projects by having to meet standards.

Building a relationship with IT or being part of the business or technical requirement gathering was seen as a way of leveraging new system development to be standards-compliant.

Legacy and Business systems

The technological limitations of “legacy systems that were never designed to be compliant in the first place” ^(RK4), were noted as barriers to meeting the standard. One interviewee acknowledged “existing systems that are in place aren’t necessarily as robust as we would like them to be, and don’t necessarily meet standards that are in place”. ^(RK4)

Systems in use prior to 2008 are not required to be compliant therefore one interviewee said their department doesn’t try and “retrofit” them but instead “take both the spirit and the letter of the law in to account.” ^(RK2) Older systems also meant limited functionality. The department developing the Information Management Platform is currently managing a system that has been unsupported since Christmas and “are keeping it trucking along ourselves”. ^(RK7) One interviewee said the couple of things they are not doing “is not because I don’t want to do it, it’s because the system can’t do it”. ^(RK1)

Business systems were also problematic as records managers seem to have little day-to-day control over them. When asked how much of the metadata capture is user-generated in their case-management system, one interviewee said, not being a user of the system meant they were not familiar with it. Although their department had an EDRMS, an interviewee explained “by sheer volume and activity, the business systems are by far the largest

recordkeeping systems in the organisation.”^(RK5) All of which were legacy systems and the current manager had had no influence on them whatsoever.

All interviewees discussed to some degree wanting to develop interoperability between systems or the use of their records system to manage their business systems. For one of the departments using Objective, linking it to business systems in order to better manage records and metadata was desirable but each additional plug-in was an added cost.

Documentation

Documentation about metadata was reported as usually being captured in documents related to systems design or business processes. Examples given included;

- high-level design documents
- functional requirements
- project documentation
- procedure documents
- business requirements

Most interviewees indicated this documentation is created at a business level and is a further example of the move away from recordkeeping policies to a focus on business needs and processes.

Disposal

Also of note in these findings is the data gathered about disposal. All seven of the interviewees said they did not routinely conduct disposal (destruction or transfer to Archives NZ) of electronic records (or therefore metadata), with some commenting they will not be looking to do this anytime soon.

There were a number of reasons:

- Most commonly, maintaining storage or purchasing additional storage is relatively cheap. “Cheaper than the overhead of trying to manage that information to the degree that would be required to dispose of it.” ^(RK5)

- One interviewee said they could afford not to do disposal because they are “for the most part policy shops that create very generic stuff” ^(RK3) and that the metadata was not really that complicated to manage long-term.
- Official Information Act [OIA] requests, rather than the standard, influenced one department’s practice of not appraising or disposing of metadata. The interviewee noted that “it reduces the OIA work as we know what we have and what we don’t.”^(RK6)
- Two interviewees explained that although the functionality to do automated rules-based disposal existed within their systems, they were not very confident of how that would work. One identified a concern about “the way the file classification has grown over time would make automated disposal nigh-on impossible.” ^(RK5)

While all seven interviewees also explained why they will not be transferring any electronic records to the Archives NZ digital repository (which is not yet functional), these findings focus on the destruction aspect of disposal.

One interviewee saw the fact “there has been a keep-everything-attitude within the organisation” ^(RK2) as a departmental weakness, something they were looking to address although, again, storage was not an issue.

In the event they do delete electronic records, a couple of interviewees acknowledged Requirement 15 of the ERMS - to keep a record of the disposal event (Archives NZ, 2008a, p.24). Only one interviewee gave an actual example of having created disposal metadata based on an inter-departmental electronic transfer.

Information culture

A number of interviewees mentioned that because users don’t think about metadata in the way records managers do, user-input has got to be kept to a minimum or be a fluid part of what a user does anyway e.g. naming a document, logging into a system.

In one part of a department, although 2,500 staff members have a log-in to the EDRMS only about 60% are regular users. The interviewee said due to recent events there had been a refocusing on security of information and that there is now encouragement that “if you’ve got access to the EDRMS, you should be using it.” (RK4)

Most interviewees mentioned at some point a version of “you can’t get around people and their crazy document titling”. (RK3) As one interviewee noted, “the metadata, as comprehensive as it is in terms of the design of the system, is only as good as what we ask people to fill in.” (RK4) One interviewee explained the reluctance of the 60% of the organisation using shared drives to put metadata into Word document fields was tolerated because “the world’s not going to come to an end” (RK2) if they don’t have the greatest metadata on internal documents, such as those of the communications team.

The following comments were made by interviewees at two departments in relation to the influence departmental mergers have had:

- “Bits of the organisation come and go at reasonably frequent intervals” (RK5) which had created a situation where there is not good interoperability between systems.
- Although they merged in 2006, part of the department’s information needs and access to systems have not yet been integrated. “Simply because the tool we have isn’t able to absorb them in at this point in time. So there is that disparate sense of those that have and those that have not. So they are still on shared drives, they are still largely paper-based.” (RK4)
- It was a challenge bringing together agencies that “have come from very different places in terms of information management maturity” (RK3) and that although they were all using the same recordkeeping solution, “you may as well be operating three EDRMS in terms of the way they have been implemented.” (RK3)

Only one interviewee emphasised their organisational culture as having a major positive influence on their ability to meet the requirements of the ERMS. A third of the department’s staff came from a legal and financial perspective which meant “a willingness to do metadata”. (RK2) This was not because of the standard or because people love metadata but “because they see it as something they need to do to do their job” (RK2) for the purposes of

evidential utility and chain of custody. The interviewee did add that people are assisted by administrative staff to ensure it is done.

10.3 Innovative Practices

The four departments with an EDRMS were all using additional tools or features they had developed, or were activated, within their systems for assisting with metadata management. The department developing an Information Management Platform is an example of web services architecture, defined by Reed as ‘reusable components which operate independently but which can be used by many applications’(2010, p.128).

User-focused strategies

The department using SharePoint allows users to submit a “new topic required.”^(RK1) Users recommend classification terms or “key pieces of metadata”^(RK1) that will then be auto-applied to documents when saved in specific parts of the file structure. Allowing users to submit metadata means that the terms that are applied to records make sense to users and are department-specific.

Another department, using Autonomy Records Management, took it a step further by allowing users to create their own folders and file areas to work in, thereby customising their view of the file plan. “They are all seeing the same content but they are accessing it in very different ways that are customised to how they want to work.”^(RK3) They can name and organise the structure to suit the way they work operationally while the link to the actual file structure and metadata capture occurs in the background. The reasoning for this was “I would much rather that they were working in a space that is comfortable for them and inadvertently producing the metadata we need.”^(RK3)

These user-focused strategies are, as one interviewee put it, a move to “more alignment with how users are creating content”^(RK3) and are similar to the focus on user/business needs over compliance with the standard mentioned in Section 10.2.

Systems-based developments

One of the interviewees using Objective said they employ a template feature called “catalogues”.^(RK6) Catalogues are “like a Properties box”^(RK6) but are pre-populated with additional metadata specific to the type of document being generated. For example, a standard letter, a Memorandum of Understanding or an Official Information Act request response. The fields in those documents (which are also captured as recordkeeping metadata) can be populated by the relevant catalogue. The impact this has on metadata is:

- that it is filled out correctly,
- is consistent,
- is auto-generated,
- captured by the system.

The interviewee described how catalogues enable rich search capability because of the additional detail applied to each document.

All interviewees talked about the non-EDRMS or business systems that exist within their organisation. Those with EDRMS discussed the potential to manage the records and metadata in these systems by connecting them to their recordkeeping systems.

Interviewees at the two departments that use Objective discussed linking it to other systems – in one case, to SharePoint. The interviewee whose department uses Autonomy discussed being able to manage shared drives using the records management part of their system.

One interviewee gave the example of how they took the opportunity to plug Objective into the finance system when some redesign occurred as part of a digitisation solution. Invoices are scanned into, and are used by, the finance system but “those images are being managed by Objective with all the richness of a proper EDRMS....They are linked perfectly well, it’s quite seamless.”^(RK5) The interviewee saw it as a “salient success in terms of metadata management”^(RK5) in that the multi-function devices are configured to capture metadata, ingest it into the workflow of the business where additional metadata is added before it goes off into storage. The interviewee pointed out, as a result of this integration,

“the entire record is in two places. So the workflow around that image is stored within the finance system. And the image, and image metadata, is held in the

EDRMS and it's the two things together that form the complete record.”^(RK5)

The department now has a model of integration which is seen as “a huge step forward in terms of integrating recordkeeping and the management of metadata aspect in the back end so the users really aren’t aware of that happening at all. It’s just using their business system.”^(RK4) The interviewee noted the additional value is that “it’s not only that it has been used but that its viability has been exposed to the rest of the organisation as a good way forward. They know there are standards they have to meet now”^(RK4)

A new paradigm

Three interviewees mentioned auto-classification and auto-classification tools as desirable for metadata management. Barriers to implementation included budgetary limitations and needing to get the current system bedded in first.

However, the department which is currently developing an Information Management Platform is looking to implement a taxonomy-supported, auto-classification tool dependent on an upcoming proof-of-concept trial. The design is that content will go through a taxonomy management and classification engine on its way to being saved in the ECM. Driven by the taxonomy management tool, access and retention rules are run and applied to content. At the same time, metadata extraction puts some terms in the metadata schema, and the search engine does its indexing.

The taxonomy management tool will identify rich semantic relationships between terms because it will know that certain terms are associated with other terms, removing the need to have it “spelt out in field after field in the metadata schema”.^(RK7) The “semantic taxonomy tool”^(RK7) will be used to automate access control and retention classification as the rules will calculate the relationships between various combinations of terms and their weightings to then know to apply, for example, “access= limited and retention= seven years”.^(RK7)

The interviewee also described the platform as an “interchange place” ^(RK7) supporting data interoperability in two ways:

1. It will run as a web service so systems (such as a business system) that can accommodate web services can plug in, or use a real-time feed, or could manually run a data/vocabulary dump.
2. The taxonomy tool can extract key master data values or fields held in some systems (the interviewee gave the example of SAP) which then be accessed from the central hub of master data. This is particularly useful when certain systems may not be interoperable with each other but are both able to be plugged into the Information Management Platform.

By running the taxonomy tool separately from the ECM as middleware, it can also “apply to almost any content or data” ^(RK7) such as library content, data sets and web content.

Similarly, there is an option to apply the business rules inside the email archive as well as inside the ECM. This includes the same taxonomies, the same classification tools and a slightly limited metadata schema.

11. Discussion

The thrust of this research was to examine what record-keeping systems certain government departments in New Zealand use, how they use them and whether they comply with the Electronic Recordkeeping Metadata Standard. To this end, several departments have been interviewed and the interviewees' responses recorded and reproduced in Section 10. The systems each interviewee uses and how they use them can be reasonably deduced from their responses.

What is discussed in this section is whether the adaptive approaches to metadata that the users have considered pragmatic for their organisations are compliant with the standard and the requirements. Also examined is how the shift in focus from the evidential nature of records, and the development of web-based services, have impacted on the role of the standard and compliance with the ERMS.

11.1 Measuring compliance

When distilled, if the requirements of the standard were just capturing six point of capture elements and three process recordkeeping metadata elements (as a few interviewees stated), then all interviewees could argue that their systems comply with the standard. Most records managers would agree that this minimum is not sufficient to benefit all the functions that electronic metadata is now used for and, as Skelton and Jones suggested, are 'perhaps not strong enough for full business assurance' (2008, p.7). However, all interviewees gave strong examples of surpassing these requirements using the technology available to them to automate metadata capture and creation. This included systems-generated metadata and systems-captured elements numbering in the hundreds. The goal of limiting the need for users to be actively engaged in metadata creation was established by all interviewees, who have developed their approaches accordingly to suit the priorities of the department e.g. where security classification was a critical piece of metadata, it remained the one mandatory user-inputted field.

If ensuring business-critical systems are mapped to the metadata schema in the Technical Specifications as per Requirement 5 of the ERMS (Archives NZ, 2008a, p.16) was taken as a gauge, the level of compliance among departments would be patchy. The variables include the number of systems the organisation is trying to work with, and the impact of being a merged department. As found in the Archives NZ survey (2010), where a lower percentage of departments had an organisation-wide metadata schema than had an EDRMS, this research found two interviewees (33%) who had one central metadata schema in place although four departments (66%) had an EDRMS.

Whether a schema could be considered organisation-wide was heavily impacted by the systems in place. For example, the two departments juggling multiple systems had multiple schema in place but were both looking to develop more integrated versions. Having a metadata schema was not reliant on having an EDRMS, as the department using shared drives and a core business system reported having one, albeit used in a limited context. Legacy systems, although not required to be compliant, still had an impact on whether a metadata schema could be described as 'organisation-wide'. Mapping systems to one

schema standardises metadata and is the key to consistent records management across the recordkeeping continuum. Referred to as 'equivalence' (Archives NZ, 2009, Metadata equivalence, para. 6.1), meeting this requirement actually supports the customisation of metadata elements (to meet business and user needs) because the adapted schema always links back to the standard set.

Principle 3 also requires that metadata is maintained so it is standardised but adds it must be persistently linked to the record and interoperable between systems and organisations (Archives NZ, 2008a, p.21). The majority of interviewees gave examples of successfully completing migrations of data to other agencies or to new systems within the department, which showed a level of compliance with this principle. However, a number of departments were currently confronting the issue of standardisation and data quality, whether it was across individual metadata elements (such as date format) or an all-department metadata schema. This proved challenging for departments with fit-for-purpose recordkeeping systems let alone across the non-EDRMS business systems, such as case-management, finance and HR systems where there was limited oversight or control.

A quarter of the standard is dedicated to the controls that apply to metadata in the event of the disposal of records. As per the reasons outlined in the findings, departments are at this time not conducting systematic disposal of electronic records. This is not a breach of the standard but has meant this research did not really test what processes would be undertaken around disposal including what kind of metadata would be captured about the action. Given the positive findings around the creation and capture of metadata, as well as the examples of additional metadata developments over and above the requirements of the standard, it is expected that those with the system capability will ensure the correct appraisal and documentation takes place.

All departments reported, although this was not discussed in detail, using the Technical Specifications. There was fairly positive feedback from interviewees about the ability to give this document directly to IT and systems developers. Therefore it is assumed that mapping from these systems to the specifications occurs or will occur with future systems development.

11.2 Technological influences

Technological influences were the dominant factor in the departments' ability to comply with the standard. Given the preference for auto-capture and system-generated metadata to minimise user-input, it is not surprising interviewees emphasised the impact the system they had to work with had on metadata practices. Organisational factors like departmental mergers (as identified in the research problem) and the role of users in the department's information culture also had an influence.

With already stretched resources, interviewees seemed loath to, or are not able to, retrofit older existing systems. Although systems implemented pre-2008 are not required to comply with the standard unless they are 'fundamentally redeveloped or have significant functionality added' (Archives NZ, 2008a, p.5); they are still part of many government departments' overall recordkeeping approach. However, this research shows departments take the opportunities that arise to improve recordkeeping functionality when, for example, conducting a risk analysis or audit of existing systems, or instigating changes during the development of a digitisation solution.

Some departments seemed more confident than others in assessing legacy and business systems for compliance with the standard. It would suggest there is a role for the standard, or the Technical specifications, to offer guidance on how to conduct metadata audits on these systems although it is not mandatory for many of them to meet the requirements.

Future technological developments look brighter with interviewees giving examples of ways in which they are able to influence the design of newer systems and processes through advice and recommendations, gap and risk analyses, building a relationship with IT, participating in business requirements gathering, and centralised procurement through their department. It was also positive that interviewees felt some systems are already designed to be compliant with most parts of the standard.

11.3 Beyond recordkeeping metadata

One of the key findings of this research is that, although all interviewees used the standard to some extent, their underlying motivation tended not to be how metadata creation, capture and maintenance assists records to be authentic and reliable for evidential purposes (as the standard suggests) but 'how does this metadata help the department work' and 'how does this metadata help our users to do their jobs?'. This is a departure from the aims that underpin the standard.

For example, one interviewee said their department had moved beyond recordkeeping metadata to more of a focus on 'usability metadata'. Another said the key focus is 'save and search'. This is not necessarily mutually exclusive to capturing recordkeeping metadata but it implies a different impetus. Using metadata to create rich semantic relationships that then feed auto-classification and findability is also not in contradiction of the standard but is another example of where departments have moved beyond the standard to focus on other roles for metadata.

Other examples were evidenced in the approaches to:

- documentation being primarily part of business processes and design documents
- risk-analysis used to justify, not mitigate, non-compliance
- the use of auto-capture over the more traditional use of mandatory fields.

Interviewees were open about the fact that they adapt, interpret and incorporate the standard rather than try to strictly adhere to it across all systems and processes.

This is not because the interviewees do not want to comply with the standard and their obligations under the PRA but because they see their primary role is to manage records and information to best serve the needs of the organisation. This is similar to the finding reported by Bettington that, while stakeholders acknowledge that compliance, accountability and evidence matter, it is 'performance outcomes such as improved efficiency, effectiveness, service delivery and reduced cost margins' (2004, p.48) that also drives contemporary organisations and recordkeeping.

This attention to business needs and processes is not completely divorced from the aims of the ERMS as it states recordkeeping is essential for 'reliable and consistent business practice and service delivery' (Archives NZ, 2008a, p.13). In fact, the Guide to implementing the Technical Specifications in an EDRMS goes further by saying 'While metadata is a concept of great significance to recordkeeping professionals, it has quite limited immediate interest to end users' and then goes on to discuss configuring EDRMS to meet users' needs and business requirements alongside records needs (Archives NZ, 2009, End users and metadata, para.5.4).

This approach of meeting multiple needs may be fine within a system that is essentially designed to have a 'recordkeeping view of metadata' (Archives NZ, 2008a, p.9). The problem lies mainly where records and metadata are created and managed as part of a business processes, which is configured to meet all the user and organisational needs but that risks meeting none (or very little) of the metadata principles required by the standard.

It becomes a further problem, as this research found, where it is common for a department to be running a number of disparate business and legacy systems that all create or keep records, often with little to no oversight or input from the records manager. The result, and this was raised by the interviewees, is that it limits not only compliance but the ability to have standardisation, interoperability or any department-wide information governance.

The key is taking the business systems' capability a step forward to ensure 'adequate, native record-keeping functionality' (Cunningham, 2011, p. 27). This would assist with a balance between meeting user needs (findability, efficient navigation around the system, ease in saving records) and having good records management practices without abstracting the process away from how people work normally. Of course, interviewees highlighted the issue that taking this step often comes back to budgetary considerations, risk analysis, multiple priorities and 'doing the best with what you've got'.

11.4 Purposeful departures

This research also found a link between external factors and the fact no interviewee said that they tried to strictly implement all aspects of the standard. Most agreed it was not possible either because;

- of the limitations of the technology (e.g. legacy systems)
- it is not always financial feasible
- records teams do not always have the resources to conduct a high level of oversight or quality checking
- recordkeeping responsibilities and systems are often devolved across large and complex organisations and are not necessarily directly under the control of the records management team.

Because of these external factors and the focus on business and user needs, the reality of metadata management is that all interviewees reported making some purposeful departures from the standard. Examples included, conducting risk analysis but not necessarily mitigating the risk if the cost was not that high.

One of the most interesting departures found was that documentation relating to metadata (which a number of requirements in the standard refer to) was primarily being written and kept as part of design and business-level documents rather than as part of stand-alone 'records and information management policies and procedures' (Archives NZ, 2008a, p.15). This further reflects the fact that decision-making about records management, and therefore metadata, is increasingly focused on and tightly bound to the business processes (not just the functional classification) which the records are a part of.

There is a strong connection between the comments made in the findings about the standard as a document, and the fact that many interviewees are taking an interpretive approach to the standard. This suggests a need for Archives NZ to provide a standard that gives clear, non-contradictory direction on how to meet the requirements. The view that a standard should be authoritative and directive is also reflected in the comments Archives NZ have received as submissions on the new combined draft standard (Archives NZ, 2013). With

departments developing information platforms, dealing with siloed IT projects and having to manage user reluctance, the ERMS needs to be prescriptive enough to assist records managers to lead and advise on what good metadata practices entail. The ERMS needs to be robust enough to sit alongside the variety of standards interviewees mentioned they look to as sources of regulatory information and direction about good practices.

Most interviewees indicated the context the ERMS might be used in is the development stage of a system or when the interviewee was looking at implementing changes. No interviewee mentioned using the ERMS to get management support or buy-in for records management or systems development. In terms of influencing systems design, the ERMS does not appear to be referred to often or have much ongoing use beyond the initial configuration of systems which is possibly why it was rated as 'least used' in the Archives NZ survey (2012, p.2).

11.5 Interoperability

At the time of this research, interoperable metadata as a focus in itself was not a hot topic amongst the interviewees. Perhaps because it is not critical to the user/business-needs focus that drives the departments' day-to-day operations. Standardised, or 'clever', metadata which is promoted throughout the literature is particularly useful in the event of migration to a new system or another department. A couple of interviewees described completing successful migrations, one using XML files and the other using simple text files. Proving the process of maintaining metadata so it can be migrated or transferred (as per the standard) can be kept quite simple yet be successful.

The interlinking of systems and networks, within and external to departments, is a huge part of the future of any electronic or digital work environment. In the long term, if systems are being inter-connected (either internally or externally) then having metadata that is exchangeable and interoperable will also provide efficiencies as metadata can be re-used by systems and will not have to be re-created –'often in manual and resource intensive ways' (Evans, McKemmish & Bhoday, 2005, p.20). Perhaps it is more likely to be something that departments will focus on if and when needed or as newer systems are implemented, or, as one interviewee suggested, as part of the requirements of the government-wide ICT

strategy. Also, if departments want to take advantage of the new paradigm of web services and centralised tools, this kind of metadata will need to be a key part of the foundation.

11.6 Non-EDRMS and compliance

The findings showed using a system other than a fit-for purpose EDRMS was not necessarily a barrier to compliance with the standard. The 'Non-EDRMS' systems used by interviewees in this research did, however, split in to two camps.

On one side are the business systems (often legacy) where interviewees were wrangling them into shape through the use of EDRMS plug-ins or as part of a broader redevelopment of formal information architecture and governance. By taking this positive and pragmatic approach to non-EDRMS, interviewees were creating successful and seamless interfaces between both systems and enabling metadata management to occur in a recordkeeping environment. The problem Reed (2010) identified with these system-to-system integrations using APIs (Application Programming Interfaces) is that the connection is hardwired specifically to the existing programs so if anything changes 'the interface programming will not work' (2010, p. 126). This is not to write-off plug-ins as a point solution but to acknowledge Reed's concern that as technology rapidly updates this may not be a sustainable long-term solution (2010, p.126).

Some interviewees were comfortable with the experience that some business systems have enough functionality to manage records adequately. But based on this research, no interviewee expressed complete confidence in being able to manage records this way and be compliant with the standard. For example, a number of interviewees raised concerns about email systems not connected to any form of records management system. Overall, interviewees looked to developing some influence over the system configuration or creating some links with records management software.

The other non-EDRMS camp are similarly process-centric systems but these can be built as web-based platforms with service components that do metadata processing and management, and can function separately from where the records are created and stored.

These systems are hailed in the literature as having the ‘flexibility to be built by assembling individual components into more complete process flows’ (Reed, 2010, p. 128). The Information Platform example studied in this research proposes to harness this by adding taxonomy-driven classification, metadata extraction and indexing for search purposes. The large siloed systems (that Reed (2010) and interviewees discussed) can instead be built with more flexible, responsive parts that can be upgraded, added to and changed as required. While this provides the flexibility to meet ever-changing business needs, it is important to note, this is where good metadata practices such as standardisation and documentation will be crucial.

As the literature and interviews showed, having records and metadata management embedded within the business workflow is seen as a positive move (Cunningham, 2011; Evans, McKemmish & Bhoday, 2005; Oliver, Evans, Reed & Upward, 2010). However, the extent to which records managers can influence the design of separate business systems was reported as variable and thus, affects their ability to ensure the characteristics that are specific to recordkeeping metadata and the principles of the standard are met.

In terms of standards, Cunningham suggests that ‘tools and guidance solidly rooted in both business processes and in recordkeeping first principles’ (2011, p.28) are needed to assist departments to navigate this developing area. This links in to the findings from this research, and earlier discussion, that suggests the ERMS should be the kind of document that can be given to IT and that is very clear about the requirements on a system.

The interviewee whose department works primarily on shared drives explained the standard could be met with the basic functionality that the system offers. But, with no examples of the ability to enhance or add additional features, it seemed that compliance largely relied on user-willingness and organisational culture.

11.7 Innovative strategies and tools

Finally this research set out to uncover any innovative practices happening in public sector recordkeeping of which there were some exciting examples found. For instance, the

development of an Information Management Platform which includes auto-classification via a taxonomy management tool. The fact this tool runs as a centralised-platform will be of interest to a number of departments looking for solutions where multiple systems can be managed by, or plugged into, it to provide the records management. The need for standardised and robust metadata, as required by the standard and the Technical specifications, was strongly evidenced in this tool, particularly to ensure that rich semantic relationships between terms can be mapped correctly.

The advantage of being able to develop a system post-standard, while a huge undertaking, is the ability to include ERMS requirements as well as up-to-date metadata management techniques. For example, the design of the Information Management Platform as a metadata 'interchange' that enables interoperability reflects the standard's requirement to manage metadata in a format that enables it to be transferred or migrated in the future.

The development of web service technologies and service orientated architectures is a positive move for New Zealand public sector recordkeeping, but it brings sharply into focus the fact these complex and fast-developing systems require guidance from 'standards and tools that reflect and have the capacity to handle the complexity' (Evans, Reed, McKemmish, 2008, p.124).

12. Recommendations for further study

As the ERMS is currently being re-written and amalgamated with the other mandatory standards, there is great potential for ongoing research into New Zealand public sector compliance with recordkeeping standards. It will also be interesting to observe how departments respond to the new standard and whether it has an impact on their approach to metadata management.

To gain a more detailed understanding of government department metadata management, further detailed research could investigate actual systems use, similar to the Kettunen and Henttonen study (2010). The capture and maintenance of individual metadata elements could be tracked to quantitatively measure how a department's system performs against the

criteria of the standard. A focus specifically on business systems, from a New Zealand recordkeeping metadata perspective, would go right to the core of the current challenges faced by records managers.

A key development would be to expand the sample to include all public sector organisation types required to meet the requirements of the PRA, such as DHB's, tertiary institutions and Crown Agencies. This could include multiple instances of recordkeeping systems, making the results more applicable to the broader public sector.

The scope of this research was to begin to build an understanding of how New Zealand government departments are interacting with the metadata standard as evidenced by their systems use. The next step would be to gather more structured, comparable data on the recordkeeping activities of individual departments so they could be mapped on to the records continuum and a more holistic analysis of the state of recordkeeping could be undertaken.

Amongst the participants interviewed, this study found that disposal of electronic records is not yet a dominant activity. As this becomes more prevalent, and the data is available, research should be conducted into compliance with the requirements of the standard.

13. Conclusion

The research in this paper set out to examine how the recordkeeping systems used by government departments comply with the requirements of the Electronic Recordkeeping Metadata Standard. For the most part, it was found that departments are harnessing the capability of their systems to be compliant with the standard by creating, maintaining and managing metadata with the resources available. Interviewees showed they look for opportunities to influence the design of new systems and there were many examples of using additional or innovative features to enhance functionality.

Also examined, was how interviewees view the ERMS and what relationship it had to the reality of metadata management in their departments. Records as evidence of business

activity, and the role of metadata to give context to ensure this evidence is reliable and authentic, has long been the purview of recordkeeping professionals and underpins the Electronic Recordkeeping Metadata Standard. However, this research has shown that the day to day needs of the organisation and of users is a significant driver in the way in which metadata is thought about. Interviewees reported a focus on business processes and user needs that has resulted in purposeful departures from the standard and a move beyond recordkeeping metadata.

While the standard refers to the evidential role of metadata and the technical requirements that have to be met, the fact the business purposes are the driver for so much recordkeeping does not invalidate the process. The goal of meeting the metadata standard is pragmatically arrived at given that this research found that metadata is managed according to a high degree of accountability which the ERMS requires.

When asked about what influences a department's ability to comply, the majority of interviewees identified technological factors as having the greatest impact. Particularly systems and processes that are unable to be adapted or are out of the direct control of records managers.

In terms of whether not using a fit-for -purpose recordkeeping system is a barrier to compliance, this research found it is not simply a matter of those that have an EDRMS are compliant, and those that don't have a fit-for purpose system are not. The fact all departments were to some extent managing a number of systems (records, business, legacy) with a range of capabilities, was a common theme throughout the findings of this research. The result of asking whether departments are compliant or not has resulted in a complex and multi-layered answer. The simultaneous states of compliance and non-compliance can exist within one department, and were identified by interviewees, as the records continuum model allows multiple realities to coexist within recordkeeping (Cumming, 2010, p.50).

Interviewees described a range of innovative strategies including user- focused and systems-focused approaches. As one interviewee demonstrated, a huge opportunity exists for the New Zealand public sector to develop innovative tools like web-based service orientated

architecture. This approach to metadata management has the potential to not only meet the requirements of the ERMS but to also support a department's core business objectives and the needs of users. Meeting these multiple goals is of importance to records managers, as found in this research.

Within this research suggestions have been made as to how the standard could better serve departments dealing with these multiple priorities and technological factors. Interestingly, the consultation process for the new standard (into which the ERMS is currently being amalgamated) gathered some similar comments to those that interviewees made in this research.

It is hoped that New Zealand government departments that are yet to implement a system, or are looking to change, can use the findings of this research to better inform their choice of recordkeeping system and to understand some of the existing challenges departments are dealing with in meeting the requirements of the Electronic Recordkeeping Metadata Standard.

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References

- Alemu, G., Stevens, B., & Ross, P. (2012). Towards a conceptual framework for user-driven semantic metadata interoperability in digital libraries: A social constructivist approach. *New Library World*, 113 (1/2), 38-54. doi:10.1108/03074801211199031
- Archives New Zealand. (n.d.). *Government recordkeeping surveys*. Retrieved from <http://archives.govt.nz/advice/public-records-act-2005/compliance-tools/government-recordkeeping-surveys#what>
- Archives New Zealand. (2008a). *Electronic Recordkeeping Metadata Standard*. Retrieved from <http://archives.govt.nz/s8-electronic-recordkeeping-metadata-standard>
- Archives New Zealand. (2008b). *Technical Specifications for Electronic Recordkeeping Metadata Standard*. Retrieved from <http://archives.govt.nz/ts-technical-specifications-electronic-recordkeeping-metadata-standard>
- Archives New Zealand. (2009). *Implementing recordkeeping metadata in EDRMS: Tailoring the technical specifications for the Electronic Recordkeeping Metadata Standard*. Retrieved from <http://archives.govt.nz/advice/continuum-resource-kit/continuum-publications-html/g14-technical-guide-implementing-recordkee>
- Archives New Zealand. (2010). *Government recordkeeping survey report 2010 - Public Offices*. Retrieved from <http://archives.govt.nz/full-report-2010-government-recordkeeping-survey-public-offices>
- Archives New Zealand. (2012). *Review of mandatory recordkeeping standards: Report on evaluation of current standards*. Retrieved from http://archives.govt.nz/sites/default/files/Report_on_survey_current_Mandatory_Standards_19_November_to_19_December_2012_pdf.pdf
- Archives New Zealand. (2013). *Report on submissions received. Consultation draft of the proposed new mandatory Records Management Standard for the New Zealand Public Sector*. Retrieved from <http://archives.govt.nz/Reportonsubmissionsreceived>
- Barham, S. (2002). New Zealand Government Implementation of a DC-based Standard – Lessons Learned, Future Issues. *Proceedings from International Conference on Dublin Core and Metadata for e-Communities 2002: 171-176*. Retrieved from <http://dcpapers.dublincore.org/index.php/pubs/article/view/708>
- Bettington, J. (2004). Standardised recordkeeping: Reality or illusion? *Archives and Manuscripts*, 32(2), 46-69. Retrieved October 7, 2012, from Australian Public Affairs Full Text Informit database.
- Bidmead, R. (2008). The EDRMS Missing Links. *IQ:The RMAA Quarterly*, 24(4), 28-29.

- Bryman, A. (2012). Research designs. In *Social research methods* (4th ed., pp. 44-78). New York: Oxford University Press.
- Caplan, P., & Guenther, R. (2005). Practical preservation: the PREMIS experience. *Library Trends*, 54(1), 111- 124. Retrieved from Academic Onefile database.
- The Clever Recordkeeping Metadata Project. (2012). *About the Clever Recordkeeping Metadata project*. Retrieved from <http://www.infotech.monash.edu.au/research/groups/rcrg/crkm/about.html>
- Connelly, J. C. (2001). The new international records management standard: Its content and how it can be used. *Information Management Journal*, 35, 26-36. Retrieved from Academic OneFile.
- Corbin, J., & Strauss, A. (2008). *Basics of qualitative research* (3rd ed.). Thousand Oaks, California: Sage Publications.
- Cumming, K. (2005). Metadata Matters. In J. McLeod & C. Hare (Eds.) *Managing electronic records* (pp.34-49). London : Facet.
- Cumming, K. (2010). Ways of seeing: contextualising the continuum. *Records Management Journal*, 20(1), 41-52. doi: 10.1108/09565691011036224
- Cunningham, A. (2001). Six degrees of separation: Australian metadata initiatives and their relationships with international standards. *Archival Science*, 1(3), 271-283. doi: 10.1007/bf02437691
- Cunningham, A. (2011). Good digital records don't just "happen": Embedding digital recordkeeping as an organic component of business processes and systems. *Archivaria*, 71, 21-34. Retrieved from Victoria University Library online holdings <http://victoria.lconz.ac.nz/vwebv/holdingsInfo?bibId=1454754>
- Day, M. (2003). Integrating metadata schema registries with digital preservation systems to support interoperability: A proposal. *Papers and Project Reports for Dublin Core-2003 in Seattle, 28 September - 2 October 2003*. Retrieved from <http://dcpapers.dublincore.org/index.php/pubs/article/view/728>
- Department of Internal Affairs. (2004). *New Zealand Government Locator Standard -NZGLS metadata standard*. Retrieved October 19, 2012, from <http://archive.ict.govt.nz/plone/archive/standards/nzglsl/standard/index.html>
- Dorner, D. G. (2009). Public sector readiness for digital preservation in New Zealand: The rate of adoption of an innovation in records management practices. *Government Information Quarterly*, 26(2), 341-348. doi: 10.1016/j.giq.2008.11.003

- Evans, J. (2007). Evaluating the recordkeeping capabilities of metadata schemas. *Archives and Manuscripts*, 35(2), 56-84. Retrieved October 17, 2012, from Australian Public Affairs Full Text Informit database.
- Evans, J., McKemmish, S., & Bhoday, K. (2005). Create once, use many times: The clever use of recordkeeping metadata for multiple archival uses. *Archival Science*, 5, 17-42. doi: 10.1007/s10502-005-4625-x
- Evans, J., Reed, B., & McKemmish, S. (2008). Interoperable data: Sustainable frameworks for creating and managing recordkeeping metadata. *Records Management Journal*, 18(2), 115-129. doi: 10.1108/09565690810882977
- Gregory, K. (2005). Implementing an electronic records management system: A public sector case study. *Records Management Journal*, 15(2), 80-85. doi:10.1108/09565690510614229
- Gunnlaugsdottir, J. (2008). Registering and searching for records in electronic records management systems. *International Journal of Information Management*, 28, 293-304. doi:10.1016/j.ijinfomgt.2008.01.013
- Healy, S. (2010). ISO 15489 records management: Its development and significance. *Records Management Journal*, 20(1), 96-103. Retrieved from Emerald database.
- Henttonen, P. (2009). A comparison of MoReq and SÄHKE metadata and functional requirements. *Records Management Journal*, 19(1), 26-36. Retrieved from Emerald database.
- Joseph, P., Debowski, S., & Goldschmidt, P. (2012). Paradigm shifts in recordkeeping responsibilities: Implications for ISO 15489's implementation. *Records Management Journal*, 22(1), 57-75. doi: 10.1108/09565691211222108
- Kettunen, K., & Henttonen, P. (2010). Missing in action? Content of records management metadata in real life. *Library & Information Science Research*, 32(1), 43-52. doi: 10.1016/j.lisr.2009.10.002
- Leedy, P. D., & Ormrod, J.E. (2011). *Practical research: Planning and design* (10th ed.). Boston: Pearson Education.
- Lim, S., & Liew, C. (2011). Metadata quality and interoperability of GLAM digital images. *Aslib Proceedings*, 63(5), 484-498. doi.org/10.1108/00012531111164978
- McKemmish, S., Reed, B., & Piggott, M. (2005). The archives. In S. McKemmish, M. Piggott, B. Reed, & F. Upward (Eds.) *Archives: Recordkeeping in Society* (pp. 159-196). Wagga Wagga: Centre for Information Studies.
- McKenna, F. (2009). Do you really need a taxonomy/classification scheme with a records management system? *IQ: The RIM Quarterly*, 25(3), 40-44.

- McLeod, J., & Childs, S. (2005). *Assessing the impact of ISO 15489 – The first international standard for records management*. Retrieved from <http://www.northumbria.ac.uk/static/5007/ceispdf/isorep.pdf>
- McLeod, J., Childs, S., & Hardiman, R. (2011). *Accelerating positive change in electronic management: Headline findings from a major research project*. Retrieved from <http://nrl.northumbria.ac.uk/5604/>
- McLeod, J., & Hare, C. (2006). *How to manage records in the e-Environment* (2nd ed.). New York : Routledge.
- The National Archives UK. (2010). *Managing digital records without an electronic record management system*. Retrieved from <http://www.nationalarchives.gov.uk/documents/information-management/managing-electronic-records-without-an-erms-publication-edition.pdf>
- Nguyen, L. T., Swatman, P.M.C., Fraunholz, B., & Salzman, S. (2009). *EDRMS implementation in the Australian public sector*. Paper presented at the ACIS 2009, Evolving Boundaries and New Frontiers: Defining the IS Discipline : Proceedings of the 20th Australasian Conference on Information Systems, Melbourne, Vic. Retrieved September 5, 2012, from <http://dro.deakin.edu.au/view/DU:30024943>
- O'Donnell, K. (2010). Taming digital records with the Warrior Princess: developing a Xena preservation interface for TRIM. *Archives and Manuscripts*, 38(2), 37-60. Retrieved October 7, 2012, from Australian Public Affairs Full Text Informit database.
- Oliver, G. (2007). Implementing international standards: First, know your organisation. *Records Management Journal*, 17(2), 82-93. doi: 10.1108/09565690710757887
- Oliver, G., Evans, J., Reed, B., & Upward, F. (2010). Achieving the right balance: Recordkeeping informatics- Part 2. *IQ: The RIM Quarterly*, 26(1), 42-45.
- Park, E. G., Lamontagne, M., Perez, A., Melikhova, I., & Bartlett, G. (2009). Running ahead toward interoperable e-government: The government of Canada metadata framework. *International Journal of Information Management*, 29(2), 145-150. doi: 10.1016/j.ijinfomgt.2008.06.003
- Pember, M. (2006). Sorting out the standards: What every records and information professional should know. *Records Management Journal*, 16(1), 21-33. doi: 10.1108/09565690610654765
- Rankin, F. (2006). Implementing EDRMS and shaping the record. In A. Tough & M. Moss (Eds.) *Record keeping in a multi-media environment : Managing the creation, use, preservation and disposal of unique information objects in context* (pp.27-45). Oxford: Chandos.

- Records Continuum Research Group. (2012). *SPIRT Recordkeeping Metadata project - Deliverables*. Retrieved from <http://www.infotech.monash.edu.au/research/groups/rcrg/projects/spirt/deliverables/>
- Reed, B. (2005). Reading the records continuum: Interpretations and explorations. *Archives and Manuscripts*, 33(10), 19-43. Retrieved from Module 12: State of the Art. In *INFO535 Managing Current Records* [Course readings]. Wellington, New Zealand: Victoria University of Wellington.
- Reed, B.(2010). Service-oriented architectures and recordkeeping. *Records Management Journal* 20(1), 124-137. doi.org/10.1108/09565691011039898
- Skelton, K. &, Jones, K. (2008). *Exploring metadata together: The Australia/New Zealand collaborative experience*. Retrieved from http://www.naa.gov.au/Images/Karen-skelton-kate-jones-08_tcm16-35735.pdf
- Stapleton, A. (2005). Continuum in context: Post-eighteenth century archival theory and the records continuum model. *Archifacts*, (April), 21-45. Retrieved from Module 1: Theory & Concepts 1. In *INFO534 Archival Systems* [Course readings]. Wellington, New Zealand: Victoria University of Wellington.
- State Sector Act 1988. Retrieved August 13, 2012 from <http://www.legislation.govt.nz/act/public/1988/0020/latest/DLM129110.html>
- State Services Commission. (2007). *Code of conduct for the State Services*. Retrieved from <http://www.ssc.govt.nz/code>
- Swan, K., Cunningham, A., & Robertson, A. (2002). Establishing a high standard for electronic records management within the Australian public sector. *Records Management Journal*, 12(3), 79-86. Retrieved from Emerald database.
- Thomas, D.R. (2006). A general inductive approach for analysing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237-246. doi: 10.1177/1098214005283748
- Troselius, N., & Sundqvist, A. (2012). A comparative case study on metadata schemes at Swedish governmental agencies. *Records Management Journal*, 22(1), 7-19. doi:10.1108/09565691211222063
- Upward, F. (1996). *Structuring the records continuum- Part one: postcustodial principles and properties*. Retrieved April 14, 2013, from <http://www.infotech.monash.edu.au/research/groups/rcrg/publications/recordscontinuum-fuppl.html>
- Wallace, D. A. (2001). Archiving metadata forum: Report from the recordkeeping metadata working meeting, June 2000. *Archival Science*, 1(3), 253-269. Retrieved from [Proquest](#) Research Library.

- Wilkins, L., Swatman, P.M.C., & Holt, D. (2009). Achieved and tangible benefits: lessons learned from a landmark EDRMS implementation. *Records Management Journal*, 19(1), 37-53. doi.org/10.1108/09565690910937236
- Yin, R.K. (2003). *Case study research: Designs and methods* (3rd ed). Thousand Oaks, California: Sage Publications.

Appendix I

Departments of the Public Service from the State Sector Act 1988 - Schedule 1 as at May 2013

Canterbury Earthquake Recovery Authority *NEW*
Crown Law Office
Department of Conservation
Department of Corrections
Department of Internal Affairs
Department of the Prime Minister and Cabinet
Education Review Office
Government Communications Security Bureau
Inland Revenue Department
Land Information New Zealand
Ministry for Culture and Heritage
Ministry for Primary Industries *NEW*
Ministry for the Environment
Ministry of Business, Innovation, and Employment *NEW*
Ministry of Defence
Ministry of Education
Ministry of Foreign Affairs and Trade
Ministry of Health
Ministry of Justice
Ministry of Maori Development
Ministry of Pacific Island Affairs
Ministry of Social Development
Ministry of Transport
Ministry of Women's Affairs
New Zealand Customs Service
Serious Fraud Office
State Services Commission
Statistics New Zealand
The Treasury

Departments that took part in the Archives NZ 2010 survey (no longer in the State Sector Act as at 2013)	Ministry or Department it has been incorporated into
Archives New Zealand National Library of New Zealand	Department of Internal Affairs
Department of Building & Housing Department of Labour Ministry of Economic Development	Ministry of Business, Innovation, and Employment
Ministry of Agriculture and Forestry Ministry of Fisheries Ministry of Research, Science and Technology New Zealand Food Safety Authority	Ministry for Primary Industries

Appendix II

Survey Questions and covering email –administered through Qualtrics

My name is Annabel Snow and I am a Masters student in the School of Information Studies at Victoria University of Wellington (VUW).

I am conducting a research project on NZ government departments' experiences in meeting the requirements of the Electronic Recordkeeping Metadata standard. This project has been approved by the VUW School of Information Management's Human Ethics Committee.

You are invited to participate in a 6 question survey about what recordkeeping systems are currently being utilised by government departments. The results will also be used to identify a sample of respondents to interview based on the range of recordkeeping systems used.

While this survey is not anonymous, no information gathered will be identifiable to you or your organisation and will be kept confidential to the researcher and my supervisor, Dr Gillian Oliver. By answering this questionnaire you are consenting to use of the information collected for this research project as long as it is not attributed to you or your organisation.

Please click on [this link](#) to start the survey. Survey closes on 14 July 2013

To be in the draw for a \$40 book voucher please fill in your contact details at the end of the survey.

If you have any queries please contact me on 021 455582 or snowanna@myvuw.ac.nz or contact my supervisor, Dr Gillian Oliver, gillian.oliver@vuw.ac.nz

1. Name of government department you are responding on behalf of:

2. Does the government department use an electronic document and records management system (EDRMS) as the primary records management system?

Yes → Q 3

No → Q 4

3. If the department has an EDRMS (or is implementing one), which specific products(s) does your organisation use?

(Please select all that are applicable)

- a) Alfresco
- b) Document One
- c) Documentum
- d) Equality
- e) FileNet
- f) Foremost
- g) Hummingbird
- h) iManage
- i) Interwoven
- j) Knowledge Tree
- k) LiveLink
- l) Lotus Notes
- m) Meridio
- n) Objective
- o) RAID/Docs Open
- p) SilentOne
- q) TRIM
- r) Sharepoint
- s) Vignette
- t) Other (please specify)_____

4. If the government department does **not** use an electronic recordkeeping management system, what recordkeeping approach(es) does your organisation primarily use?

(Please select all that are applicable)

- a) Shared Drives
- b) Data warehouse
- c) Business information system e.g. finance, payroll Name_____
- d) Core business system e.g. case management Name_____

- e) Paper systems
- f) Other (please specify)_____

5. Has the department merged with, or separated from, any other agency in the last three years?

Yes → Q6

No → Q 6

6. Would you be prepared to be interviewed as part of a research project about the use of recordkeeping systems and the Electronic Recordkeeping Metadata Standard? No information gathered will be attributable to you or your organisation.

a) Yes:

Name_____

Position_____

Preferred contact details_____

-Thank you for your time and participation.

You have been entered into the draw for a \$40 book voucher.

b) Yes but I would like more information first:

Email address: _____

-Thank you for your time and participation.

You have been entered in to the draw for a \$40 book voucher.

c) No:

- Thank you for your time and participation. If you would like to be included in the draw

for a \$40 book voucher, please enter your email address.

Email address:_____

Appendix III

Cover email sent to interviewees, participant information sheet & consent form

Dear _____,

Once again, thank you for agreeing to participate in my research.

Please find attached:

1. Some **information** for you about my research and your participation
2. A **consent form** for you to sign which I will collect when I come to interview you.
3. An outline of the **questions** I will be asking so you can familiarise yourself with the focus of the interview.

Please note if you require employer permission to participate. Please obtain this before the interview.

To confirm our interview is booked for:

Day

Time

Location

If you have any questions, please feel free to contact me by email or phone, 021455582
Or my supervisor, Dr Gillian Oliver, at the School of Information Management at Victoria University of Wellington. Email: gillian.oliver@vuw.ac.nz, Phone (04) 463-7437

Kind regards,

Annabel Snow

Participant Information Sheet

Title: Study of the experiences of New Zealand government departments in meeting the requirements of the Electronic Recordkeeping Metadata standard.

My name is Annabel Snow and I am a Masters student in the School of Information Management at Victoria University of Wellington. As part of this degree I am undertaking a research project leading to a research report. I am undertaking a study of NZ government departments' experiences in meeting the requirements of the Electronic Recordkeeping Metadata standard. This project has been approved by the VUW School of Information Management's Human Ethics Committee.

By researching the range of recordkeeping strategies and systems utilised by government departments, as well as the challenges faced in meeting the metadata standard, I hope this research will be of benefit to the New Zealand public sector recordkeeping community.

I am conducting face to face interviews with records or information managers who are knowledgeable about their department's electronic records management practices. Each interview will last approximately 45 minutes. Information obtained in the interviews will form the basis of my research project and will be used in a written report which may be submitted for publication at conferences and/or in journals. Information will be non-attributable. It will not be possible for you, or your organisation, to be identified.

All material collected will be kept confidential and secure. Only I and my supervisor, Dr Gillian Oliver, will see the interview transcripts. The final report will be submitted for marking to the School of Information Management, deposited in the University Library and provided to those people who assisted the research. Interview transcripts and recordings will be stored securely and then destroyed two years after the completion of the project.

Should you wish to withdraw from the project, you may do so without question at any time before **23 August 2013** when the data will be analysed. My contact details are below. Any information provided up to the time of withdrawal will be excluded and destroyed. If you would like to receive feedback on this research, in the form of a summary of research findings, please tick the box on the consent form below.

Prior to conducting the proposed interview, Victoria University of Wellington requires that I obtain your written informed consent. The consent form is attached. Please complete the form, sign it and give it to me when I come to interview you.

I have attached a list of questions which are indicative of those that I will ask during the interview. Please read them in advance of the interview and if necessary try to gather together information which will help you respond to them.

If you have any questions or would like to receive further information about the project, please contact me at snowanna@myvuw.ac.nz, phone 021455582

Or my supervisor, Dr Gillian Oliver, at the School of Information Management at Victoria University of Wellington. Email: gillian.oliver@vuw.ac.nz, Phone (04) 463-7437

Yours sincerely

Annabel Snow

Consent to Participate in Research

TITLE: Study of the experiences of New Zealand government departments in meeting the requirements of the Electronic Recordkeeping Metadata standard.

[Please mark each box with an X to indicate agreement]

☐

I agree to be interviewed for the purpose of this research, and I consent to the use of any information I provide as long as it is not attributed to me or my organisation.

☐

I have been provided with adequate information relating to the nature and objectives of this research project and the confidentiality conditions. I have understood that information and have been given an opportunity to ask questions and have them answered to my satisfaction.

☐

I **do not** have to seek approval from my supervisor to participate in this research,

OR (delete the option that is not required)

I **have** sought and obtained approval from my supervisor to participate in this research.

☐

I agree to have my interview audio recorded.

☐

I understand that I may withdraw from this project at any time until **23 August 2013** in which case all data I have provided will be destroyed.

☐

I would like to receive feedback on this research, in the form of a summary of research findings.

Please send the report to this email address: _____

Name:

Signed:

Date:

Appendix IV

Interview Guide

Topics to be explored, as appropriate:

Recordkeeping technology
Metadata capture and management
Metadata schema
Metadata maintenance
Metadata disposal
Transfer and migration of metadata
Challenges

Standard questions:

1. Please tell me about your role and responsibilities
2. Please tell me about the government agency you work for.
3. What recordkeeping system(s) are used by your agency?
4. How is metadata managed within this system?
5. Does your agency employ any alternative approaches instead of using an electronic recordkeeping system? What are they?
6. How is metadata managed within this system?

The response to questions 3 – 6 governs the format of the interview, as the recordkeeping system the agency uses directly affects their approach to meeting the requirements of the metadata standard.

The following questions will be used if necessary, where the relevant information is not elicited during discussion:

1. Can you tell me about how the two forms of metadata (point of capture metadata and recordkeeping process metadata) are captured and created in your system?
 - *Point of capture:*
 - *Recordkeeping process:*
2. How much of the metadata is inputted by users?
3. Does your agency have a metadata schema? How does it work with your system? Is it organisation-wide?
4. Do you ever appraise and/or dispose of metadata? What is the process?
5. Do you have any processes/procedures to quality check metadata? What are they?
6. Do you employ any unusual approaches to metadata capture or management? What are they?

7. Where is metadata stored in your system? For example does it sit within your EDRMS or is it stored separately?
8. Can you describe how your organisation manages metadata during:
 - the transfer of records?
 - the migration of records to a different system?
 - integration of systems
9. Do you find the standard a useful resource in the above events? Why?
10. What, in your opinion, doesn't work particularly well within your recordkeeping approach in regards to meeting the requirements of the metadata standard?
11. What, in your opinion, does work particularly well within your recordkeeping approach in regards to meeting the requirements of the metadata standard?
12. What requirements/parts of the standard does your agency find the hardest to meet? Why is that?
13. Are there any other aspects of the metadata standard here that we haven't already discussed that are of concern/relevance to you?

Appendix V

Codes used in interview data analysis

Category 1 – Compliance

IS	Approaches to and examples of compliance with the standard
NO	Examples of non-compliance with the standard
IMP	Developments being made to improve compliance or systems-use
PO	Documentation about metadata capture and decisions
DISP	Practices around the disposal of records and metadata
INF	Influences on department's ability to comply with the standard

Category 2 – Role of the standard

PRA	Actual practices of the department
REQ	Comment on the requirements or ideals of the standard
YI	Departmental use of the standard to inform practice
NI	Non-use of the standard
OTH	Other standards followed or used by the department
DEV	Suggested improvements for the standard
REL	Departmental relationship with the standard's requirements

Category 3 – Innovative practice

ED	Systems-based innovation
STR	User –focussed strategy
PHI	Philosophy shift