

Australian Government Recordkeeping Metadata Standard Implementation Guidelines



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EXECUTIVE SUMMARY

Good recordkeeping is the basis for establishing and maintaining documentary evidence of government activities and helps government agencies manage and preserve corporate memory for short and long-term purposes. Metadata can be used to identify, authenticate and contextualise not only records, but also people, business processes, rules and relationships. Metadata provides government agencies with a way to control the storage, access, retrieval, transfer and disposal of records, and measure and compare the quality of recordkeeping across areas.

These guidelines will help staff in Australian Government agencies working in the fields of information management, data management and information and communication technology, understand and implement the *Australian Government Recordkeeping Metadata Standard Version 2.0* (AGRkMS).

Version 1 of the standard recommended that Australian Government agencies tie all metadata to the Record entity itself. Version 2 of the standard recommends that agencies capture information about up to five different objects or concepts, referred to as metadata entities, that are part of a recordkeeping environment. This metadata recording model is referred to as the multiple-entity model.

The standard recommends that agencies adopt a five-entity implementation — capturing metadata about records, agents, business, mandates and relationships — as best practice. However, the standard also allows agencies to have single-entity, two-entity, three-entity and four-entity implementations. These guidelines discuss the advantages and disadvantages of each of these options to help agencies decide which model to implement.

The standard provides a structured way to capture metadata about the five entities, using 26 properties that capture characteristics about the five metadata entities in a standardised way. Agencies can extend the list of properties (and encoding schemes) for their own needs, however, these extensions must be compliant with the standard.

If agencies have implemented recordkeeping metadata systems that are compliant with Version 1 or have other legacy systems that record metadata, they should map those systems to Version 2. This mapping could be done at time of system upgrade and would include correlating properties in the old system with properties that have the same or a similar meaning in the upgraded system.

The guidelines also recommend that agencies establish a quality assurance process to monitor the creation of manual (free text) or semi-automatic metadata (pick lists) by end users, and provides an example of a quality compliance checklist. All decisions taken by staff associated with the implementation of the metadata recording system should be explicitly recorded in formal configuration documentation. In addition, agencies should set up an information management framework to identify the risks and consequences of not managing the records effectively.

These guidelines accompany the *Australian Government Recordkeeping Metadata Standard Version 2.0* and contain many examples on how to implement the standard, as well as cross-references to the detailed information in the standard.

1. INTRODUCTION

1.1 Purpose and intended audience

These guidelines have been prepared to help staff working in the fields of information management, data management and information and communication technology (ICT) in Australian Government agencies understand and implement the *Australian Government Recordkeeping Metadata Standard Version 2.0*.

The guidelines assume a basic understanding of metadata and its purposes, particularly for recordkeeping, and a degree of familiarity with the AGRkMS.

The AGRkMS describes the information (metadata) that the National Archives of Australia (the National Archives) recommends be recorded in records management systems and business systems to be consistent with AS ISO 15489¹ and AS ISO 23081.² These guidelines accompany Version 2 of the AGRkMS and include cross-references to it. A discussion of the purpose and benefits of standardised metadata is included in Section 1 of the AGRkMS.

1.2 Coverage

These guidelines provide:

- an overview of the AGRkMS metadata schema, explaining how the various components, such as entities, properties and sub-properties, work together
- details of the multiple-entity approach recommended by the standard
- implementation requirements for compliance with the AGRkMS including
 - advice on determining recordkeeping metadata requirements for different kinds of business systems, and deciding which combination of entities will best meet defined requirements
 - coverage of specific implementation issues, including examples of how these issues might be addressed
- coverage of metadata maintenance issues, including storage, accessibility and requirements for retention
- information about the metadata entities and properties, as well as the role of encoding schemes to capture the metadata
- a glossary of key terms and acronyms.

¹ AS ISO 15489.1:2002, 'Records Management – Part 1: General'. is the Australian and international standard for records management, *AS ISO 15489*, provides guidance on creating records policies, procedures, systems and processes to support the management of records in all formats. It is widely used in Australia and internationally in both private and public organisations.

² AS ISO 23081.1:2006, 'Information and Documentation – Records Management Processes – Metadata for Records – Part 1: Principles'.

1.3 How to use these guidelines

These guidelines should be read in association with the AGRkMS. The guidelines provide background information to the AGRkMS, explain the concepts underlying the standard, and provide many examples to help with implementation.

Section 2 provides an overall view of the key concepts of the standard and its main components. If you are unfamiliar with entities and properties, this is the place to start. If you are already comfortable with these concepts, you could start by looking at the various diagrams in Section 2. These diagrams provide high-level views of the AGRkMS schema, and show how the different components fit together.

Sections 3 and 4 are intended for use by management in agencies preparing to implement the standard, either in an Electronic Document and Records Management System (EDRMS), or in one or more specific business systems. Section 3 covers the decisions that agencies will need to make before implementing the standard, and include:

- best-practice and minimum implementation requirements
- information about different entity configurations, including working examples
- key implementation issues for consideration
- an implementation checklist.

Section 4 provides guidance for staff in agencies where the standard has been implemented who need to consider the longer-term maintenance of metadata, including its migration to new systems.

Sections 5 and 6 are key to understanding how to implement the standard and are especially relevant for staff who have to design the multiple-entity system and apply the standard. Section 5 describes all the entities that can be used in a multiple-entity implementation model, recommended as best practice by the standard. It also provides several practical examples of how to capture metadata for these entities. Section 6 gives a thorough background on the use of properties and the underlying concepts. It illustrates the use of properties and encoding schemes to describe entities.

The table in the Appendix A gives an overview of the entities, properties and sub-properties that are part of the standard and provides cross-references to where information on these items can be found in the AGRkMS.

1.4 Feedback

The National Archives welcomes comments on the AGRkMS Implementation Guidelines.

Australian Government agencies should submit comments on the National Archives' Agency Service Centre online form: <http://www.naa.gov.au/records-management/help/index.aspx>

Consultants, contractors and vendors engaged by Australian Government agencies may email comments to recordkeeping@naa.gov.au

2. THE OVERALL VIEW

2.1 What is metadata?

Metadata is a term used for 'data about data'. The term metadata was traditionally used by librarians and archivists to describe information about various types of publications and records. For example, details such as the author, publisher, format of a publication.

Metadata, as used in the current context of recordkeeping, includes a wide variety of structured information that can be used to identify, authenticate and contextualise not only records, but also people, business processes, rules and relationships.

2.2 Why use metadata?

Australian Government agencies are required to carry out their business in an accountable, equitable and efficient manner. Good recordkeeping is the basis for establishing and maintaining documentary evidence of government activities, and helps agencies manage and preserve corporate memory for short and long-term purposes.

Metadata is an essential component of any good recordkeeping system and ensures that information about records and business processes and transactions is recorded in a structured way, linked to the relevant records. At the same time, metadata provides agencies with a way to control the storage, access, retrieval, transfer and disposal of records, and allows them to measure and compare the quality of recordkeeping across areas. Finally, metadata facilitates the storage of records within the intellectual control systems and public finding aids of the National Archives.

2.3 Introducing entities and properties

The Australian Government Recordkeeping Metadata Standard (AGRkMS) sets out the type of recordkeeping metadata that Australian Government agencies should include in their business systems and specifies the minimum mandatory requirements.

Version 1 of the standard³ recommended that Australian Government agencies tied all metadata to the Record entity itself. However, Version 2 of the AGRkMS differs from the first version in that it recommends agencies capture information about up to five different objects or concepts, including a record, that are part of a recordkeeping environment. These objects or concepts are called 'entities'. This metadata model is referred to as the multiple-entity model.

The entities recognised in the multiple-entity model represent the major components that are present in everyday organisational business, including recordkeeping. These entities are:

- Record (e.g. physical publications, electronic documents, groups of publications, electronic folders or directories, or even the metadata of records and entire archives)
- Agent (e.g. people, groups of people, organisations, roles, automated systems)

³ National Archives of Australia, *Recordkeeping Metadata Standard for Commonwealth Agencies Version 1.0*, 1999

- Business (e.g. the functions and activities of what an organisation does)
- Mandate (e.g. legislation, policies and rules)
- Relationship (e.g. information about the relationship between a record, agent, business, mandate or other relationship).

These entities and their characteristics are discussed in more detail in Section 5.

The standard also specifies how the recordkeeping metadata recorded for these entities must be captured. It provides a structured way to do this, so that metadata can be applied to a wide variety of systems and agencies. The standard structures in which the metadata are captured are referred to as properties. Properties (e.g. type, category, name, description, change history, permissions, etc.) describe the entities using a descriptive value or using sub-properties, which in turn use descriptive values to capture details of the properties.

Properties and their characteristics are described in detail in Section 6.

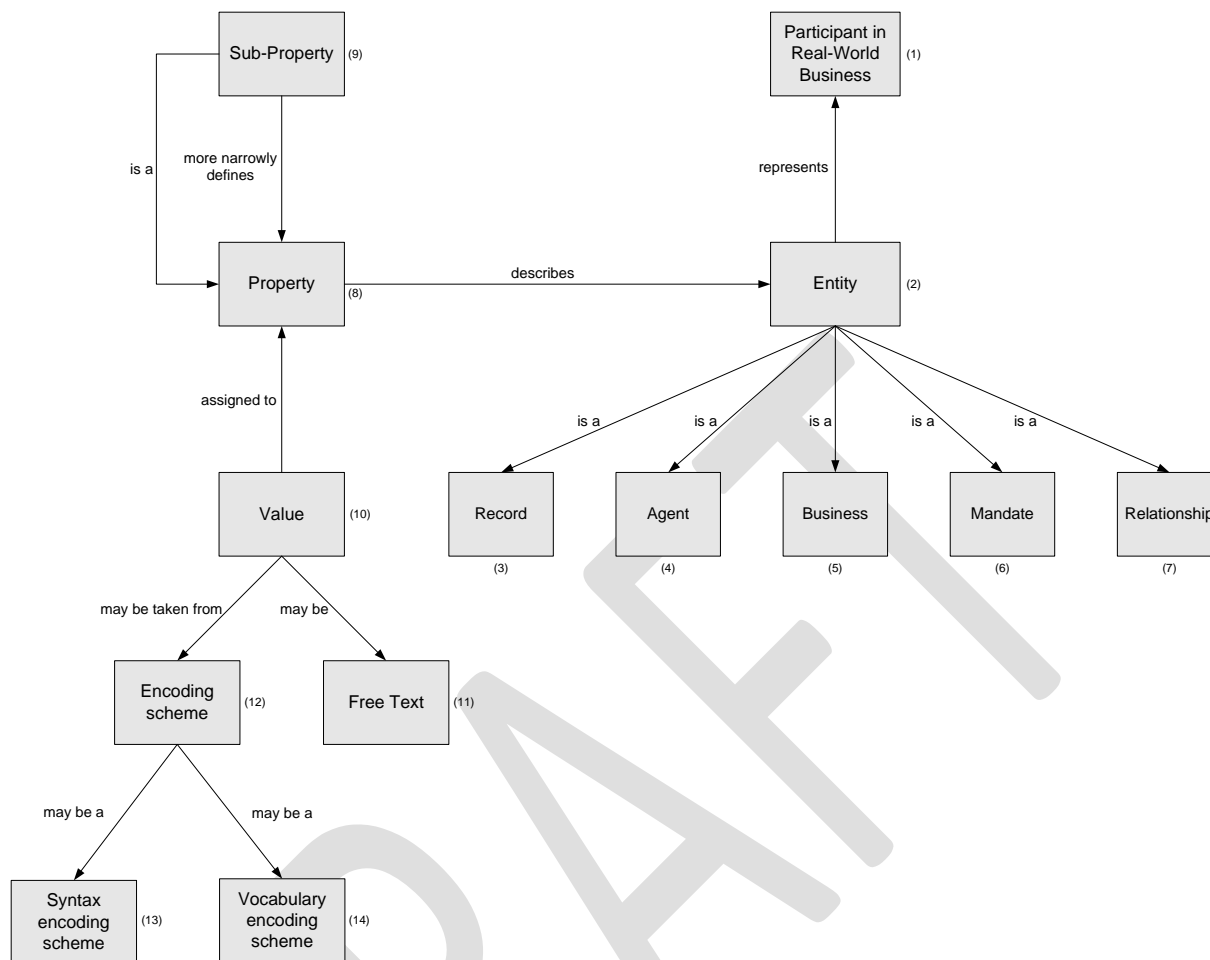
2.4 Relationships between entities and properties

The standard introduces a structured system to capture recordkeeping metadata using entities, properties and their interrelationships in a consistent way. The set of specifications that define the structure and syntax of this system, and of the metadata, in a formal language is referred to here as the AGRkMS schema.

Figure 1 shows the components of the AGRkMS schema. It visualises how entities and properties relate to each other and how metadata about entities are recorded through their properties. To understand the flow chart, start reading it from the top-right. Before recording metadata about a 'real-world' component (1) such as a person, group, document, electronic record, rule or relationship, you have to first decide which of the available entity types (2) best represents the component you wish to describe: i.e. a record (3), an agent (4), a business (5), a mandate (6), or a relationship (7).

Once you have identified the type of entity (move to the left of the diagram), the entity can be described using the properties (8) and sub-properties (9) provided in the standard. Some properties capture information directly as a descriptive value, while others, in turn, capture information in sub-properties (9), which more precisely describe the property. However, other properties may record a value (10), which can be free text (11) or taken from an encoding scheme (12). Values taken from an encoding scheme may either be taken from syntax coding schemes (externally defined syntaxes or a formal notation, 13) or vocabulary coding schemes (controlled vocabularies, 14).

Figure 1 Components of the AGRkMS schema: relationships between metadata entities and properties



Notes

1. Relationships between the flow-chart components, represented by the lines, should be read in the direction of the arrows.
2. Numbers refer to items discussed in the text.
3. "Participant in real-world business" includes any real-world component

2.5 The multiple-entity approach of the standard

The approach used in the standard is based on the multiple-entity approach presented in the standards on metadata for records, AS ISO 23081 *Metadata for records*, Part 1⁴ and Part 2⁵.

This enables you to develop independent metadata descriptions for each of the entities involved in recordkeeping.

It allows you to create a metadata description for an entity (e.g. an Agent) just once, and reuse the description multiple times, whenever it is related to another entity (e.g. a Record). The metadata description for the entity can then be reused every time the entity it represents is

⁴ AS ISO 23081.1:2006, *Information and documentation -- Records management processes -- Metadata for records -- Part 1: Principles*.

⁵ AS ISO 23081.2:2009, *Information and documentation -- Managing metadata for records -- Part 2: Conceptual and implementation issues*.

involved in another recordkeeping action or event. In this approach, the Relationship entity is the glue that enables the two entities (e.g. the Agent and Record) to be related.

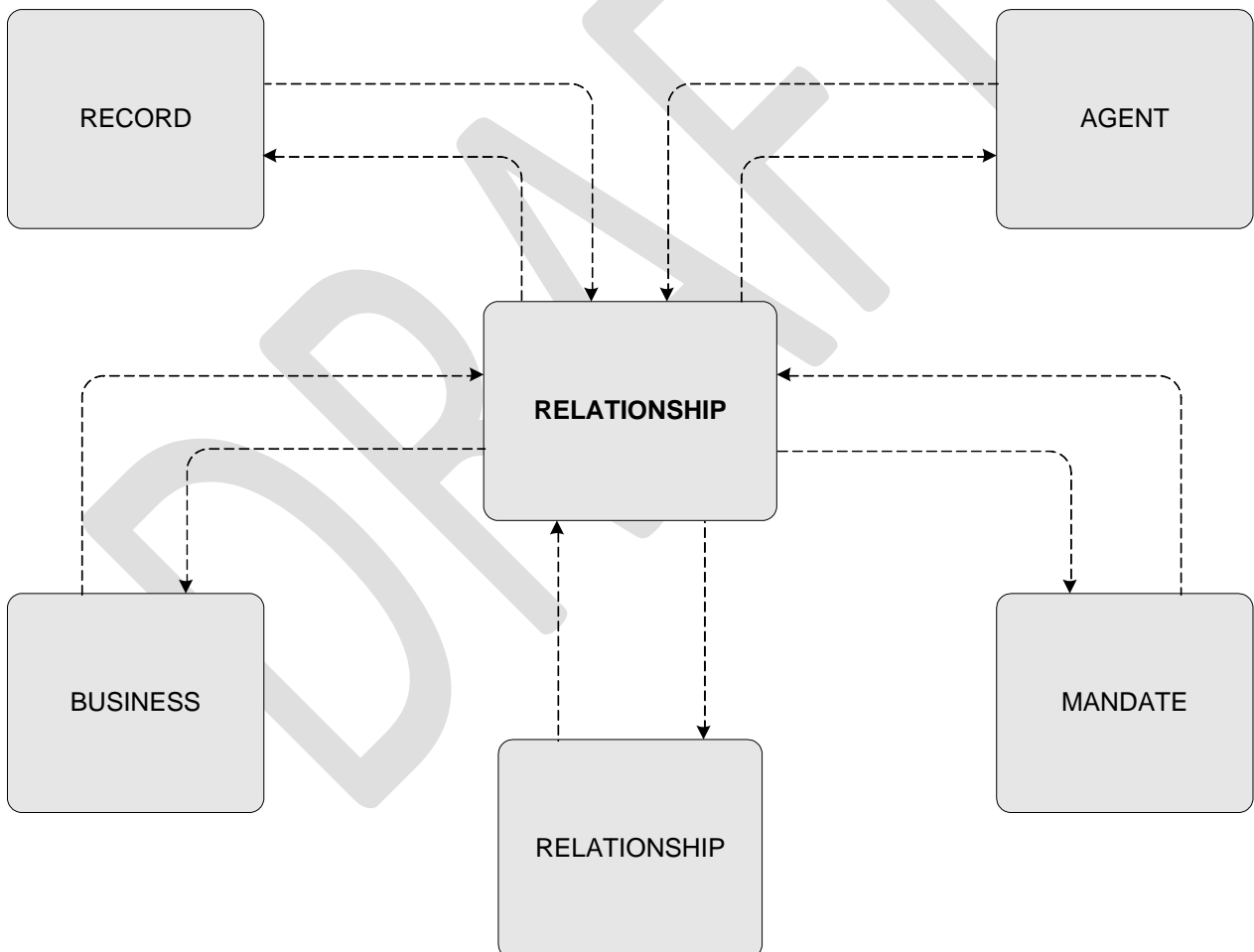
Figure 2 shows how the five entities can be related in the AGRkMS schema. The Relationship entity is the key. Any entity can be related to any other entity via the Relationship entity. The dotted lines indicate the links, via Relationship, between the different entities.

Instances of the same entity can also be related. Consider examples of where documents (Records) are related to other files or folders (other Records), or where people (Agents) are related to organisations (other Agents).

Relationships can also be related to other relationships, as shown in the diagram. For example, the authorisation for a particular business event can be shown by relating an 'authorises' relationship to a specific event relationship. This relationship model allows users to include a high level of contextual description in recordkeeping.

How the Relationship entity works in practice is described, with examples, in Section 5.8.

Figure 2 Relationships between entities in a five-entity model



2.6 Metadata requirements for your organisation

AGRkMS describes the minimum metadata necessary to ensure that records in your agency remain accessible and usable over time. It describes mandatory, conditional and optional properties and sub-properties to use when describing entities.

In order to comply with the standard, your organisation must implement at least the mandatory metadata properties and, where relevant, mandatory sub-properties. In some circumstances, you will also need to implement conditional properties for compliance.

The standard recommends full five-entity implementation as best practice; however, some agencies may not currently be in a position to do this. Therefore, the standard allows the implementation of several other options to suit your organisation's requirements and levels of technical sophistication. Consequently, the actual implementation of the mandatory properties and sub-properties will look different, depending on the type of implementation of the standard your organisation chooses to put in place.

Your organisation must consider its business needs when determining the level of detail needed in applying metadata. While many properties are optional, there are occasions when the more information you provide, the more useful the description will be. Optional properties may be applied based on the nature and business purpose of the record or other entity being described.

Section 3 gives an overview of the various implementation options that the standard allows.

3. IMPLEMENTING METADATA

In this section we discuss the decisions that agencies will need to make before implementing the standard. This also includes decisions that need to be made by agencies that implemented recordkeeping metadata systems according to Version 1 and who wish to adapt their recordkeeping metadata systems to comply with Version 2.

These decisions include:

- which entities to use
- which entity configuration model to implement
- which properties and sub-properties to use and whether to extend the system
- which physical form of implementation to use
- whether to automate the system
- how to link the old records to the new system.

3.1 Deciding which entities to use

The National Archives recommends that agencies implement a five-entity metadata model (using Record, Agent, Business, Mandate and Relationship). A three-entity metadata model (using Record, Agent and Relationship) is the minimum for any system designed to make and keep records supported by the National Archives.

Other implementation models using different entity combinations are possible, and these are examined in Section 3.2.

The number of entities your agency selects for its recordkeeping system may depend on the type and purpose of the recordkeeping system. For example a limited, narrow-focused system for a specific purpose may only require a limited number of entities to meet business needs. A broad-based business system for general or multiple purposes could need more entities to provide sufficient evidence of business activity and to support decision-making.

3.2. Implementation configurations

This section is largely adapted from *Implementing Recordkeeping Metadata in EDRMS: Tailoring the Technical Specifications for the Electronic Recordkeeping Metadata Standard*⁶ published by Archives New Zealand and is used with permission.

For more details about the properties, sub-properties and their values used in this section, see Section 6.

⁶ <http://continuum.archives.govt.nz/G14.html>

3.2.1 Single-entity implementation

Single entity implementations are possible for specific business systems with a narrow focus, but such an implementation in isolation is not recommended by the National Archives.

Record entity implementations

The advantages to a single-entity implementation include:

- it brings all the properties relating to multiple entities into one entity
- it brings all relationships and links within one entity
- it ensures that metadata is more easily maintained across system boundaries.

A single entity approach is a common implementation in an Electronic Document and Records Management System (EDRMS) but some extend beyond this to include limited separate agent and relationship metadata.

Disadvantages include:

- it creates large amounts of repeated and potentially redundant metadata at the item level
- it requires significant simplification of metadata about other entities
- it only documents record-to-record relationships
- it has a limited ability to record and trace changes to other entities.

With this type of single-entity implementation compromises will need to be made particularly with the expression of relationships and the recording of recordkeeping event relationships. Relationships will be primarily limited to relationships between one record and another and only a very limited view of other relationships (particularly recordkeeping events) and agents will be possible. Relationships will often be 'hard wired' to present a 'Creation' (and implicitly ownership) relationship for agents and a 'Control' relationship for business entities.

Recordkeeping event relationships will not be implemented using the 'Relationship Entity' however a simplified rendering of recordkeeping event relationships can be represented in the change history.

Other single-entity implementations

There may be special cases where agencies wish to establish systems that describe single entities other than Record entities, using recordkeeping metadata. For example descriptions of agents in human resource systems, or network logins or business rules in business systems. These systems allow entities to be referenced by other systems that generate recordkeeping metadata. However, compromises will have to be made particularly with the expression of relationships such as managing agents that show changes over time.

Implementations of single-entity systems are possible but not recommended in isolation for recordkeeping purposes as they do not adequately document the context of creation and use of the record, which is the object of interest.

3.2.2 Two-entity implementation

Record and Relationship entity implementation

This option will allow a limited description of recordkeeping event relationships, e.g. when a file contains one or more items, or when one record item supersedes another. Even a two-entity implementation will simplify the representation of recordkeeping metadata, as with the single-entity implementation, but a two-entity implementation does allow for the identification of relationship as a separate entity.

For recordkeeping purposes, the lack of agent information means that all key agent properties still need to be brought within the record entity, as details about agents associated with records is a key part of the contextual information necessary to keep records useable over time.

The two-entity implementation is possible, but not recommended.

Record and Agent entity implementation

This option recognises that many systems, including some Electronic Document and Records Management System (EDRMS), manage records and agents as separate entities, recording separate metadata about each of these entities. This two-entity system still simplifies the representation of recordkeeping metadata and, as with the single-entity implementation, does not regard relationships as a separate entity. The system requires that descriptions of relationships are incorporated in the metadata of other entities and thus stores recordkeeping events within the Record (or Agent) entity.

Recording agents as a separate metadata entity does, however, open the possibility that the agent metadata from another system, such as a personnel system or a network login, can be inherited.

For recordkeeping purposes, the lack of a sophisticated relationship expression between entities means that all key metadata properties will still need to be brought within the Record entity.

The advantages to this two-entity implementation over a one-entity implementation include:

- two-entity systems more accurately reflect the way systems currently work because they allow independent metadata recording for the Agent entity
- two-entity systems enable inheritance of agent information from other systems (e.g. personnel systems, network login).

Disadvantages of two-entity systems include:

- it creates large amounts of repeated, and potentially redundant, metadata at the item level
- it significantly simplifies metadata about other entities, i.e. Business and Mandate
- it has very limited ability to manage relationships between Agent and Record entities; it duplicates Agent information in records as if it were a single entity implementation
- Relationships will often be 'hard wired' to present creation (and implicitly ownership) relationship for agents and a control relationship for business entities.

Recordkeeping event relationships cannot be implemented since the 'Relationship Entity' is not used. However, a simplified rendering of recordkeeping event relationships can be represented in the Change History.

There can be no specific relationship assumed or applied for mandates affecting Record and Agent entities. These will need to be referred to by associational links (related to) that leave the exact nature of the relationship unspecified.

Information about individual people will also need to be documented in change history. This will be minimal, and no indication of changes to role over time will be possible.

Other two-entity implementations

There may be special cases where agencies may need to establish systems to describe entities other than Record with Relationship or Record with Agent, using recordkeeping metadata. For example, human resource systems or network logins may be able to keep Agent metadata which can be used or referenced by other systems that generate recordkeeping metadata as part of a wider multiple-entity implementation. Incorporation of relationship allows entities to be managed showing changes over time.

Two-entity implementations are possible, but not recommended for recordkeeping purposes.

3.2.3 Three-entity implementation

Record, Agent and Relationship entity implementation

The three-entity implementation Record, Agent and Relationship is the minimum recommended best practice implementation supported by the National Archives for any system designed to make and keep records.

Implementing the three entities, Record, Agent and Relationship, changes the way relationships are documented and managed. Rather than bringing some of these properties into the metadata of the Record entity, the Relationship entity points to the particular entities being related and identifies the relationship between them.

The Relationship entity describes the following types of relationships:

- *Provenance relationships* — documenting the ownership (e.g. controlled, controlling), succession (e.g. precedes, succeeds) and associated relationships between records and other entities
- *Recordkeeping event relationships* — representing the recordkeeping business events that are undertaken on records (or other metadata entities that we are managing), for example, changing, registering or sentencing. Recordkeeping event relationships can also be scheduled for the future, providing a way of triggering these events automatically.

The advantages to this three-entity implementation include:

- it reflects the way systems currently work and allows independent recording of the Agent entity

- it enables the inheritance of agent information from other systems (e.g. payroll, network login)
- it eliminates the need to duplicate agent information in the Record entity
- it enables the expression of more complex relationships between Agent and Record entities
- it enables agent entities to be managed and show changes over time (e.g. to role).

Disadvantages include:

- its implementation is more complex than a single-entity or two-entity system
- it requires the use of a defined relationship syntax
- the maintenance of metadata over system boundaries and over time is more difficult
- the expression of other relationships (that include business and mandate) is still limited and needs to be reflected in the Record and/or Agent entities.

Record, Business and Relationship entity implementation

The Record-Business-Relationship three-entity implementation is supported by the National Archives because the Business entity (where the Category is 'Function') is in the Commonwealth Record Series system which the National Archives uses for intellectual control of records.

Implementing three entities in the Record–Business–Relationship configuration changes the way business (including functions, activities and transactions) is documented and managed. Rather than bringing some of the properties for the Business entity into the metadata for Record, the Relationship entity points to the entities being related and identifies what the relationship is.

The advantages to this three-entity implementation include:

- it reflects the way systems currently work and allows independent recording of the Agent entity
- it enables the inheritance of functions when business is transferred between business units or organisations
- it eliminates the need to duplicate business information in the Record entity
- it enables more complex relationships between function and record to be expressed
- it enables business entities to be managed and show changes over time (e.g. to name)
- it is useful for agencies with material that has ongoing or enduring business or historical value to the agency, but is not 'retain as national archives' and therefore will not be transferred to the National Archives.

Disadvantages include:

- its implementation is more complex than a single-entity or two-entity system

- it requires the use of a defined relationship syntax
- it has greater difficulty in maintaining metadata over system boundaries and over time
- the expression of other relationships (that include agent and mandate) is still limited and needs to be reflected in the Records and/or Business entities.

3.2.4 Four-entity implementation

Record, Agent, Business and Relationship entity implementation

Implementing these four entities expands on the previous configuration to allow additional descriptions of:

- recordkeeping acts, actions, decisions, communications or the component parts of recordkeeping processes
- business activities performed by organisations and people responsible for recordkeeping functions
- major units of mandated activity performed by organisations or people in pursuance of recordkeeping purposes
- broader societal purposes of recordkeeping functions.

The advantages to this four-entity implementation include:

- it enables the inheritance of business information from other systems (e.g. enterprise management systems, etc.)
- it enables the expression of more complex relationships
- it enables organisational activities to be managed and show changes over time.

Disadvantages include:

- its implementation is more complex than a single-entity, two-entity or three-entity system
- it requires the use of a defined relationship syntax
- it has greater difficulty in maintaining metadata over system boundaries and over time
- the expression of mandates is still limited and will need to be reflected in the records and/or agent entities.

Record, Agent, Mandate and Relationship entity implementation

Implementing four entities in this configuration is possible, but not recommended.

Such an implementation allows descriptions of:

- recordkeeping acts, actions, decisions, communications or the component parts of recordkeeping processes
- mandates governing organisations or people in pursuance of recordkeeping purposes

- broader societal purposes of recordkeeping functions.

The advantages to this particular four-entity implementation include:

- it enables the inheritance of mandates from other systems (e.g. enterprise management systems, etc.)
- it enables the expression of more complex relationships
- it enables organisational business and mandate activities to be managed showing changes over time.

Disadvantages include:

- it is a more complex implementation than a single-entity, two-entity or three-entity system
- it requires the use of a defined relationship syntax
- it has greater difficulty in maintaining metadata over system boundaries and over time
- it allows only limited descriptions of business rules
- the expression of business is still limited and will need to be reflected in the records and/or agent entities.

3.2.5 Full implementation

A five-entity implementation is considered best practice and is recommended by the standard.

Implementing five entities (Record, Agent, Business, Mandate and Relationship) expands on the previous configuration to allow descriptions of legislation, regulations, policies, business rules, requirements, standards and system specifications that dictate why a record exists and must be kept.

The advantages of the full five-entity implementation include:

- it incorporates business and mandate information
- it enables the expression of more complex relationships
- it enables business and mandates to be managed and show changes over time.

Disadvantages include:

- its implementation is more complex than a single-entity, two-entity, three-entity or four-entity system
- it requires the use of a defined relationship syntax
- it has greater difficulty in maintaining metadata over system boundaries and over time.

3.3 Options to extend the metadata schema

The AGRkMS is an extensible standard. This means that users with different or more specific metadata needs may add extra properties and encoding schemes to meet their requirements. However, when extending the AGRkMS metadata set with additional properties the new set must be compliant with AGRkMS and the added metadata must also be valid as AGRkMS metadata.

Applying the following principles can meet this aim:

- any existing AGRkMS properties used in a new metadata set must retain the same semantics as those defined in the standard
- mandatory properties in AGRkMS, or conditional properties where the trigger conditions are met, must remain mandatory in the new set
- the semantics of any properties added in the new metadata set must be consistent with the semantics of existing properties, including any new sub-properties of existing properties.

In addition, extensions should use:

- Vocabulary Encoding Schemes for any new properties whose content is to be drawn from a controlled list of values; and/or
- Syntax Encoding Schemes for new properties following a formal notation or an externally defined standard.

Wherever possible, your organisation should define the encoding schemes that control the terms to be used for a specific property or sub-property. Encoding schemes will enable the user to select a value from a predefined list with a limited choice. Such lists may be drop-down lists or pick-lists. By creating a pre-defined list, your organisation controls the terms used in the metadata property, ensures consistency in spelling, and enforces the rules applied to the terms (e.g. the use of full names instead of abbreviations).

Pick-lists and drop-down menus can enforce rules that enable only one value to be selected. Care should be taken in implementing this rule, as sometimes multiple values are appropriate for a property (e.g. where a number of topics or subjects are contained in one document). Multiple values for a property or sub property may only be selected by a user where the property is repeatable.

Encoding schemes are one of the mechanisms used to ensure that only minimal metadata needs to be manually attributed. In some implementations, often only the name of the document is required to be entered by the user – no more onerous than giving a file name to a word processing document or a subject to an email. The free-text Description property can be offered as an option where additional information about the resource is desirable.

3.4 Forms of physical implementation

The standard provides agencies with a logical data model to implement recordkeeping metadata which is based on the conceptual model presented in AS ISO 23081. However, the

National Archives does not specify the physical form of implementation that agencies or systems developers should adopt.

The metadata schema can be implemented using XML-based, relational, or object-oriented technologies. The National Archives has also developed XML schemas to assist Australian Government agencies in their technical implementations of AGRkMS.

3.5 Automatic metadata application

Many metadata properties can be filled with a value automatically. Examples include:

- identifiers based on automated system allocation
- dates based on system clocks
- agent contact details based on user login information or integrated human resources systems
- rights information based on default agency policy
- format based on system configuration and file types.

In addition, some metadata properties can be semi-automated using pick lists of keywords, jurisdictions and security classifications.

3.6 Mapping to determine gaps in existing systems

If your agency has legacy recordkeeping systems that are based on older metadata standards, you will need to map the metadata generated by legacy systems to your new metadata model based on the standard.

By mapping properties of different metadata standards, or from earlier to newer versions of standards, properties which have the same or a similar meaning can be correlated. Mapping also allows your organisation to identify the gaps in your current system and how you will need to update it to include new properties created in the standard.

It is also important that your agency maps data types and formats between systems, standards and versions of standards. For example some older systems may record dates as text strings or non-ISO standard formats.

Appendixes A and B in the AGRkMS provide tables that will assist your organisation to map metadata to Version 2 of the standard.

4. MAINTAINING METADATA

Having decided on your metadata implementation strategy, configured your systems and processes, and begun to create and capture metadata, what needs to be considered now? The foregoing steps are not the end of managing metadata in sustainable and appropriate ways.

Your agency needs to consider how the metadata will be maintained and what needs to be done to ensure that the metadata lasts as long as the record or, in some cases, even longer.

This section looks at:

- how to ensure a high quality system
- how to document the system
- how to manage the risks
- how to store the data
- keeping metadata and making it accessible.

4.1 Metadata quality

Quality of metadata is fundamental to the unique identification, authentication, persistence and administration of records. High quality metadata will ensure that records are easily discovered and accessed by authorised users and that unauthorised access to records is restricted as required.

Your organisation must establish a quality assurance process so that it can monitor the creation of manual (free text) or semi-automatic metadata (pick lists) by end users.

The most common criteria for determining metadata quality are completeness, accuracy, provenance, conformance to expectations, logical consistency and coherence, timeliness and accessibility.⁷

- *Completeness* covers the expectation that all mandatory and, where applicable, conditional properties are used.
- *Accuracy* implies that metadata values reflect the nature and content of the record and are not merely default values.
- *Provenance* is, to some extent, administrative in nature and relies on policies and processes of the record custodian to ensure metadata is meaningful.
- *Conformance to expectations* implies that metadata should
 - contain information that users and custodians of records would reasonably expect to find without being superfluous

⁷ Thomas R. Bruce and Diane I. Hillmann, The continuum of metadata quality: Defining, expressing, exploiting. In D. I. Hillmann and E.L. Westbrooks (Eds.), *Metadata in practice* (pp. 238-256). ALA Editions, Chicago, 2004.

- meet statutory requirements.
- *Logical consistency and coherence* may be determined by random spot checks of item descriptions.
- *Timeliness* can be determined by the currency of metadata in relation to actions performed on a record. Lack of currency may be an indicator of technical problems with metadata maintenance as well as the content of metadata.
- *Accessibility* covers several issues. Firstly, metadata physically separated from the record and object may still be accessible to users even if the record is not. Alternatively, the metadata may be inaccessible due to technical barriers, for example it may be unreadable because it is in unusual, obsolete or proprietary file formats.

Table 1 provides an example of a check list as a way to monitor quality and compliance.

Table 1 Example checklist for compliance and quality⁸

Measure	Obligation	Purpose	Met? Y/N	Comments
<p><i>Identify each property and sub-property in line with organisational implementation decisions.</i></p> <p><i>Must include all mandatory properties, and conditional properties where applicable, from the Standard.</i></p>	<p><i>In general, this should reflect the obligations in the Standard.</i></p> <p><i>However, an agency may wish to make some optional metadata mandatory based on the nature and business purpose of the record.</i></p>	<p><i>Include a succinct explanation of the purpose of the property or sub-property.</i></p>	<p><i>Indicate whether the metadata requirement is met.</i></p>	<p><i>Indicate how the metadata requirement is met, or if not met, potential approaches to change this.</i></p>
Compliance measure 2				
Compliance measure 3				

4.2 Implementation documentation

Configuring systems involves making implementation-specific judgments about how individual metadata properties and sub-properties will be identified, which defaults will be used, which templates and behaviours will be associated with records, and the sources of automatically generated metadata.

⁸ After *Queensland Recordkeeping Metadata Standard and Guideline*, Queensland State Archives, February 2008.

Agencies should record all these decisions in formal configuration documentation. The requirement to document decisions should be the responsibility of records managers, product vendors, or any consultants or in-house ICT staff associated with the project.

Over time, as systems are upgraded or the original configuration is changed, this documentation will be crucial to understand the rationale behind the properties in use. Agencies should also document any changes to the configuration of the whole system over time.

4.3 Risk management

Agencies should set up an information management framework to identify the risks and consequences of not managing records effectively.

It is essential that records:

- can be proven to be genuine
- are accurate and can be trusted
- are complete and unaltered
- are secure from unauthorised access, alteration and deletion
- can be found when needed
- are related to other relevant records.

In particular, attention should be given to records supporting high-risk functions including those that:

- receive a high level of public and media scrutiny
- instigate or are subject to litigation
- allocate or spend large amounts of money
- relate to issues of national security
- relate to business functions that are outsourced
- relate to the health and welfare of citizens or staff
- relate to employment conditions of staff.

High-risk functions may require more detailed documentation and more rigorous records management. Questions to ask include:

- What is the value of the records and metadata to the business? Do the records have long term business value?
- What are the types of records that will be created in the system and what is their format? How will they remain readable into the future?

- What is the archival value of the records? Will they need to be retained as national archives?
- What is the historical value of the records? Do records that are not national archives have enduring value to other stakeholders?

4.4 Storing metadata

Some formats used for records permit the storing of metadata internally within the object itself (embedded). Separate storing of metadata in a database has some advantages for record formats that do not support embedded metadata, but it has the disadvantage of not being directly connected to the records themselves. Hence, the separate storing of metadata requires ongoing maintenance of accurate links from the database to the records.

4.4.1 Persistence of links

Links between resources can be made by referencing unique identifiers. Identifiers and links (e.g. to related resources) will only work for resources being described with a persistent, stable identifier. Systems that dynamically generate resources with a different identifier each time, or with identifiers that are likely to change with future machinery of government changes (for example Uniform Resource Identifiers (URI) incorporating the acronym of a department or state) cannot support the deployment of metadata as recommended in the Australian Government Recordkeeping Metadata Standard (AGRkMS) and thus should not be used by agencies implementing AGRkMS.

4.4.2 Embedding versus linking metadata

As noted above, some formats used for records allow custom metadata to be embedded within the object. For example, Adobe Extensible Metadata Platform (XMP) allows custom metadata to be embedded in objects in formats such as JPEG, JPEG 2000, GIF, PNG, HTML, TIFF, PSD, PostScript, and Encapsulated PostScript without affecting the readability of the documents.

Note that the Integrity Check property (Record entity) should be avoided for records with embedded recordkeeping metadata. The purpose of the Integrity Check property is to determine whether a record has been changed. However, the act of embedding or changing a cryptographic hash will change the record itself, hence an integrity check will fail. Integrity checks are only required for digital records transferred between systems, including transfer of records to the National Archives. Integrity Check metadata should be separate from the record itself.

Other forms of embedded document metadata should be avoided for recordkeeping as they are generally proprietary and dependent on specific software applications and versions in order to be created, edited or viewed.

4.5 Keeping metadata and making it accessible

Metadata is a 'control record'. Control records are the records created and maintained in order to help identify, locate, retrieve and use (understand) other records. Agency control records

include such registry tools as record registers, movement registers, subject indexes, and name indexes. Control records are essential for the ongoing use of records over time and across different domains, and must be retained permanently.

Agencies must designate control records for agency recordkeeping systems (both paper and electronic), including the mandatory metadata properties in AGRkMS⁹ and business rules for using agency specific metadata¹⁰, as 'permanent' and add a disposal sentence of 'retain as national archives', even when the record the metadata describes is sentenced for destruction.

As metadata is a control record and must be retained indefinitely, future accessibility relies on metadata being stored in open formats. These are formats that are able to be easily accessed over time by future users, and which are not dependent on proprietary systems to be retrieved and viewed.

Open, text-based formats such as Extensible Markup Language (XML) are recommended for implementing metadata systems in agencies.

Business information systems and electronic records management systems should be able to export metadata in open formats.

⁹ Administrative Functions Disposal Authority class 1490.

¹⁰ Administrative Functions Disposal Authority class 1495.

5. WORKING WITH ENTITIES

In this section we discuss the five entities that are included in AGRkMS and the various high-level relationships that exist between these entities in the recordkeeping metadata system. We also discuss the important concepts of categorisation, aggregation and inheritance that influence how the entities are described using properties.

Each entity is covered in detail, including:

- a discussion of the purpose of the entity and the reasons for its inclusion
- a diagram showing the layers of aggregation as represented by the entity categories
- a summary of the properties and sub-properties applicable to the entity
- examples of metadata records at different layers of aggregation.

We provide several examples of metadata for each entity and include values for all mandatory and, where the conditions are met, conditional properties and sub-properties. Where properties and sub-properties are not applicable to the level of aggregation in the example they are not included. Values for optional properties and sub-properties are not always included in these examples.

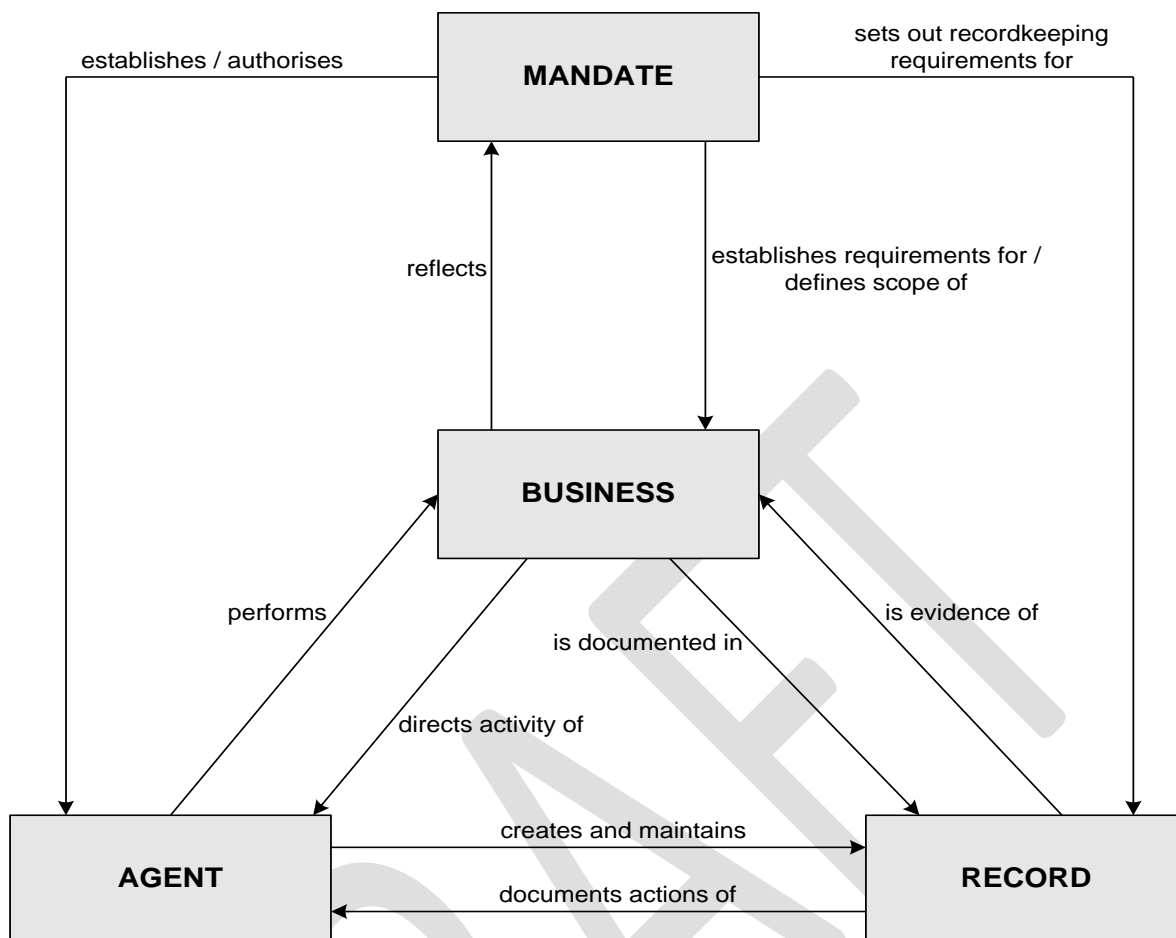
5.1 Introducing entities

Entities are objects or concepts that are of interest in a particular business environment. Entities, whether physical or conceptual, can be described and represented using metadata.

For AGRkMS, five relevant entities have been derived from AS ISO 23081 *Information and documentation — Managing metadata for records*. These entities are:

- Records (the documentary evidence created as a result of doing business)
- Agents (the people and structures associated with undertaking the business)
- Business (the functions and activities of an organisation)
- Mandates (the business rules, policies and mandates that govern business and provide the authority for agents and records)
- Relationships (the linkages between the entities and within the entities).

The generic business entity model shown in Figure 3 depicts the high-level relationships between these five entities which have been selected for their applicability not only to recordkeeping but also to broader business.

Figure 3 High-level relationships between entities in a generic business entity model

Note: The high-level relationships, shown by the lines between the entities, should be read in the direction of the arrows.

Each entity shown in the model shown in Figure 3 can be described using selected metadata properties available in the standard (26 properties in total). These properties are described in detail in Section 6 and an overview is provided in Table 7 of that section.

Not all properties in the standard are applicable to all entities. There are five properties that are applicable to all entities. These are:

- Category
- Identifier
- Name
- Date Range
- Description.

In addition, for multiple-entity implementations (see sections 2.5 and 3.2) the special property Entity Type must also be used to specify which type of entity is being described in a metadata record.

5.2 Entity combinations supported by the standard

The standard recommends that agencies implement the full five-entity model but recognises that some agencies may not currently be in a position to put this in place. Because the standard itself is not specific about which other combinations of entities agencies might consider implementing we present all five implementation models that agencies can use. We consider the three-entity model of Record, Relationship and Agent the core implementation for agencies and vendors wishing to comply with the standard.

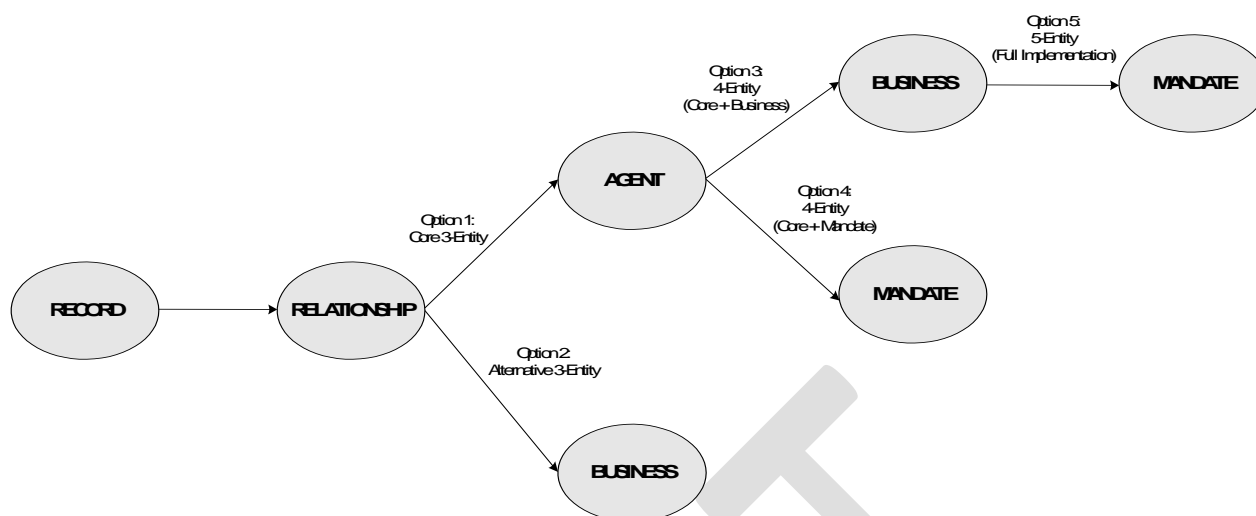
Agencies are of course able to select entities from the standard for use in specific business system implementations. However, for implementations of business systems designed to make and keep records, including electronic document and records management systems (EDRMS), the National Archives recommends that a combination of the Record, Relationship and Agent entities as the minimum best-practice implementation (see also Section 3.2.3).

This combination is the minimum required to usefully describe records and their contexts of creation and management over time. This is consistent with the key principles of the series system approach to record description.

Nevertheless, the National Archives supports five different entity combinations for implementation. Each of these are discussed in more detail in Section 3.2 of these guidelines. The supported implementation options are:

- Record — Relationship — Agent (minimum recommended best practice)
- Record — Relationship — Business
- Record — Relationship — Agent — Business
- Record — Relationship — Agent — Mandate
- Record — Relationship — Agent — Business — Mandate (full implementation).

Figure 4 shows these five supported options in a diagram. The second option is included because it is explicitly allowed under the Commonwealth Record Series system, with the Business category being 'Function'. However, we recognise that many agencies will not find this combination immediately useful. It is perhaps of more use to agencies that are actively managing their own archival material, rather than transferring it to the custody of the National Archives (agencies that have entered into s.64 agreements with the National Archives).

Figure 4 The five-entity implementation options supported by the standard

5.3 Understanding the concepts¹¹

Before moving onto a discussion of each individual entity, let's first look at some important concepts you need to understand when working with entities: categorisation, aggregation and inheritance.

5.3.1 Categorisation

All five entities in the standard include a mandatory property called Category. This important property is used to identify in which pre-defined class or category an entity can be classified. Put another way, the Category property represents the layers of aggregation within an entity. These levels of aggregation may be based on a hierarchy, or on an organisational, functional or permissions-based grouping. For example, levels of Agent aggregation can include a workgroup, section, department or organisation and levels of Record aggregation include a transaction sequence, file or series. The concept of aggregation, and its influence on how metadata is assigned to entity instances, is further discussed in Section 5.3.2.

Each entity comprises two or more classes or categories that are mutually exclusive. This means that an entity can only fall into one category, a rule enforced by the Category property being non-repeatable (see Section 6.3). The categories adopted in the standard are taken from AS ISO 23081-2:2009 *Information and Documentation — Managing Metadata for Records — Part 2: Conceptual and Implementation Issues*. Fixed vocabulary encoding schemes containing values and definitions for the Category property for each entity are included in Appendix D2 of the AGRkMS. Diagrams showing the categories for each entity are included with the descriptions of the individual entities in sections 5.4 to 5.8.

¹¹ Much of Section 5.3 is taken, with permission, from Archives New Zealand, *Implementing Recordkeeping Metadata in EDRMS: Tailoring the Technical Specifications for the Electronic Recordkeeping Metadata Standard for use in an Organisational Environment*, 2009: <http://continuum.archives.govt.nz/G14.html>

It is also important to understand that some properties and sub-properties only apply when an entity belongs to a specific Category. For example:

- the Contact property is applicable to all Agent categories except that of 'Mechanism'
- the Position property is only applicable to the Category 'Person' of the Agent entity
- the Disposal property is applicable to most categories of the Record entity, with the exception of the Category aggregations 'Archive' and 'Archives'.

Information about when the individual properties and sub-properties apply for each of the entity properties is included in Section 2 of the AGRkMS (in the 'Conditions of Use' and 'Applicability' fields of technical descriptions of the respective properties).

5.3.2 Aggregation

The concept of aggregation is closely related to that of categorisation. Aggregation is about the total collection of the different classes or categories, and how these are related to one another (levels of aggregation). Records and other entities involved in recordkeeping can have various levels of aggregation, as represented by the categories. They are grouped together into layers that help us to manage recordkeeping relationships.

Sometimes the levels of aggregation are hierarchical; for example, the Category property for the Record entity includes 'Series', 'File' and 'Item' as options. Hierarchical aggregation means that the categories are arranged in a hierarchy, where Series contain Files, and Files contain Items such as individual documents or objects.

There are also other types of aggregation. For example:

- the Agent entity includes a category 'Work Group', which may be based on either a hierarchical, organisational, functional or permissions-based aggregation
- the Mandate entity includes categories that capture aggregation reflecting the authority and purpose of the Mandate.

The use of categories enables the application and management of metadata about entities, including relationships, at different layers of aggregation. Exactly how an agency implements aggregations will be the result of decisions taken at the time of system configuration. For example, record aggregations can be set up so that they are visible to the users of a system. In such cases users will typically be able to place individual documents or groups of linked documents into a container which may be represented as a file, folder or directory. At other times, aggregations are applied only in the metadata, and are invisible to users as they go about their day-to-day work.

It is worth noting that while fixed layers of aggregation for the entities have been defined in the various Category type schemes, this does not restrict your agency to those categories only. You may add further layers of aggregation as required by the business of your agency.

However, one of the major drivers for standardised recordkeeping metadata is the ability to enhance interoperability. To achieve that, a common vocabulary for aggregations is needed so that if one agency inherits another's metadata (for example, following machinery of government changes) it is able to slot that metadata into its system(s) with the functionality appropriate to the aggregation. For this purpose a baseline consistency is needed.

Even where agencies have introduced their own customised layers of aggregation, these should be mapped to the predefined layers of aggregation as outlined in the Category encoding schemes in the AGRkMS. In order to manage recordkeeping metadata, it is necessary to know what an implementation defines as equivalent to the fixed layers of aggregation defined in the Category type schemes. This is because, as shown in later sections, specific metadata will be assigned to each of these layers.

5.3.3 Inheritance

Inheritance is about an entity (for example, a person or a document) taking on a characteristic or behaviour of a group by virtue of it being a member of that group. Categories are often used to enable an entity to inherit the characteristics, behaviours or actions of a higher level of a hierarchical aggregation. With Agent entities, for example, a security, business or recordkeeping permission can be applied at a work group level, and then be inherited by all individual persons within the work group.

Working in the opposite direction, it is also possible to configure the security classification of a file to be upgraded when a document or other item of a higher level of classification is placed on that file.

Typically, the types of assigned values that are inherited by lower levels of aggregation are related to creation/ownership, security, rights and permissions, and disposal. Several examples of inheritance are included in the following sections on the individual entities.

5.4 The Record entity

5.4.1 Discussion

The Record entity is central to what we are trying to achieve with a standard for recordkeeping metadata.

The Record entity is used to describe individual record objects (whether physical or virtual), aggregations of records (whether physical or conceptual), and also the metadata itself (metadata about metadata).

Figure 5 gives an overview of the Category type schemes (see also AGRkMS, Appendix D 2.1, page 86) used to classify a Record entity. The diagram shows that the categories are mutually exclusive, in that any single entity can only belong to one category. It also shows that the categories or levels of aggregation are hierarchical (as discussed in Section 5.3). For example, an 'Archive' contains 'Series', 'Series' contain 'Files', and may contain 'Transaction Sequences' or 'Items'; 'Files' contain 'Items', and may contain 'Transaction Sequences'; and 'Transaction Sequences' contain 'Items'. It is important to keep the concept of hierarchy in mind as you work with the entities.

Figure 5 Record entity categories

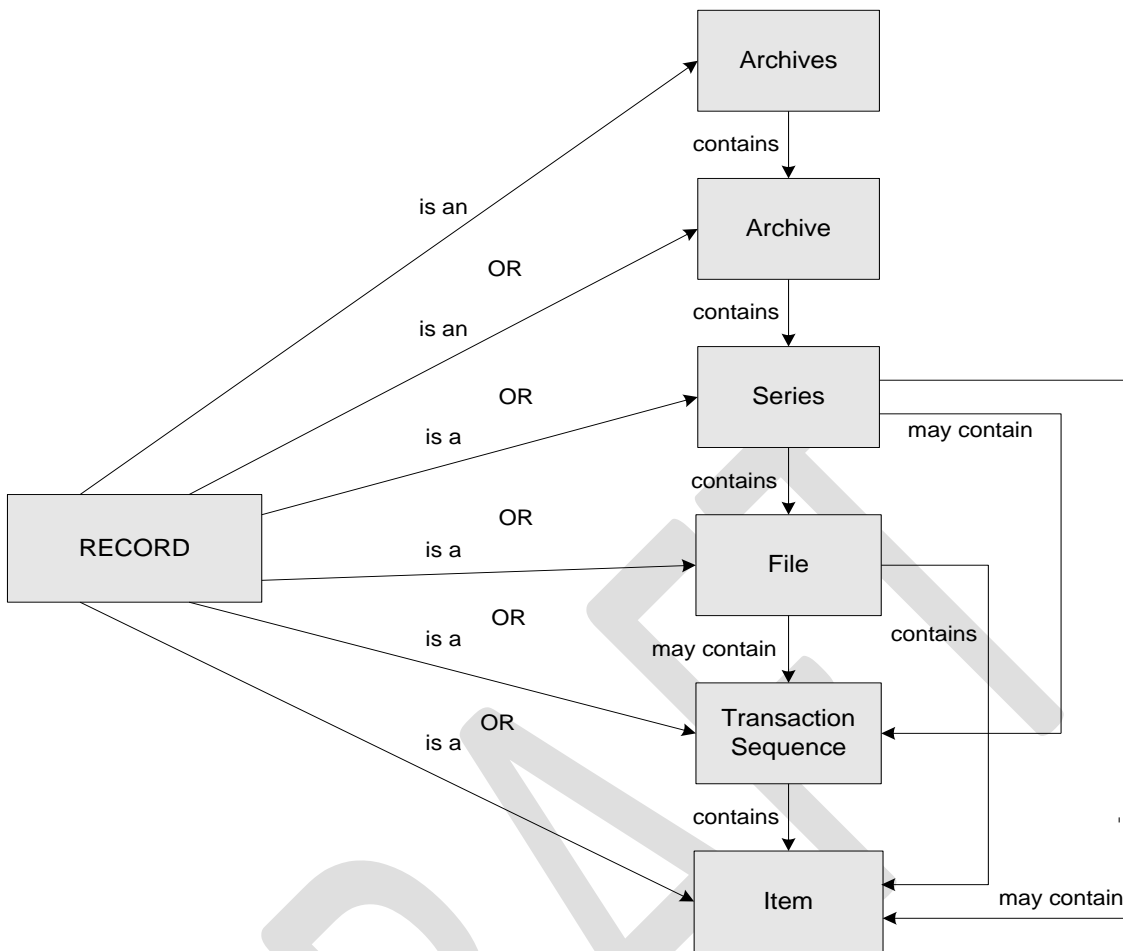


Table 2 gives a summary overview of the properties and sub-properties applicable to the Record entity. It lists their obligation status, repeatability status and provides cross-references to the AGRkMS detailed discussion and, when relevant, the applicable encoding scheme.

Note that at the lowest level of aggregation for this entity, you are often defining an actual physical or virtual object. This is one reason why the Record entity contains many more properties than the others.

Table 2 Record entity properties and sub-properties

Properties				Sub-properties				AGRkMS	
No	Property	Obligation	Repeat	No	Sub-property	Obligation	Repeat	Details	Encoding scheme
1	Category Archives Archive Series File Transaction Sequence Item	Mandatory	No					p 24	p 86
2	Identifier	Mandatory	Yes	2.1	Identifier String	Mandatory	No	p 25	
				2.1	Identifier Scheme	Conditional	No	p 26	p 89
3	Name	Mandatory	Yes	3.1	Name Words	Mandatory	No	p 27	

Properties				Sub-properties				AGRkMS	
No	Property	Obligation	Repeat	No	Sub-property	Obligation	Repeat	Details	Encoding scheme
				3.2	Name Scheme	Conditional	No	p 27	
4	Date Range	Mandatory	No	4.1	Start Date	Mandatory	No	p 28	p 95
				4.2	End Date	Conditional	No	p 29	p 95
5	Description	Optional	Yes					p 29	
8	Jurisdiction	Optional	Yes					p 35	p 96
9	Security Classification	Conditional	Yes					p 36	p 97
10	Security Caveat	Conditional	Yes	10.1	Caveat Text	Mandatory	No	p 37	
				10.2	Caveat Category	Conditional	No	p 38	p 98
12	Rights	Conditional	Yes	12.1	Rights Statement	Mandatory	Yes	p 41	
				12.2	Rights Type	Mandatory	No	p 42	p 100
				12.3	Rights Status	Conditional	No	p 43	p 101
15	Language	Conditional	Yes					p 45	p 102
16	Coverage	Optional	Yes	16.1	Jurisdictional Coverage	Optional	Yes	p 46	p 96
				16.2	Temporal Coverage	Optional	Yes	p 46	
				16.3	Spatial Coverage	Optional	Yes	p 47	p 102
17	Keyword	Conditional	Yes	17.1	Keyword Term	Mandatory	No	p 48	
				17.2	Keyword ID	Optional	No	p 49	p 103
				17.3	Keyword Scheme	Conditional	No	p 50	p 103
				17.4	Keyword Scheme Type	Conditional	No	p 50	
18	Disposal	Mandatory	Yes/No	18.1	Records Authority	Mandatory	No	p 52	
				18.2	Disposal Class ID	Conditional	No	p 52	
				18.3	Disposal Action	Conditional	No	p 53	
				18.4	Disposal Trigger Date	Conditional	Yes	p 54	
				18.5	Disposal Action Due	Conditional	Yes	p 56	
19	Format	Conditional	No	19.1	Format Name	Conditional	No	p 58	
				19.2	Format Version	Conditional	No	p 58	
				19.3	Creating Application Name	Conditional	No	p 59	
				19.4	Creating Application Version	Conditional	No	p 60	
				19.5	Format Registry	Conditional	No	p 60	
20	Extent	Mandatory	Yes	20.1	Physical Dimensions	Conditional	No	p 61	
				20.2	Logical Size	Conditional	No	p 61	
				20.3	Quantity	Conditional	No	p 62	
				20.4	Units	Mandatory	No	p 62	p 104
21	Medium	Conditional	No					p 63	
22	Integrity Check	Conditional	No	22.1	Hash Function Name	Mandatory	No	p 64	p 104
				22.2	Message Digest	Mandatory	No	p 65	
23	Location	Conditional	Yes/No					p 65	
24	Document Form	Optional	No					p 66	p 105
25	Precedence	Optional	No					p 67	p 107

5.4.2 Examples of Record entity metadata

Example 1 Record entity with Category 'File' — a digital container

Property / Sub-property	Value
1. Category	File
2. Identifier	
2.1 Identifier String	L680661
2.2 Identifier Scheme	CRS
3. Name	
3.1 Name Words	Exploration for Petroleum on the Australian Continental Shelf: licence by Acme Oil Company Limited
3.2 Name Scheme	-
4. Date Range	
4.1 Start Date	2006-03-01
4.2 End Date	2006-07-25
5. Description	Correspondence, application and supporting documents pertaining to the application of a resources exploration licence.
8. Jurisdiction	AU
9. Security Classification	COMMERCIAL-IN-CONFIDENCE
10. Security Caveat	
10.1 Caveat Text	-
10.2 Caveat Category	-
12. Rights	
12.1 Rights Statement	All rights, including copyright, in the content of charts and maps in supporting documents are owned or controlled by the applicant.
12.2 Rights Type	FOI
12.3 Rights Status	FOI
15. Language	en-AU
16. Coverage	
16.1 Jurisdictional Coverage	AU
16.2 Temporal Coverage	-
16.3 Spatial Coverage	AU-WA
17. Keyword	
17.1 Keyword Term	Resources exploration
17.2 Keyword ID	-
17.3 Keyword Scheme	TAGS
17.4 Keyword Scheme Type	-
18. Disposal	
18.1 Records Authority	Records Authority 9999
18.2 Disposal Class ID	15243
18.3 Disposal Action	D25 after last action
18.4 Disposal Trigger Date	2031-07-28
18.5 Disposal Action Due	-
19. Format	
19.1 Format Name	Portable Document Format
19.2 Format Version	1.2
19.3 Creating Application Name	Adobe Acrobat
19.4 Creating Application Version	3.0
19.5 Format Registry	PRONOM PUID:fmt/101

Property / Sub-property	Value
20. Extent 20.1 Physical Dimensions 20.2 Logical Size 20.3 Quantity 20.4 Units	116 MB
21. Medium	CD-ROM
22. Integrity Check 22.1 Hash Function Name 22.2 Message Digest	MD5 df4af193d311cad95d6dc416db29b1ed
23. Location	Box 3/24/4/6
24. Document Form	Contract
25. Precedence	Routine

Example 2 Record entity with Category 'Item' — a digital document

Property / Sub-property	Value
1. Category	Item
2. Identifier 2.1 Identifier String 2.2 Identifier Scheme	98834xk331 System-assigned
2. Identifier 2.1 Identifier String 2.2 Identifier Scheme	D2010005510 System application document ID
3. Name 3.1 Name Words 3.2 Name Scheme	IMP Section Workplan Jan - Jun 2010 -
4. Date Range 4.1 Start Date 4.2 End Date	2010-01-07T10:09:57+11:00 2010-03-60
5. Description	-
8. Jurisdiction	AU
9. Security Classification	Unclassified
10. Security Caveat 10.1 Caveat Text 10.2 Caveat Category	- -
12. Rights 12.1 Rights Statement 12.2 Rights Type 12.3 Rights Status	-
15. Language	-
16. Coverage 16.1 Jurisdictional Coverage 16.2 Temporal Coverage 16.3 Spatial Coverage	- -
17. Keyword 17.1 Keyword Term 17.2 Keyword ID 17.3 Keyword Scheme 17.4 Keyword Scheme Type	-

Property / Sub-property	Value
18. Disposal	//Inherited from file metadata//
18.1 Records Authority	Administrative Functions Disposal Authority
18.2 Disposal Class ID	2045
18.3 Disposal Action	D5 after plan is superseded
18.4 Disposal Trigger Date	-
18.5 Disposal Action Due	-
19. Format	
19.1 Format Name	
19.2 Format Version	-
19.3 Creating Application Name	-
19.4 Creating Application Version	
19.5 Format Registry	
20. Extent	
20.1 Physical Dimensions	-
20.2 Logical Size	1461
20.3 Quantity	-
20.4 Units	KB
21. Medium	
22. Integrity Check	
22.1 Hash Function Name	-
22.2 Message Digest	-
23. Location	
24. Document Form	Work Plan
25. Precedence	-

Example 3 Record entity with Category 'Series'

Property / Sub-property	Value
1. Category	Series
2. Identifier	
2.1 Identifier String	A11402
2.2 Identifier Scheme	CRS
3. Name	
3.1 Name Words	'INFOCM', change management control system
3.2 Name Scheme	
4. Date Range	
4.1 Start Date	2005-07-01
4.2 End Date	
5. Description	Fault notifications to computer systems registered on 'INFOCM'. The series operates as an electronic change management control system containing a detailed synopsis of amendments. It records a descriptive file title and information about the computer system, the reported fault, required fix and an audit trail of the change.
8. Jurisdiction	AU
9. Security Classification	Unclassified
10. Security Caveat	
10.1 Caveat Text	
10.2 Caveat Category	

Property / Sub-property	Value
12. Rights 12.1 Rights Statement 12.2 Rights Type 12.3 Rights Status	
15. Language	en-AU
16. Coverage 16.1 Jurisdictional Coverage 16.2 Temporal Coverage 16.3 Spatial Coverage	AU 2005-07-01/ AU
17. Keyword 17.1 Keyword Term 17.2 Keyword ID 17.3 Keyword Scheme 17.4 Keyword Scheme Type	Logs KAAA
18. Disposal 18.1 Records Authority 18.2 Disposal Class ID 18.3 Disposal Action 18.4 Disposal Trigger Date 18.5 Disposal Action Due	Administrative Functions Disposal Authority 2099 D7 after last action - -
19. Format 19.1 Format Name 19.2 Format Version 19.3 Creating Application Name 19.4 Creating Application Version 19.5 Format Registry	Extensible Markup Language 1.0 INFOCM 2.1.03 PRONOM PUID:fmt/101
20. Extent 20.1 Physical Dimensions 20.2 Logical Size 20.3 Quantity 20.4 Units	- 1.07 - GB
21. Medium	Hard disk
22. Integrity Check 22.1 Hash Function Name 22.2 Message Digest	
23. Location	server3:/var/log/infocm/
24. Document Form	Log
25. Precedence	Priority

5.5 The Agent entity

5.5.1 Discussion

The Agent entity includes people, organisational groupings or aggregations (individuals, workgroups, departments, etc.) and mechanisms, and the important roles they play in business.

Agents are essential to understanding and managing records because they create, use and perform actions on records as part of their day-to-day business. It is impossible to properly interpret records without understanding the context of their creation and use as represented by the relationships between agents and records.

Agents are not necessarily people or organisational elements. Other agents, including operational equipment such as monitoring instruments, and specialised applications such as accounting systems, can also conduct business or create and/or use records quite independently of a physical person. Figure 6 gives an overview of the Category type schemes (see also AGRkMS, Appendix D2.2, page 87) used to classify an Agent entity.

Figure 6 Agent entity categories

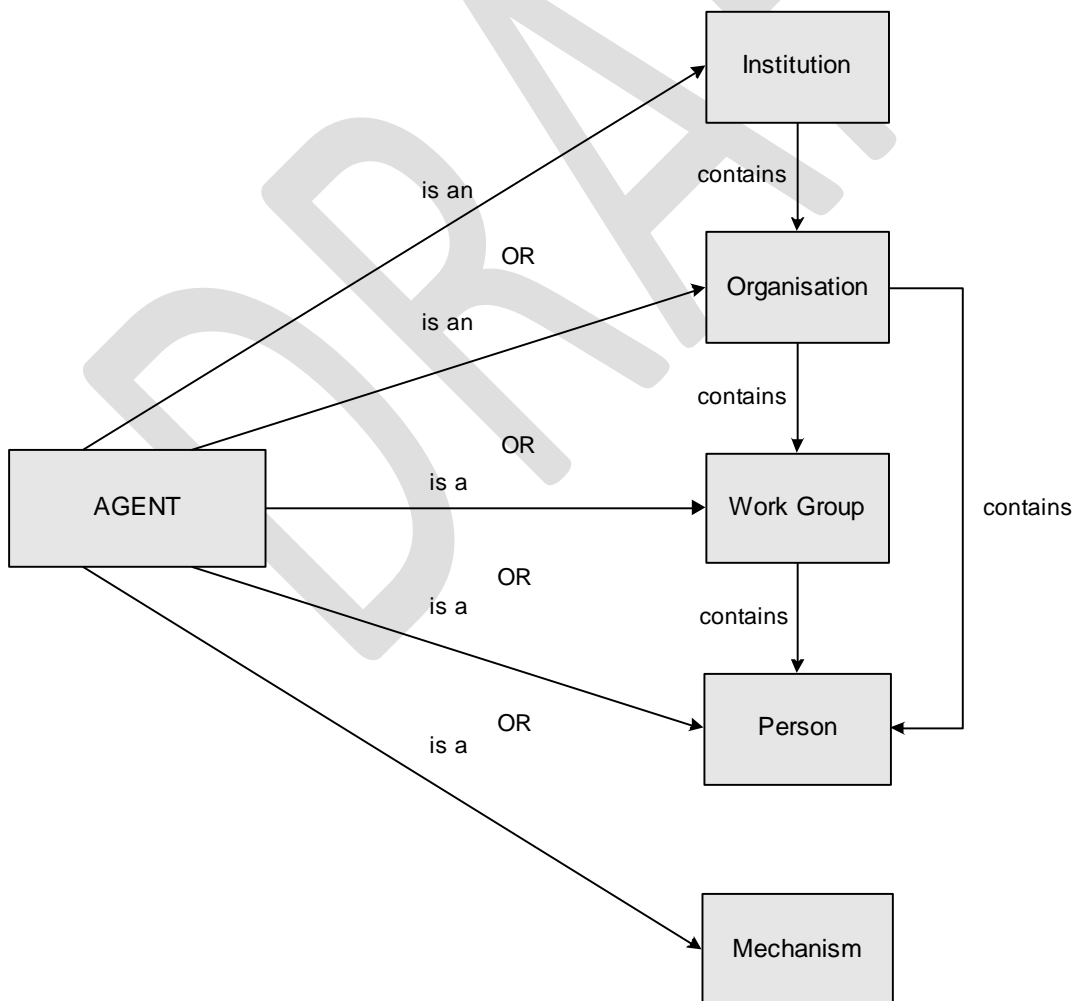


Table 3 lists the properties and sub-properties applicable to the Agent entity. It lists their obligation status, repeatability status and provides cross-references to the AGRkMS detailed discussion and, when relevant, the applicable encoding scheme.

Table 3 Agent entity properties and sub-properties

Properties				Sub-properties				AGRkMS	
No	Property	Obligation	Repeat	No	Sub-property	Obligation	Repeat	Details	Encoding scheme
1	Category Institution Organisation Work Group Person Mechanism	Mandatory	No					p 24	p 87
2	Identifier	Mandatory	Yes	2.1	Identifier String	Mandatory	No	p 25	
				2.1	Identifier Scheme	Conditional	No	p 26	p 89
3	Name	Mandatory	Yes	3.1	Name Words	Mandatory	No	p 27	
				3.2	Name Scheme	Conditional	No	p 27	
4	Date Range	Mandatory	No	4.1	Start Date	Mandatory	No	p 28	p 95
				4.2	End Date	Conditional	No	p 29	p 95
5	Description	Optional	Yes					p 29	
8	Jurisdiction	Optional	Yes					p 35	p 96
11	Permissions	Conditional	Yes	11.1	Permission Text	Mandatory	No	p 40	p 99
				11.2	Permission Type	Mandatory	No	p 40	p 99
13	Contact	Conditional	Yes	13.1	Contact Details	Mandatory	No	p 43	
				13.2	Contact Type	Mandatory	No	p 44	
14	Position	Optional	No					p 44	
15	Language	Optional	Yes					p 45	p 102

5.5.2 Examples of Agent entity metadata

Example 4 Agent entity with Category 'Organisation'

Property / Sub-property	Value
1. Category	Organisation
2. Identifier	
2.1 Identifier String	CA1401
2.2 Identifier Scheme	CRS
3. Name	
3.1 Name Words	Department of the Prime Minister and Cabinet
3.2 Name Scheme	-
4. Date Range	
4.1 Start Date	1971-03-12
4.2 End Date	

Property / Sub-property	Value
5. Description	The Department of the Prime Minister and Cabinet was created on 12 March 1971 by the Executive Council Minute of that date (Commonwealth of Australia Gazette, No 28, 15 March 1971) and took over all of the functions of the Department of the Cabinet Office (CA 1285) which was abolished on that date and most of the functions of Prime Minister's Department (CA 12) which was also abolished on that date.
8. Jurisdiction	AU
13. Contact 13.1 Contact Details 13.2 Contact Type	1 National Circuit, Barton, ACT 2600 Street Address
13. Contact 13.1 Contact Details 13.2 Contact Type	PO Box 6500, Canberra, ACT 2600 Business Address
13. Contact 13.1 Contact Details 13.2 Contact Type	Tel:+61262715111 Telephone
13. Contact 13.1 Contact Details 13.2 Contact Type	http://www.pmc.gov.au Web Address
15. Language	en-AU

Example 5 Agent entity with Category 'Work Group'

Property / Sub-property	Value
1. Category	Work Group
2. Identifier 2.1 Identifier String 2.2 Identifier Scheme	WG1457 BIS-ID
3. Name 3.1 Name Words 3.2 Name Scheme	Risk Management Committee -
4. Date Range 4.1 Start Date 4.2 End Date	2005-10-01
5. Description	A committee established by Chief Executive Officer responsible for ensuring risk management policies, procedures and practices are consistent with best practice.
8. Jurisdiction	AU
11. Permissions 11.1 Permission Text 11.2 Permission Type	- -
13. Contact 13.1 Contact Details 13.2 Contact Type	risk@example.gov.au Email

Property / Sub-property	Value
14. Position	Secretariat
15. Language	en

Example 6 Agent entity with Category 'Person'

Property / Sub-property	Value
1. Category	Person
2. Identifier	
2.1 Identifier String	123-4567
2.2 Identifier Scheme	APS
2. Identifier	
2.1 Identifier String	jans6945
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Jean Smith
3.2 Name Scheme	
4. Date Range	
4.1 Start Date	2009-01-07
4.2 End Date	
5. Description	-
8. Jurisdiction	
11. Permissions	
11.1 Permission Text	CONFIDENTIAL
11.2 Permission Type	PSM
13. Contact	
13.1 Contact Details	mailto:jean.smith@example.gov.au
13.2 Contact Type	Email
13. Contact	
13.1 Contact Details	tel:+61262123456
13.2 Contact Type	Telephone
14. Position	Director, Finance
15. Language	en

Example 7 Agent entity with Category 'Mechanism'

Property / Sub-property	Value
1. Category	Mechanism
2. Identifier	
2.1 Identifier String	MSW134
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Incoming mail digitisation
3.2 Name Scheme	
4. Date Range	
4.1 Start Date	2010-01-01
4.2 End Date	

Property / Sub-property	Value
5. Description	All inward correspondence is digitised unless bearing any form of security or privacy marking.
8. Jurisdiction	AU
11. Permissions 11.1 Permission Text 11.2 Permission Type	- -
13. Contact 13.1 Contact Details 13.2 Contact Type	mailroom@example.gov.au Email
14. Position	Mail Room Manager
15. Language	en

5.6 The Business entity

5.6.1 Discussion

The Business entity is used to express what your agency does in terms of its functions, activities and sequences of transactions.

Describing the actual business within which records are created and used provides further important contextual information.

Use of the Business entity facilitates:

- appropriate management of the records, based on the importance of the business being transacted
- understanding of the records over time.

Figure 7 gives an overview of the Category type schemes (see also AGRkMS, Appendix D2.3) used to classify a Business entity.

The Business entity also has a special link to the Relationship entity, because the information captured under the Business entity Category 'Transaction' is often closely related to that captured under the Relationship entity Category 'Recordkeeping Event'. For example, some of the more generic recordkeeping event relationship Name property values (see Appendix D4.2 of the AGRkMS), such as 'Authorises', 'Changes', or 'Creates', are applicable in a wide range of business activities and will often form the Transaction level of the Business entity.

An example of how the Business and Relationship entities work together is provided in Section 5.8.

Figure 7 Business entity categories

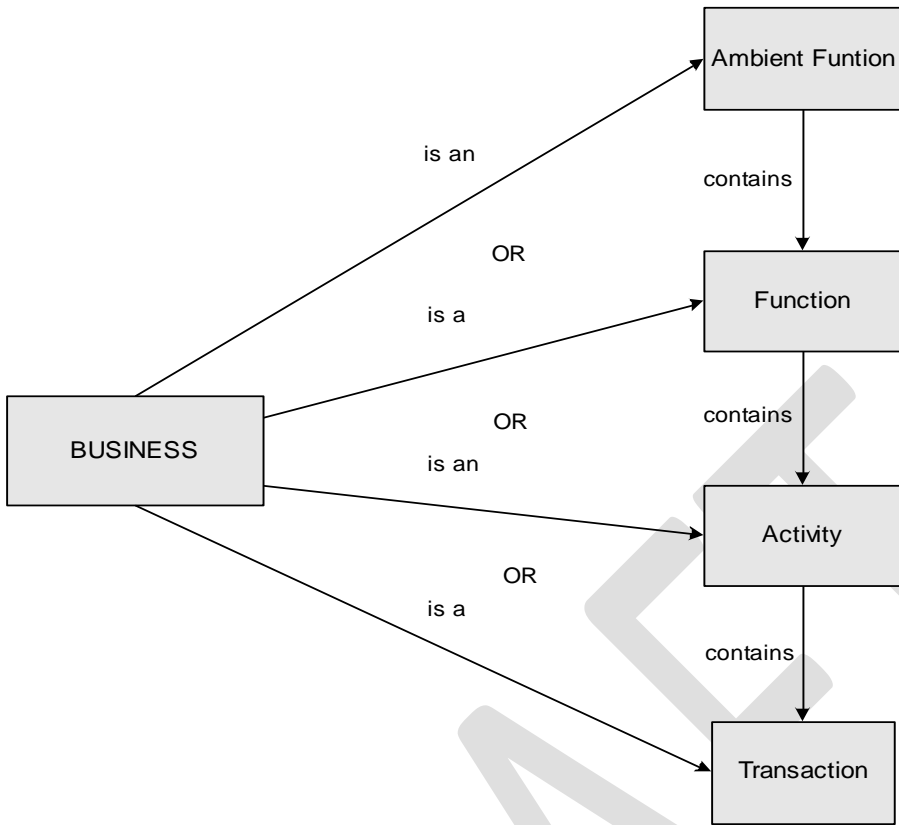


Table 4 lists the properties and sub-properties applicable to the Business entity. It lists their obligation status, repeatability status and provides cross-references to the AGRkMS detailed discussion and, when relevant, the applicable encoding scheme.

Table 4 Business entity properties and sub-properties

Properties				Sub-properties				AGRkMS	
No	Property	Obligation	Repeat	No	Sub-property	Obligation	Repeat	Details	Encoding scheme
1	Category Ambient Function Function Activity Transaction	Mandatory	No					p 24	p 87
2	Identifier	Mandatory	Yes	2.1	Identifier String	Mandatory	No	p 25	
				2.1	Identifier Scheme	Conditional	No	p 26	p 89
3	Name	Mandatory	Yes	3.1	Name Words	Mandatory	No	p 27	
				3.2	Name Scheme	Conditional	No	p 27	
4	Date Range	Mandatory	No	4.1	Start Date	Mandatory	No	p 28	p 95
				4.2	End Date	Conditional	No	p 29	p 95
5	Description	Optional	Yes					p 29	
8	Jurisdiction	Optional	Yes					p 35	p 96
9	Security Classification	Conditional	Yes					p 36	p 97
11	Permissions	Conditional	Yes	11.1	Permission Text	Mandatory	No	p 40	
				11.2	Permission Type	Mandatory	No	p 40	p 99

5.6.2 Examples of Business entity metadata

Example 8 Business entity with Category 'Function'¹²

Property / Sub-property	Value
1. Category	Function
2. Identifier	
2.1 Identifier String	F002
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Compensation
3.2 Name Scheme	AFDA
4. Date Range	
4.1 Start Date	2000-02
4.2 End Date	
5. Description	The function of providing compensation to personnel and visitors while proceeding to or from work, during working hours or on the organisation's premises.
8. Jurisdiction	AU
9. Security Classification	UNCLASSIFIED

¹² A business entity with Category 'Ambient Function' (broader societal purposes such as 'Defence' or 'Trade') would look similar.

Property / Sub-property	Value
11. Permissions	
11.1 Permission Text	-
11.2 Permission Type	-

Example 9 Business entity with Category 'Activity'

Property / Sub-property	Value
1. Category	Activity
2. Identifier	
2.1 Identifier String	A007023
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Insurance
3.2 Name Scheme	AFDA
4. Date Range	
4.1 Start Date	2000-02
4.2 End Date	
5. Description	The process of taking out premiums to cover loss or damage to property or premises, and to cover customers and staff against injury or death resulting from incidence on the organisation's premises or whilst engaged during employment.
8. Jurisdiction	AU
9. Security Classification	UNCLASSIFIED
11. Permissions	
11.1 Permission Text	-
11.2 Permission Type	-

Example 10 Business entity with Category 'Transaction'

Property / Sub-property	Value
1. Category	Transaction
2. Identifier	
2.1 Identifier String	2009/45
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Security alarm response reports 2009
3.2 Name Scheme	
4. Date Range	
4.1 Start Date	2009-01-01
4.2 End Date	2009-12-31
5. Description	Reports by security patrol staff on responses to alarm warnings.
8. Jurisdiction	AU
9. Security Classification	RESTRICTED
11. Permissions	
11.1 Permission Text	RESTRICTED
11.2 Permission Type	Security

5.7 The Mandate entity

5.7.1 Discussion

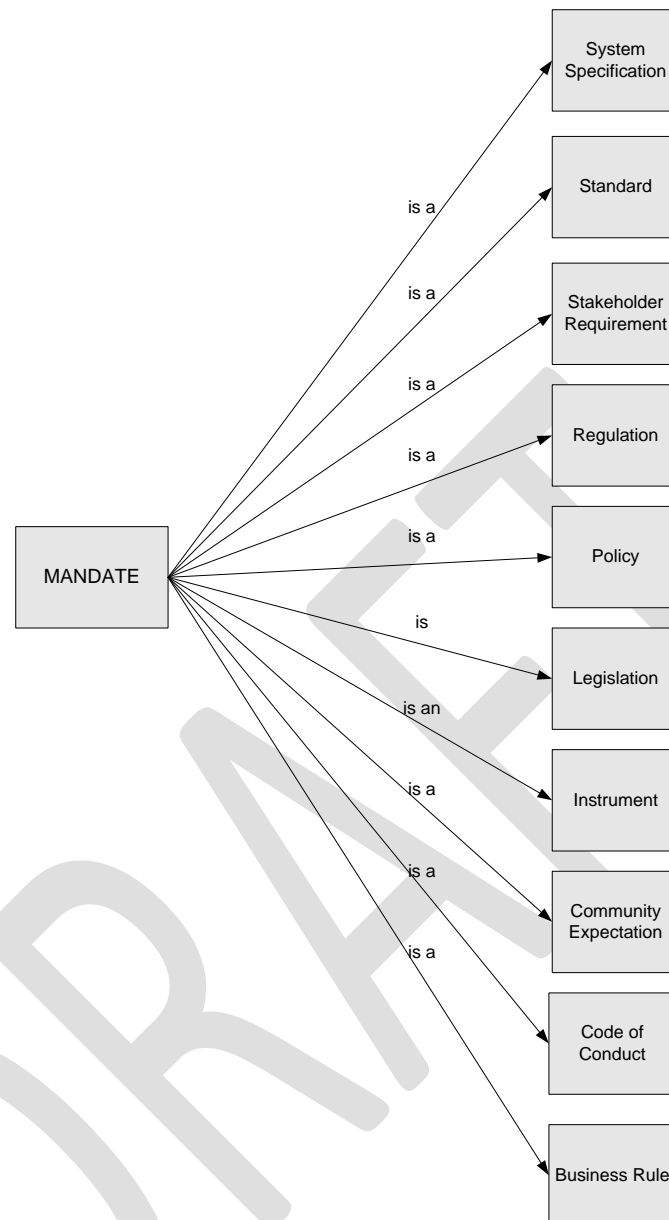
Mandates are an important part of both recordkeeping and broader business because they help us understand why particular records need to be created, and how and why they should be kept.

Mandates include legislation, policies and rules that:

- establish or govern the business of an organisation
- delegate authority to agents
- require and regulate specific records.

It is important to note that mandates are not always laid out formally in, for example, legislation or regulations. Mandates can often be inferred from business rules, community expectations and other less formally or rigorously documented requirements.

Figure 8 gives an overview of the Category type schemes (see also AGRkMS, Appendix D2.4) used to classify a Business entity.

Figure 8 Mandate entity categories

This current Mandate entity Category type scheme is not exhaustive, and further terms will be added to it in subsequent versions of the standard. Agencies can also extend the scheme, provided that any new terms introduced do not have meanings that overlap with, or correspond to, terms already in the scheme.

While mandates have often not been comprehensively documented by agencies in the past it makes sense to do so in the digital environment because links to relevant mandates can be more easily set up and maintained. Describing the mandates relevant to your business up front will assist in the proper and informed management of required business records.

Table 5 lists the properties and sub-properties applicable to the Mandate entity. It lists their obligation status, repeatability status and provides cross-references to the AGRkMS detailed discussion and, when relevant, the applicable encoding scheme.

Table 5 Mandate entity properties and sub-properties

Properties				Sub-properties				AGRkMS	
No	Property	Obligation	Repeat	No	Sub-property	Obligation	Repeat	Details	Encoding scheme
1	Category	Mandatory	No					p 24	p 88
2	Identifier	Mandatory	Yes	2.1	Identifier String	Mandatory	No	p 25	
				2.1	Identifier Scheme	Conditional	No	p 26	p 89
3	Name	Mandatory	Yes	3.1	Name Words	Mandatory	No	p 27	
				3.2	Name Scheme	Conditional	No	p 27	
4	Date Range	Mandatory	No	4.1	Start Date	Mandatory	No	p 28	p 95
				4.2	End Date	Conditional	No	p 29	p 95
5	Description	Optional	Yes					p 29	
8	Jurisdiction	Optional	Yes					p 35	p 96
9	Security Classification	Conditional	Yes					p 36	p 97
10	Security Caveat	Conditional	Yes	10.1	Caveat Text	Mandatory	No	p 37	
				10.2	Caveat Category	Conditional	No	p 38	p 98
16	Coverage	Optional	Yes	16.3	Spatial Coverage	Optional	Yes	p 47	p 102

5.7.2 Examples of Mandate entity metadata

Example 11 Mandate entity with Category 'Legislation'

Property / Sub-property	Value
1. Category	Legislation
2. Identifier 2.1 Identifier String 2.2 Identifier Scheme	C2009C00484 ComLaw
3. Name 3.1 Name Words 3.2 Name Scheme	Archives Act 1983
4. Date Range 4.1 Start Date 4.2 End Date	2009-10-16
5. Description	An Act relating to the preservation and use of archival resources, and for related purposes. Amendments up to Act No. 102 of 2009.
8. Jurisdiction	AU
9. Security Classification	Unclassified
16. Coverage 16.3 Spatial Coverage	AU

Example 12 Mandate entity with Category 'Standard'

Property / Sub-property	Value
1. Category	Standard
2. Identifier 2.1 Identifier String 2.2 Identifier Scheme	AS/ISO 15489
3. Name 3.1 Name Words 3.2 Name Scheme	Information and documentation -- Records management
4. Date Range 4.1 Start Date 4.2 End Date	2001-10-02
5. Description	Provides guidance on managing records of originating organisations, public or private, for internal and external clients.
8. Jurisdiction	AU
9. Security Classification	Unclassified
16. Coverage 16.3 Spatial Coverage	AU

Example 13 Mandate entity with Category 'Stakeholder Requirement'

Property / Sub-property	Value
1. Category	Stakeholder Requirement
2. Identifier 2.1 Identifier String 2.2 Identifier Scheme	SR0103 SysID
3. Name 3.1 Name Words 3.2 Name Scheme	Local government consultation – South Australia – 2008-2010 -
4. Date Range 4.1 Start Date 4.2 End Date	2008-07-01 2010-06-30
5. Description	Half yearly consultation with local government authorities involved in the development of affordable housing or joint ventures.
8. Jurisdiction	AU
9. Security Classification	Unclassified
10. Security Caveat 10.1 Caveat Text 10.2 Caveat Category	- -
16. Coverage 16.3 Spatial Coverage	AU-SA

Example 14 Mandate entity with Category 'Business Rule'

Property / Sub-property	Value
1. Category	Business Rule
2. Identifier 2.1 Identifier String 2.2 Identifier Scheme	BR035 SysID
3. Name 3.1 Name Words 3.2 Name Scheme	Provide draft findings to applicant
4. Date Range 4.1 Start Date 4.2 End Date	2009-03-01
5. Description	Where inconsistencies are detected the Regulator discusses findings of the detailed audit with the applicant and advises of any issues arising. The applicant may be asked to provide additional information.
8. Jurisdiction	AU
9. Security Classification	COMMERCIAL-IN-CONFIDENCE
10. Security Caveat 10.1 Caveat Text 10.2 Caveat Category	- -
16. Coverage 16.3 Spatial Coverage	AU

5.8 The Relationship entity**5.8.1 Discussion**

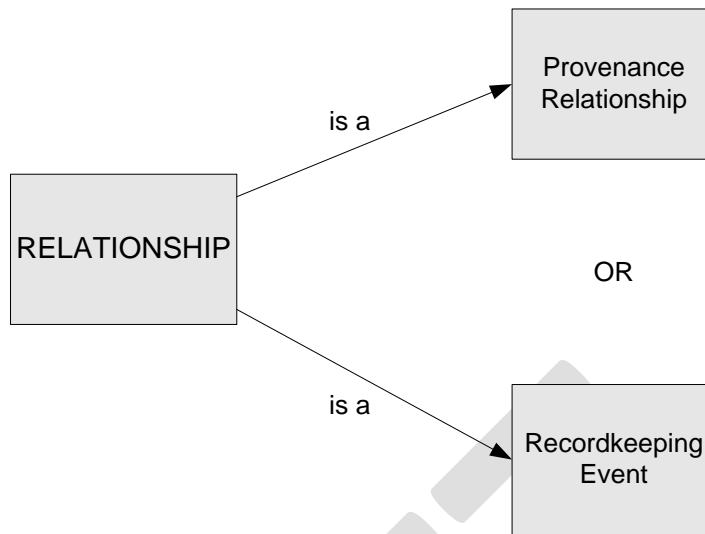
The Relationship entity plays a central and crucial role in the metadata standard.

Relationships document the links between and within entities. In recordkeeping practices to date, relationships have often been implicit and able to be derived by physical placement of documents or the knowledge of location or roles. In the digital world this physicality is removed so we need to make the implicit relationships that have always been there far more explicit to ensure that we interpret and manage digital records appropriately.

The Relationship entity provides the means of linking records to their business context, not only at creation, but also with continued use and management of the records over time.

Figure 9 gives an overview of the Category type schemes (see also AGRkMS, Appendix D2.5) used to classify a Relationship entity.

Figure 9 Relationship entity categories



The two categories of relationships, shown above, are explained further in Section 5.8.3.

Table 6 shows the properties and sub-properties applicable to the Relationship entity. The table lists their obligation status, repeatability status and provides cross-references to the AGRkMS detailed discussion and, when relevant, the applicable encoding scheme.

Table 6 Relationship entity properties and sub-properties

Properties				Sub-properties				AGRkMS	
No	Property	Obligation	Repeat	No	Sub-property	Obligation	Repeat	Details	Encoding scheme
1	Category Provenance Relationship Recordkeeping Event	Mandatory	No					p 24	p 89
2	Identifier	Mandatory	Yes	2.1	Identifier String	Mandatory	No	p 25	
				2.1	Identifier Scheme	Conditional	No	p 26	p 89
3	Name	Mandatory	Yes	3.1	Name Words	Mandatory	No	p 27	
				3.2	Name Scheme	Conditional	No	p 27	p 91, 93
4	Date Range	Mandatory	No	4.1	Start Date	Mandatory	No	p 28	p 95
				4.2	End Date	Conditional	No	p 29	p 95
5	Description	Optional	Yes					p 29	
6	Related Entity	Mandatory	Yes	6.1	Assigned Entity ID	Mandatory	No	p 30	
				6.2	Assigned Entity ID Scheme	Conditional	No	p 31	
				6.3	Relationship Role	Mandatory	No	p 32	p 95
7	Change History	Conditional	Yes	7.1	Property Name	Mandatory	No	p 33	
				7.2	Prior Value	Mandatory	No	p 34	
				7.3	Relationship ID	Conditional	No	p 35	

For each of the two Relationship categories 'Provenance Relationship' and 'Recordkeeping Event' the standard provides a list of applicable Name Scheme values in an encoding scheme (see AGRkMS Appendix D4.1 and D4.2, p 91–95). For example, these allow you to express

Recordkeeping Event relationships such as 'Authorises', 'Converts', 'Creates', 'Establishes', 'Next in Sequence', 'Owns', 'Succeeds', 'Transfers'.

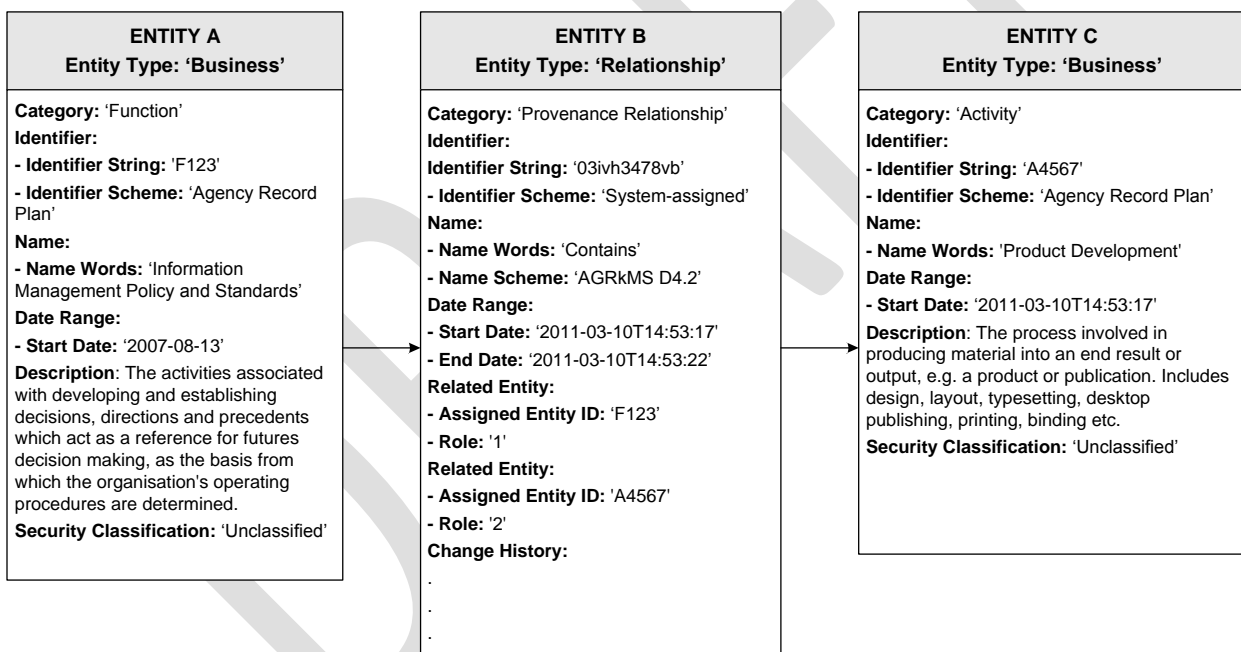
5.8.2 The special role of relationships

Relationships have a special role in the metadata standard. They are the 'glue' that binds each of the other entities together in time and context. Without relationships, it is very difficult to maintain the contextual information about provenance (record ownership and control) or the history of recordkeeping and other business actions over time.

The Relationship entity also has a special link with the Business entity. This is because the information recorded in the Category 'Transaction' under the Business entity can be reflected by the Category 'Recordkeeping event', documented under the Relationship entity.

For example, a Relationship entity with Category 'Provenance Relationship' with the Name property 'Contains' takes place within the Business entity Category 'Function' named 'Information Management Policy and Standards', under the Business Category 'Activity' named 'Product Development'.

Figure 10 Linking two business entities using the Relationship entity



BUSINESS (Function) "Contains" BUSINESS (Activity)

By using the Relationship entity you can also eliminate redundancy of description. This is because Relationship, as well as storing the details of each contextual event or recordkeeping action, acts as a pointer to the participants in each event or action. The details of the Record, Agent, Business, and/or Mandate instances involved in the relationship are already stored with the respective entities (in the form of metadata descriptions), and do not need to be repeated each time they are involved in another relationship. By using Relationship as both a pointer and a link, these existing descriptions are effectively reused each time the entity instance they describe is involved in another relationship.

Relationships can also be linked to other relationships. This enables the full context of recordkeeping to be documented by linking all participants in a particular event to that event.

Information can be captured about not only who or what carried out the event, but also who or what authorised it, the effects it had, and any resulting future actions.

Section 5.8.3 looks at how the Relationship entity actually works.

5.8.3 How relationships work

In addition to the five core properties (Category, Identifier, Name, Date Range and Description), the Relationship entity has a further two properties applicable only to the description of relationships. These properties are Related Entity and Change History.

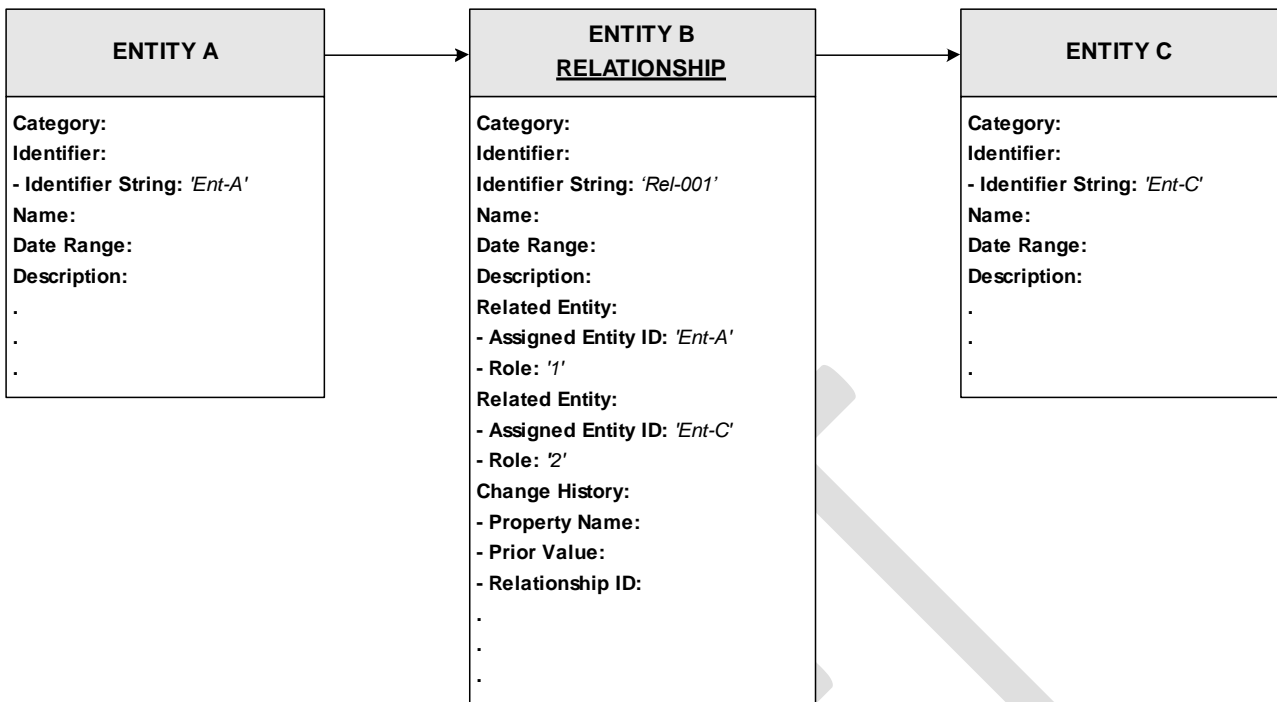
The diagram in Figure 11 shows how the Related Entity property works to link two generic entities with a Relationship entity. The diagram depicts some entity (Entity A) in a relationship with another entity (Entity C). These two generic entities, as well as the Relationship entity linking them (Entity B), all have the same five core properties. The Identifiers of the two generic entities A and C ('Ent-A' and 'Ent-C') are required as part of the linking process. The key to understanding how Relationship works is found in the Related Entity property of the Relationship entity.

Step 1 — Expressing the relationship

When two entity instances are involved in a relationship, such as a 'Recordkeeping Event', their participation in the relationship is captured by recording their Identifier String sub-properties in the Assigned Entity ID sub-property of the Related Entity property in the Relationship entity. These Identifier Strings, provided they are unique, are the links back to the full details of the individual entities participating in the relationship.

The Role sub-property under Related Entity property indicates the direction in which the relationship must be read. So, when looking at the relationship, you read from the participant with Role 1 ('Ent-A') to the participant with Role 2 ('Ent-C'). The full reading of this generic relationship therefore takes the form of:

Entity A ('Ent-A') has relationship B ('Rel-001') with entity C ('Ent-C').

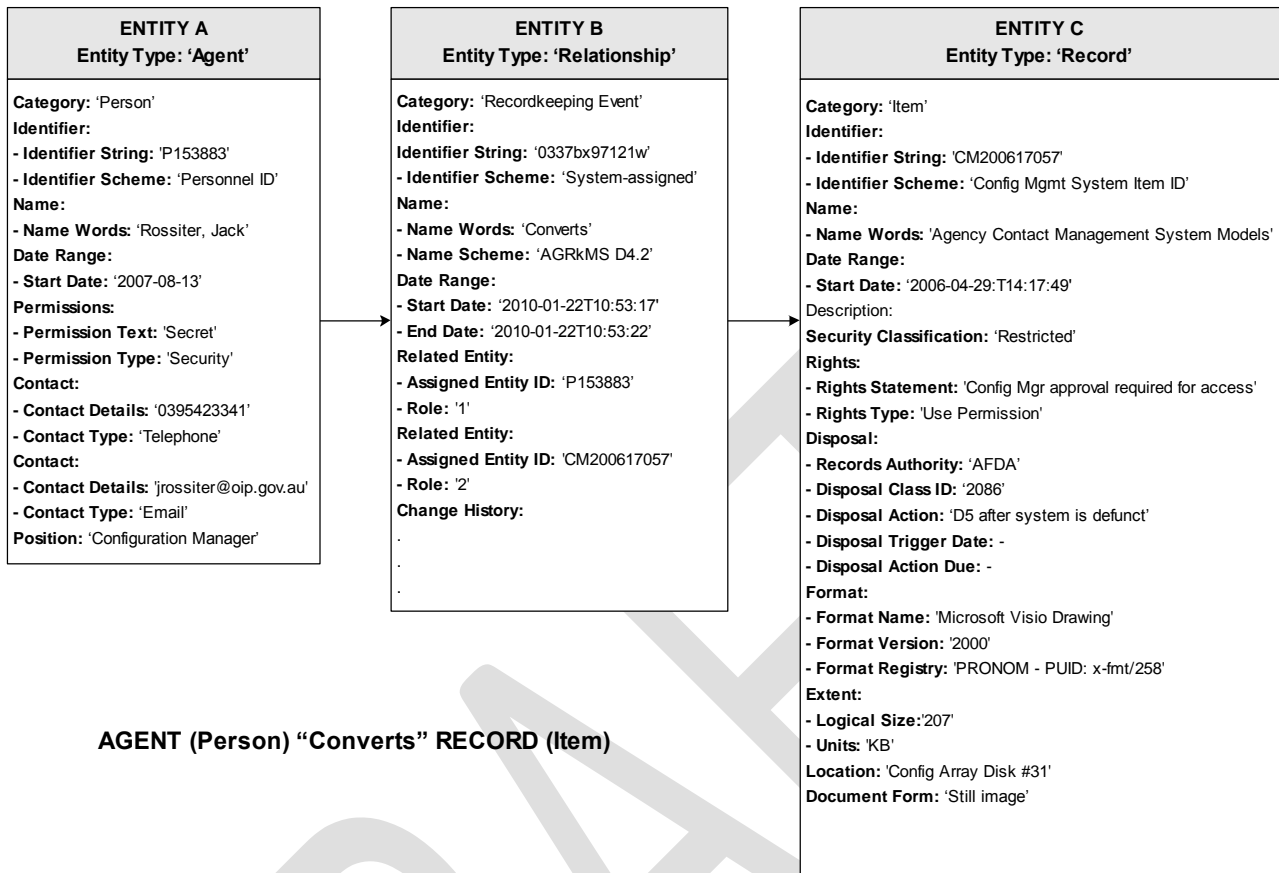
Figure 11 Linking entities using the Relationship entity

The following real example illustrates this use of the Relationship entity.

Consider a digital record item — a document containing a set of diagrams — that has been created using the Microsoft Visio 2000 drawing application. The organisation is about to implement a new corporate drawing package to replace MS Visio 2000. The work group who created the set of diagrams wants to be able to continue accessing (but not editing) the diagrams created using MS Visio 2000. Therefore, the work group has decided to convert these diagrams to JPEG format.

Example 15 shows the metadata required to describe this conversion using the Relationship entity: the Agent entity A (a 'Person' — someone from the work group) 'Converts' (Relationship — entity B) the Record entity C (an 'Item' — the Microsoft Visio 2000 drawing) to the new format.

Example 15 Relationship entity with Category 'Recordkeeping Event' and Name Scheme 'Converts' — Part 1



Step 2 — Capturing the change when documenting a relationship

The next thing to consider is how the Change History property works in documenting relationships. Shortly we will extend the above example to illustrate how it works, but we will first take a look at the Change History property in general.

In the business of recordkeeping it is important to know not just about the current state of affairs, but also about the history of the participants in recordkeeping. We want to know all about a record — when it was created and by whom, its management, and its use over time. Similarly, the history of agents, the business they conduct and the mandates that govern them, provide essential contextual information for recordkeeping. Maintaining this information enables us to fix records in the proper context of their creation, management and use, thereby assuring their authenticity and making it easier to understand the decisions and actions they document.

Metadata is, of course, the means by which this information is captured and maintained. When change happens — for example, a record is converted from one format to another, or a person moves to a new work position — we need a way to capture and store not only the new situation (in the form of a value), but also the previous situation (in the form of a new value). The Relationship entity, specifically through the Change History property, provides the mechanism for doing this. Over time, it provides a way of maintaining the histories of participating entities in organisational recordkeeping.

The first part of documenting a change is simple. When a metadata value changes, the new value overwrites the old value in the metadata record of the relevant entity. For example, if Jackie Lim is promoted from a Project Officer in the Information Management Policy section to the Assistant Director responsible for Data Management Standards, the value for the Position property in her metadata record will change from 'Project Officer, Information Management Policy' to 'Assistant Director, Data Management Standards'. Some of her contact details may also change.

What happens to the old values? This is where the Change History property comes in.

The Change History property comprises three sub-properties, shown here with their use obligations and repeatability:

- Property Name (mandatory, repeatable)
- Prior Value (mandatory, not repeatable)
- Relationship ID (conditional¹³ and not repeatable)

When a value in a metadata record is changed, the details of the old value should not be lost; they need to be stored in Change History. The name of the property or sub-property where the value has changed is recorded in Property Name. The prior value (the one that has just been overwritten) is recorded in Prior Value. The identifier of the relationship (or event) that resulted in the change (that is, the Identifier String of the relevant relationship) is recorded in Relationship ID, thereby providing a link back to the relationship and the other details stored there, such as the date/time the event occurred.

In most situations the Relationship ID is not required because the Change History details are actually recorded within the metadata record for the relationship that resulted in the change. In such circumstances, this information would be redundant. We will explore an example of this later in the section.

Returning now to the Jackie Lim example, we will assume that some agent, perhaps a mechanism, is programmed to change the relevant details in Jackie's metadata record. For simplicity, we will not record the details of the agent making the change, other than the fact that it is a mechanism, and that its Identifier String is 'Batch10583319'.

The diagram in Example 16 illustrates what happens when some details in Jackie's metadata record — her telephone number and her position — are changed. It shows a skeletal record for the agent making the change, the full 'change' relationship details including Change History, and Jackie's metadata record before and after the changes. For simplicity, not all possible properties and values are shown in the latter.

Note how the entire Change History property is repeated for each individual value change.

¹³ Note that the use obligation of the Relationship ID sub-property is different to that shown in the AGRkMS, where it is listed as [M]. The obligation shown in the AGRkMS is an error; it will be corrected in the next version of the Standard.

Example 16 Relationship entity with Category 'Recordkeeping Event' and Name Scheme 'Changes'

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Original Metadata Record for Agent

ENTITY A <u>AGENT</u>
Category: 'Mechanism' Identifier: - Identifier String: 'Batch10583319' . . .

ENTITY C <u>AGENT</u>
Category: 'Person' Identifier: - Identifier String: '8107731' - Identifier Scheme: 'Dept Employee ID' Name: Name Words: 'Lim, Jackie' Date Range: - Start Date: '2006-03-22' . . Contact: - Contact Details: '0295637088' - Contact Type: 'Telephone' Contact: - Contact Details: 'jackie.lim@ictm.gov.au' - Contact Type: 'Email' Position: 'Project Officer, IM Policy'

ENTITY B <u>RELATIONSHIP</u>
Category: 'Recordkeeping Event' Identifier: - Identifier String: '87855vf039m' - Identifier Scheme: 'System-assigned' Name: Name Words: 'Changes' Name Scheme: 'AGRkMS D4.2' Date Range: - Start Date: '2010-01-25T00:30:00' - End Date: '2010-01-25T00:30:09' Description: 'Changes to employee's metadata record' Related Entity: - Assigned Entity ID: 'Batch10583319' - Role: '1' Related Entity: - Assigned Entity ID: '8107731' - Role: '2' Change History: Property Name: 'Position' Prior Value: 'Project Officer, IM Policy' Change History: Property Name: 'Contact Details' Prior Value: '0295637088'

ENTITY C <u>AGENT</u>
Category: 'Person' Identifier: - Identifier String: '8107731' - Identifier Scheme: 'Dept Employee ID' Name: Name Words: 'Lim, Jackie' Date Range: - Start Date: '2006-03-22' . . Contact: - Contact Details: '0295637507' - Contact Type: 'Telephone' Contact: - Contact Details: 'jackie.lim@ictm.gov.au' - Contact Type: 'Email' Position: 'Assistant Director, DM Standards'

Changed Metadata Record for Agent

When looking at Example 16 you may wonder how the mechanism determined which set of contact details (the telephone number or the email address) needed to be changed. In this particular case the actual format of the value can be used to program the change (both telephone numbers and email addresses have standardised formats that are machine-readable and machine-processable).

The conversion of the digital item results in changes not only to the Format sub-properties, but also the Extent sub-properties. The diagram in Example 17 shows the full metadata record for the 'Converts' relationship, with the Change History details included, as well as the changed metadata record for the digital item.

Example 17 Relationship entity with Category 'Recordkeeping Event' and Name Scheme 'Converts' — Part 2

ENTITY B Entity Type: 'Relationship'	ENTITY C Entity Type: 'Record'
<p>Category: 'Recordkeeping Event'</p> <p>Identifier:</p> <p>Identifier String: '0337bx97121w'</p> <p>- Identifier Scheme: 'System-assigned'</p> <p>Name:</p> <p>- Name Words: 'Converts'</p> <p>- Name Scheme: 'AGRKMS D4.2'</p> <p>Date Range:</p> <p>- Start Date: '2010-01-22T10:53:17'</p> <p>- End Date: '2010-01-22T10:53:22'</p> <p>Related Entity:</p> <p>- Assigned Entity ID: 'P153883'</p> <p>- Role: '1'</p> <p>Related Entity:</p> <p>- Assigned Entity ID: 'CM200617057'</p> <p>- Role: '2'</p> <p>Change History:</p> <p>- Property Name: 'Format Name'</p> <p>- Prior Value: 'Microsoft Visio Drawing'</p> <p>Change History:</p> <p>- Property Name: 'Format Version'</p> <p>- Prior Value: '2000'</p> <p>Change History:</p> <p>- Property Name: 'Format Registry'</p> <p>- Prior Value: 'PRONOM - PUID: x-fmt/258'</p> <p>Change History:</p> <p>- Property Name: 'Logical Size'</p> <p>- Prior Value: '207'</p>	<p>Category: 'Item'</p> <p>Identifier:</p> <p>- Identifier String: 'CM200617057'</p> <p>- Identifier Scheme: 'Config Mgmt System Item ID'</p> <p>Name:</p> <p>- Name Words: 'Agency Contact Management System Models'</p> <p>Date Range:</p> <p>- Start Date: '2006-04-29:T14:17:49'</p> <p>Description:</p> <p>Security Classification: 'Restricted'</p> <p>Rights:</p> <p>- Rights Statement: 'Config Mgr approval required for access'</p> <p>- Rights Type: 'Use Permission'</p> <p>Disposal:</p> <p>- Records Authority: 'AFDA'</p> <p>- Disposal Class ID: '2086'</p> <p>- Disposal Action: 'D5 after system is defunct'</p> <p>- Disposal Trigger Date: -</p> <p>- Disposal Action Due: -</p> <p>Format:</p> <p>- Format Name: 'JPEG File Interchange Format'</p> <p>- Format Version: '1.02'</p> <p>- Format Registry: 'PRONOM - PUID: fmt/44'</p> <p>Extent:</p> <p>- Logical Size: '1041'</p> <p>- Units: 'KB'</p> <p>Location: 'Config Array Disk #31'</p> <p>Document Form: 'Still image'</p>

Complete metadata record for "converts" Relationship

Changed metadata record for digital Item

The metadata record for the Category 'Recordkeeping Event' and Name Scheme 'Converts' now includes the old values for Format and Extent under Change History. Again, note how the entire

Change History property is repeated for each new change. The metadata record for the digital item shows the new values for Format and Extent following the "converts" event.

Step 3 — Deciding when to use the Relationship ID sub-property

The final issue we need to look at with Change History is the use of the sub-property Relationship ID. Generally, a value for Relationship ID is not required because the Change History details are actually recorded within the metadata record for the relationship that resulted in the change. The Relationship ID sub-property only needs to be used when capturing a Relationship to Relationship link.

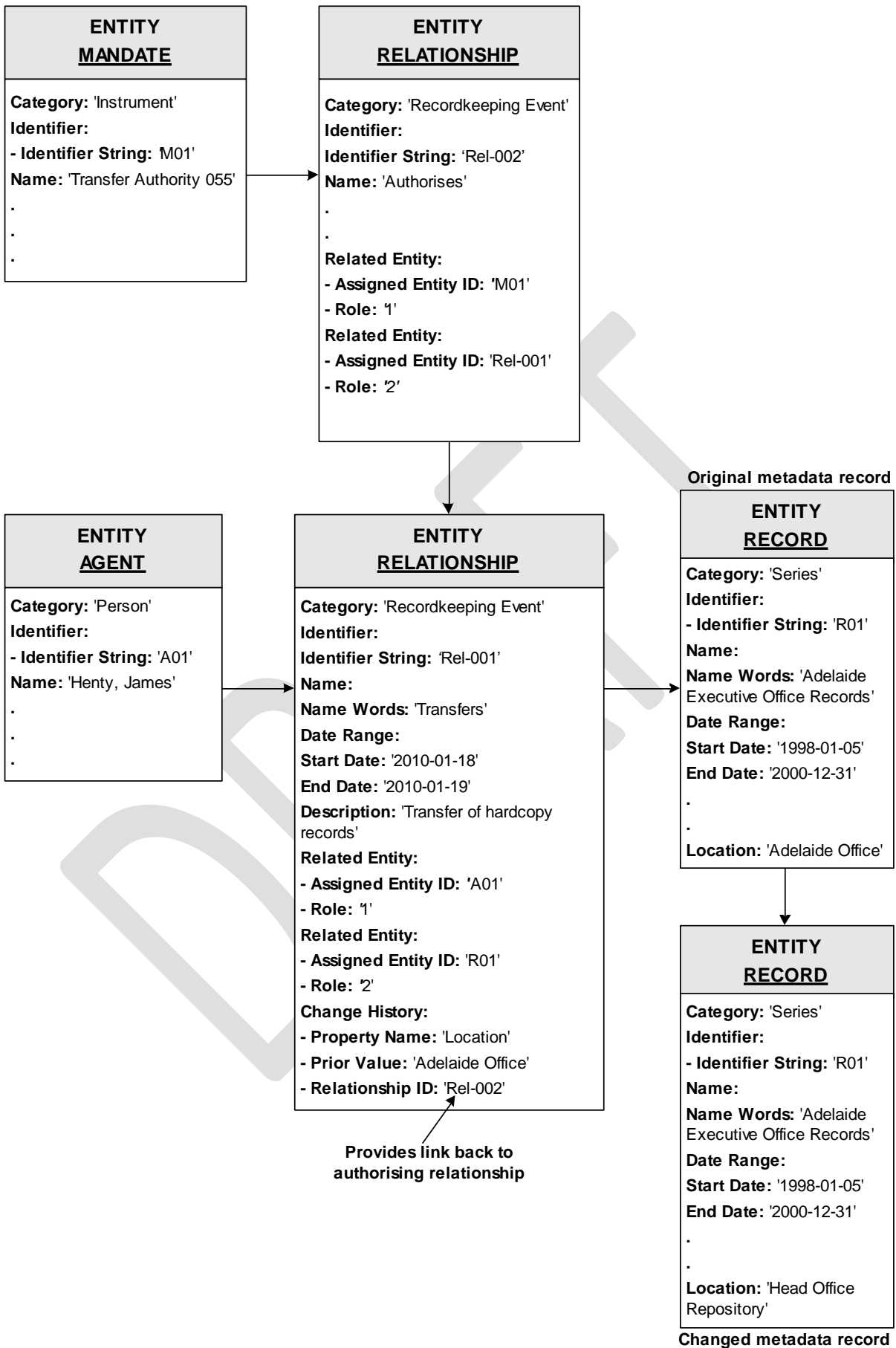
An example of this is where a relationship 'Authorises' another event such as 'Transfers'. The 'Authorises' relationship is ultimately responsible for the action taken so, in such cases, the Relationship ID of the 'Authorises' relationship is recorded in the 'Transfers' relationship.

Figure 12 illustrates the concept.

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Figure 12 Use of the sub-property Relationship ID in Relationship to Relationship links

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5.8.4 Examples of Relationship entity metadata

Example 18 Relationship entity with Category 'Recordkeeping Event' and Name Scheme 'Authorises'

Property / Sub-property	Value
1. Category	Recordkeeping Event
2. Identifier	
2.1 Identifier String	R984656
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Authorises
3.2 Name Scheme	
4. Date Range	
4.1 Start Date	2008-10-15
4.2 End Date	
5. Description	Director, Finance authorises Business Rule 819.
6. Related Entity	
6.1 Assigned Entity ID	jans6945
6.2 Assigned Entity ID Scheme	SysID
6.3 Relationship Role	1
6. Related Entity	
6.1 Assigned Entity ID	BR819
6.2 Assigned Entity ID Scheme	SysID
6.3 Relationship Role	2

Example 19 Relationship entity with Category 'Recordkeeping Event' and Name Scheme 'Next in Sequence'

Property / Sub-property	Value
1. Category	Recordkeeping Event
2. Identifier	
2.1 Identifier String	R9586733
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Next in Sequence
3.2 Name Scheme	
4. Date Range	
4.1 Start Date	2007-01-01
4.2 End Date	2007-12-31
5. Description	Multi part file of submissions.
6. Related Entity	
6.1 Assigned Entity ID	2007/18
6.2 Assigned Entity ID Scheme	CRS
6.3 Relationship Role	1
6. Related Entity	
6.1 Assigned Entity ID	2007/19
6.2 Assigned Entity ID Scheme	CRS
6.3 Relationship Role	2

Example 20 Relationship entity with Category 'Provenance Relationship' and Name Scheme 'Contains'

Property / Sub-property	Value
1. Category	Provenance Relationship
2. Identifier	
2.1 Identifier String	R84753
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Contains
3.2 Name Scheme	
4. Date Range	
4.1 Start Date	2005-01-01
4.2 End Date	
5. Description	Series contains annual general correspondence files.
6. Related Entity	
6.1 Assigned Entity ID	A4969
6.2 Assigned Entity ID Scheme	CRS
6.3 Relationship Role	1
6. Related Entity	
6.1 Assigned Entity ID	2007/102
6.2 Assigned Entity ID Scheme	CRS
6.3 Relationship Role	2

Example 21 Relationship entity with Category 'Provenance Relationship' and Name Scheme 'Establishes'

Property / Sub-Property	Value
1. Category	Provenance Relationship
2. Identifier	
2.1 Identifier String	R82365
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Establishes
3.2 Name Scheme	
4. Date Range	
4.1 Start Date	2009-05-22
4.2 End Date	
5. Description	Customs Legislation Amendment (Name Change) Act 2009 establishes Australian Customs and Border Protection Service.
6. Related Entity	
6.1 Assigned Entity ID	C2009A00033
6.2 Assigned Entity ID Scheme	Comlaw
6.3 Relationship Role	1
7. Change History	
7.1 Property Name	CA9259
7.2 Prior Value	CRS
7.3 Relationship ID	2

Example 22 Relationship entity with Category 'Provenance Relationship' and Name Scheme 'Owns'

Property / Sub-property	Value
1. Category	Provenance Relationship
2. Identifier	
2.1 Identifier String	R9465837
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Owns
3.2 Name Scheme	
4. Date Range	
4.1 Start Date	1998-10-23
4.2 End Date	
5. Description	Department of Agriculture, Fisheries and Forestry, Central Office owns Correspondence files, annual single number series with 'U' (Livestock and Pastoral) prefix.
6. Related Entity	
6.1 Assigned Entity ID	CA8610
6.2 Assigned Entity ID Scheme	CRS
6.3 Relationship Role	1
6. Related Entity	
6.1 Assigned Entity ID	A9076
6.2 Assigned Entity ID Scheme	CRS
6.3 Relationship Role	2

Example 23 Relationship entity with Category 'Provenance Relationship' and Name Scheme 'Succeeds'

Property / Sub-property	Value
1. Category	Provenance Relationship
2. Identifier	
2.1 Identifier String	R29178645
2.2 Identifier Scheme	SysID
3. Name	
3.1 Name Words	Succeeds
3.2 Name Scheme	
4. Date Range	
4.1 Start Date	2009-11-17
4.2 End Date	
5. Description	Telecommunications Act 1997 amendments up to Act No. 111 of 2009 succeeds Telecommunications Act 1997 amendments up to Act No. 16 of 2009.
6. Related Entity	
6.1 Assigned Entity ID	C2009C00536
6.2 Assigned Entity ID Scheme	Comlaw
6.3 Relationship Role	1
6. Related Entity	
6.1 Assigned Entity ID	C2009C00156
6.2 Assigned Entity ID Scheme	Comlaw
6.3 Relationship Role	2

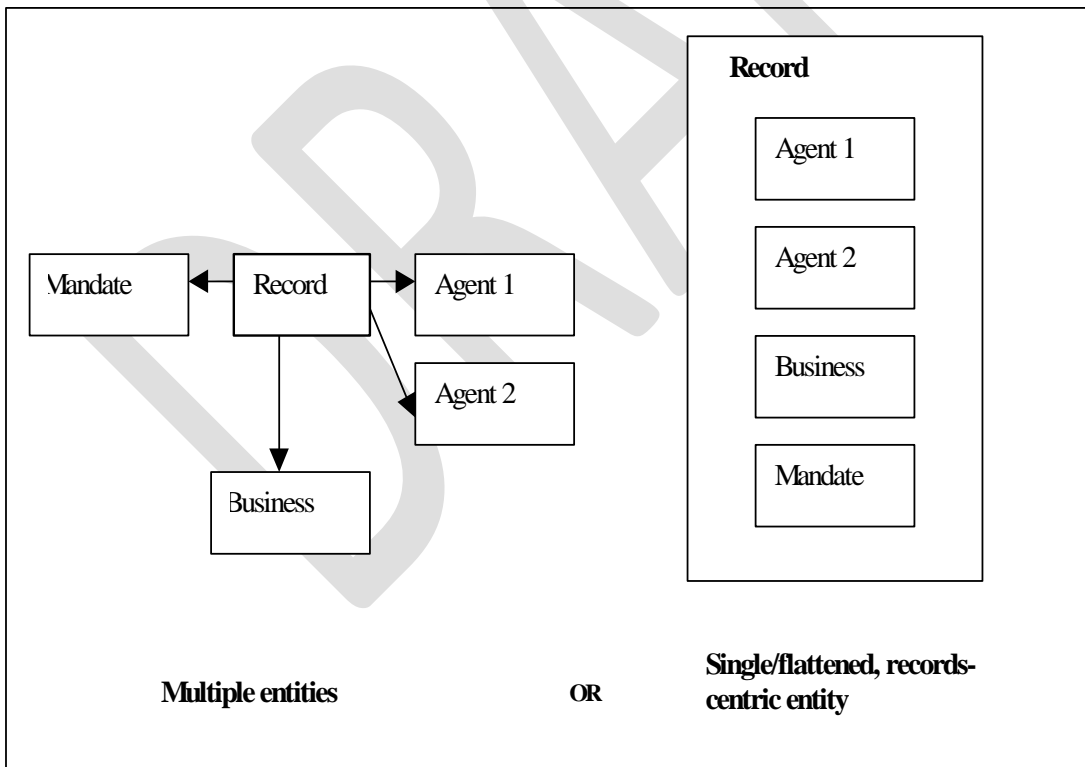
5.9 Flattening entities¹⁴

The standard AS ISO 23081 and the AGRkMS both discuss the notion of flattening recordkeeping metadata. The diagram in Figure 13, taken from AS ISO 23081-2-2009, illustrates how the single-entity or flattened approach differs from the multiple-entity approach.

The diagram shows alternative ways of representing the same metadata. The illustration on the left shows metadata relating to entities maintained independently and links them through the concept of relationships (represented by the arrows). If an agency is unable to implement this multiple-entity model, the figure on the right illustrates how the metadata of the various entities can be brought within a single entity, the Record, while maintaining all the metadata properties relevant to the previously separate entities. Implementations that support this type of flattening only tend to make relationships between records explicit, while most other relationships are contained in metadata properties. Such implementations are called 'records-centric' implementations, and are quite common in current practice, where relationships have not been built into system design.

Even though the standard allows agencies to implement flattening, it recommends that they implement a multiple-entity model to record metadata.

Figure 13 Comparing the multiple-entity model with the single or flattened record-centric entity model



¹⁴ Much of Section 4.9 is taken, with permission, from Archives New Zealand, *Implementing Recordkeeping Metadata in EDRMS: Tailoring the Technical Specifications for the Electronic Recordkeeping Metadata Standard for use in an Organisational Environment*, 2009: <http://continuum.archives.govt.nz/G14.html>

5.9.1 What is meant by flattening?

Flattening is a way of simplifying the metadata and minimising reliance on the relationships between entities. Instead of documenting the metadata about the five entities as separate metadata records and then linking them by relationships, flattening allows the details of some of the entities to be included in fewer entities overall.

For example, it is possible to flatten the metadata into a single entity. In a recordkeeping context, that entity will always be the Record. When this is done, all the other information that needs to be identified is regarded as an aspect of the record itself. So, for example, information about the agents that created the record will be documented within the record entity, the information about the business being conducted will be documented within the record entity, and information about the actions taken on the record and its links to other records will also be documented within the record entity.

5.9.2 Reasons for flattening

The extent to which a specific system or application is able to manage the relevant metadata as separate and linked entities will depend on the sophistication of the specific application. For example, it is very common for EDRMS to subsume much of the metadata about other entities into the Record entity.

One reason for flattening metadata into a single entity is the need to have persistent links. There are technical problems associated with managing links, or relationships, over time and beyond the confines of the creating system. The relationships must be well documented, persistent and able to endure for the length of time a record is required. Links can be difficult to maintain.

Maintaining links within one system is usually achievable in practice, and quite common. However, even within one system, care needs to be exercised to ensure that metadata is not overwritten or lost when details, such as a person's role, change.

One solution is to bring all this data together in the recordkeeping system and then apply the controls needed to keep it time-bound within the recordkeeping system itself. The metadata might be sourced from outside the recordkeeping system, but because of the difficulties in maintaining it in this time-bound way, it is copied into the system, and not linked out to other systems.

5.9.3 Limitations of flattening

There are several limitations to flattening your recordkeeping metadata implementation. These include:

- massive duplication of data
- complexity of metadata properties and sub-properties, resulting in overly complex descriptions
- difficulty of extracting specific information about the flattened entities
- difficulty of mapping between different systems (i.e. those with flattened implementations against those without)

- decreased interoperability between systems, with implications for the migration of records to new systems or transfer of records to another organisation
- lack of context
- machine-processability issues.

For these reasons, the National Archives does not support flattening, particularly flattening to just the single entity of Record. The National Archives recommends that all AGRkMS implementations incorporate Relationship as an entity.

The implementation models supported by the National Archives are described in Section 3.2.

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6. PROPERTIES AND ENCODING SCHEMES

In this section we give an overview of the properties and sub-properties that are used in the metadata standard to describe entities. We list their use obligation status (whether their use is mandatory, conditional or optional) and their repeatability (whether they can be used more than once) and the implications these two concepts have on the implementation of the recordkeeping metadata standard. We also discuss how to record values for the properties and sub-properties using encoding schemes. Finally, we provide some basic examples of how to use properties and sub-properties to describe an Agent entity, a Record entity and a Relationship entity.

Properties and sub-properties are described in detail in Section 2.1 of the Australian Government Recordkeeping Metadata Standard (AGRkMS). Where appropriate, we include cross-references to this publication.

6.1 Introducing properties and sub-properties

Metadata properties and sub-properties are information tags. They are used to describe the features or characteristics of something of interest in a particular environment. They are used to describe entities of interest in business and recordkeeping environments. The properties and sub-properties are used to store information about an entity; for example, the identifier, name and security classification of a Record (such as a series or a file) or the name, access permissions and contact details of an Agent (such as a work group or a person).

The terms 'property' and 'sub-property' are equivalent to the terms 'element' and 'sub-element', respectively, used in the National Archives' previous standard, the *Recordkeeping Metadata Standard for Commonwealth Agencies*.

Sub-properties more narrowly define properties, in that they provide specific information about particular aspects of a property. Not all properties in the standard have sub-properties. For properties that do not have sub-properties, the information is captured directly into the property itself. Where a property does have sub-properties, it is referred to as a 'container'. This means that the property is a container for a number of sub-properties, in which the actual information is stored.

6.1.1 Overview of the properties used in the metadata standard

There are 26 properties in the standard. A core set of five properties is applicable to all the entities. These are: Category, Identifier, Name, Date Range and Description. A further property, Entity Type, has a special purpose for multiple-entity systems. It acts as a kind of 'switch' in multiple-entity implementations, to signify which of the entities is being described (i.e. Record, Agent, Business, Mandate or Relationship). The remaining 20 properties have a more limited applicability, with several of them applicable only to the Record entity.

Table 7 lists all the metadata properties and shows their applicability to each of the five entities. The numbering system reflects that used in the AGRkMS. The special property Entity Type is listed at the top and applies only to multiple-entity systems. The five core properties are listed first.

The table also shows the use obligation of each property, that is, whether its use is mandatory, conditional or optional under the standard. Use obligation is further explained in Section 6.2. The table also shows which properties can be repeated. Repeatability is covered in Section 6.3. These two key concepts, use obligation and repeatability, are essential to understanding how the metadata properties and sub-properties in the AGRkMS schema work.

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Table 7 Overview of metadata properties and their applicability to each of the five entities

No	Metadata properties							AGRkMS
	Record	Agent	Business	Mandate	Relationship	Use obligation status	Repeat	
0 ^a								p 23
1	Category	Category	Category	Category	Category	Mandatory	No	p 24
2	Identifier	Identifier	Identifier	Identifier	Identifier	Mandatory	Yes	p 25
3	Name	Name	Name	Name	Name	Mandatory	Yes	p 26
4	Date Range	Date Range	Date Range	Date Range	Date Range	Mandatory	No	p 28
5	Description	Description	Description	Description	Description	Optional	Yes	p 29
6	-	-	-	-	Related Entity	Mandatory	Yes	p 30
7	-	-	-	-	Change History	Conditional	Yes	p 33
8	Jurisdiction	Jurisdiction	Jurisdiction	Jurisdiction	-	Optional	Yes	p 35
9	Security Classification	-	Security Classification	Security Classification	-	Conditional for Record and Mandate, Optional for Business	Yes	p 36
10	Security Caveat	-	-	Security Caveat	-	Conditional	Yes	p 37
11	-	Permissions	Permissions	-	-	Conditional	Yes	p 39
12	Rights	-	-	-	-	Conditional	Yes	p 41
13	-	Contact	-	-	-	Conditional	Yes	p 43
14	-	Position	-	-	-	Optional	No	p 44
15	Language	Language	-	-	-	Conditional for Record, Optional for Agent	Yes	p 45
16	Coverage	-	-	Coverage	-	Optional	Yes	p 45
17	Keyword	-	-	-	-	Conditional	Yes	p 48
18	Disposal	-	-	-	-	Mandatory	Yes/No	p 51
19	Format	-	-	-	-	Conditional	No	p 57
20	Extent	-	-	-	-	Mandatory	Yes	p 60
21	Medium	-	-	-	-	Conditional	No	p 63
22	Integrity Check	-	-	-	-	Conditional	No	p 64
23	Location	-	-	-	-	Optional	Yes/No	p 65
24	Document Form	-	-	-	-	Optional	No	p 66
25	Precedence	-	-	-	-	Optional	No	p 67

^a No 0 is the special property that records Entity Type. It only applies for multiple-entity systems

6.2 Use obligation

A property's use obligation status indicates whether a metadata property or sub-property needs to be included in an implementation to be compliant with the Australian Government Recordkeeping Metadata Standard.

Understanding use obligation is an important part of understanding how to design and implement systems to comply with a standard. Where systems have an identified requirement to make and keep accountable records, compliance with the AGRkMS will enable that requirement to be met.

In the standard there are three obligation categories:

- Mandatory — MUST be used
- Conditional — MUST be used IF certain circumstances are met
- Optional — MAY be used.

There are different levels of complexity with obligation depending on whether or not properties have sub-properties, whether the obligations of sub-properties differ from those of their parent properties and the nature of the conditions attached to conditional properties and sub-properties. The simplest cases are those where properties have no sub-properties and are not conditional on particular events or circumstances.

The use obligation status of properties has been listed in Table 7. We will now discuss each of the use obligations in turn as they relate to the properties. Use obligation is also covered in more depth in Section 6.5, in the practical discussion about working with properties and sub-properties.

6.2.1 Mandatory properties

To comply with the standard, mandatory properties must be included in the metadata records of all applicable entities.

Table 8 below shows that there are only seven mandatory properties in the standard. Four of these are applicable to all the entities, one is applicable only to the Relationship entity, and two are applicable only to the Record entity.

Table 8 Mandatory properties

No in AGRkMS	Property name	Applicable entities
1	Category	All
2	Identifier	All
3	Name	All
4	Date Range	All
6	Related Entity	Relationship
18	Disposal	Record
20	Extent	Record

6.2.2 Conditional properties

To comply with the standard, conditional properties must be present in the metadata records of all applicable entities under certain defined circumstances.

Most of the properties in the standard are conditional and require certain conditions to be met before they become mandatory. For example, the property Entity Type must be used if more than one entity is implemented, because its purpose is to indicate which type of entity the metadata record is describing. As another example, the property Contact must always be used to provide the contact details of an Agent entity, except when the Agent is a mechanism (i.e. its Category property is 'Mechanism') such as a sensor or a system application.

Table 9 lists the 12 conditional properties in the standard.

Table 9 Conditional properties

No in AGRkMS	Property name	Applicable entities
0	Entity Type	Used as a switch for multiple-entity implementations
9	Security Classification	Record Business Mandate
10	Security Caveat	Record Mandate
11	Permissions	Agent Business
12	Rights	Record
13	Contact	Agent
15	Language	Record
17	Keyword	Record
19	Format	Record
21	Medium	Record
22	Integrity Check	Record
23	Location	Record

6.2.3 Optional properties

Optional properties may be used, but do not have to be used, to capture extra descriptive information about entities.

It is up to implementers to decide whether or not optional sub-properties are useful in their particular organisational context, or are required to meet specific business requirements.

For example, your agency might have a sound business reason for recording the Document Form property of each record item created (e.g. because your agency works with a range of documents, including text-based, moving and still images, and sound recordings). In this case, a local decision could be made to make Documentary Form conditional — i.e. MUST be used if a Record of the Category 'Item' is being described.

Table 10 lists the seven optional properties in the standard.

Table 10 Optional properties

No in AGRkMS	Property name	Applicable entities
5	Description	All
8	Jurisdiction	Record Agent Business Mandate
14	Position	Agent
15	Language	Agent
16	Coverage	Record Mandate
24	Document Form	Record
25	Precedence	Record

6.3 Repeatability

A property's repeatability status indicates whether a property can be used more than once to describe the same entity.

Repeatability is important because it allows a fuller description of an entity's roles and relationships within recordkeeping and broader business contexts. For example, repeatability enables a more comprehensive description of an entity's current status, history and relationships with other entities.

Like use obligation, repeatability is applicable to both properties and sub-properties. When applied at property level, repeatability refers to the property as a whole, regardless of whether it is without sub-properties or is a 'container' (contains sub-properties). The repeatability status of properties has been listed in Table 7.

Repeatability at sub-property level is applied to each individual sub-property, independent of its parent property and (usually, but not always) independent of any other sub-properties grouped under the same property.

6.3.1 Repeatable properties

Repeatable properties may be used more than once to describe the same entity instance. There are 18 repeatable properties in the AGRkMS schema. Table 11 lists the repeatable properties and indicates to which entities they apply.

Table 11 Repeatable properties

No in AGRkMS	Property name	Applicable entities
2	Identifier	All
3	Name	All
5	Description	All
6	Related Entity	Relationship
7	Change History	Relationship
8	Jurisdiction	Record Agent Business Mandate

No in AGRkMS	Property name	Applicable entities
9	Security Classification	Record Business Mandate
10	Security Caveat	Record Mandate
11	Permissions	Agent Function
12	Rights	Record
13	Contact	Agent
14	Position	Agent
15	Language	Record Agent
16	Coverage	Record Mandate
17	Keyword	Record
18	Disposal (Series and Transaction Sequences only)	Record
20	Extent	Record
23	Location (Series and Transaction Sequences only)	Record

6.3.2 Non-repeatable properties

Non-repeatable properties must not be used more than once to describe the same entity instance. Eight properties in the standard are not repeatable. These are listed in Table 12.

Table 12 Non-repeatable properties

No in AGRkMS	Property name	Applicable entities
0	Entity Type	All
1	Category	All
4	Date Range	All
19	Format	Record
21	Medium	Record
22	Integrity Check	Record
24	Document Form	Record
25	Precedence	Record

6.4 Cardinality

Repeatability is used in conjunction with use obligation to provide information about the actual number of times a property or sub-property may be used to describe a single instance of an entity. The rules for this concept, known as cardinality, are summarised in Table 13:

Table 13 Cardinality of properties

Use obligation status	Repeatable	Not-repeatable	Use rule
Mandatory	✓		Must be used 1 or more times
		✓	Must be used once only
Conditional	✓		May be used 0 or more times
		✓	May be used 0 or 1 times
Optional	✓		May be used 0 or more times
		✓	May be used 0 or 1 times

If a repeatable property or sub-property is mandatory, it must be used once to describe an entity instance, but it can be used more than once. If a repeatable property or sub-property is conditional or optional it does not have to be used but, dependent on whether certain conditions are met, or whether a decision has been made to implement an optional property, it can be used one or more times.

If a non-repeatable property or sub-property is mandatory it must be used once and once only. If a non-repeatable property or sub-property is conditional or optional it does not have to be used but, dependent on whether certain conditions are met or whether a decision has been made to implement an optional property, it can be used once and once only.

6.5 How properties and sub-properties work

Now that we have covered properties and sub-properties at a high level, and looked at the underlying concepts of use obligation, repeatability and cardinality, it is time to take a more detailed look at the properties and sub-properties.

This section looks in more detail at how properties without sub-properties and containers (properties containing sub-properties) are used. It shows that the level of complexity differs based on whether or not there are sub-properties, and the combinations of use obligation and repeatability involved. Examples and tools such as decision trees and tables illustrate how to apply the rules of obligation, repeatability and cardinality in different situations. Table 17 in Appendix A gives an overview of all the properties and sub-properties that can be used with each of the metadata entities.

6.5.1 Properties without sub-properties

Properties with no sub-properties are simple to implement and their values are captured directly into the property. The values for these properties are often taken from a vocabulary encoding scheme (such as a controlled list or thesaurus), and/or formatted according to a syntax encoding scheme. Information about using encoding schemes is provided in Section 6.6.

Table 14 lists the eleven properties that do not have sub-properties. The table also includes information about applicable encoding schemes, references to the relevant AGRkMS appendices, and provides some example values.

Table 14 Properties without sub-properties

No	Property name	Encoding scheme	Example values
0	Entity Type	AGRkMS Appendix D1 Entity Type Scheme	'Record' 'Agent' 'Business' 'Mandate' 'Relationship'
1	Category	AGRkMS Appendix D2.1 – D2.5 Category Type Schemes	For Record entities: 'Archive', 'Series', 'Item' For Agent entities: 'Organisation', 'Workgroup', 'Person', 'Mechanism' For Business entities: 'Function', 'Activity', 'Transaction' For Mandate entities: 'Legislation', 'Business Rule', 'Standard', 'Community Expectation' For Relationship entities: 'Provenance Relationship', 'Recordkeeping Event'
5	Description	-	'This recordkeeping metadata standard is a complete revision of the 1999 standard. The standard takes a multiple-entity approach, based on the model presented in the Australian Standard AS ISO 23081.'
8	Jurisdiction	AGRkMS Appendix D7: aglsJuri Scheme	'AU' or 'Commonwealth of Australia', "SA' or 'South Australia'
9	Security Classification	AGRkMS Appendix D8: Protective Security Manual (PSM) Security Classifications	'Unclassified' 'Commercial-in-Confidence' 'Highly Protected' 'Secret'
14	Position	-	'Assistant Director, Information Policy' 'IT System Auditor' 'Agency Security Advisor' 'Case File Digitisation Manager' 'Consultant'
15	Language	AGRkMS Appendix D14: RFC 5646 ¹⁵	'en' (English) 'en-AU' (Australian English) it (Italian) 'zh-Hans' (Simplified Chinese)
		ISO 639-3 ¹⁶	'asf' (Auslan - Australian Sign Language) 'pjt' (Pitjantjatjara) 'coa' (Cocos Islands Malay) 'ban' (Balinese)
21	Medium	-	'Paper' 'Magnetic Tape' 'DVD'
23	Location	-	'Bay 72, Shelf 5' 'Tape Silo 2, T13'

¹⁵ <http://tools.ietf.org/html/rfc5646> (replaces RFC 4646)

¹⁶ ISO 639-3:2007 *Codes for the representation of names of languages — Part 3: Alpha-3 code for comprehensive coverage of languages*. Includes Australian indigenous languages.

No	Property name	Encoding scheme	Example values
24	Document Form	AGRkMS Appendix D21: Document Form Scheme	'Electronic Message' 'Media Release' 'Metadata' 'Minute' 'Report' 'Software'
25	Precedence	AGRkMS Appendix D22: Document Precedence Scheme	'R' or 'Routine' 'P' or 'Priority' 'O' or 'Immediate'

6.5.2 Containers — properties with sub-properties

Containers, or properties containing sub-properties, are more complex to implement because there are two levels of use obligation and repeatability to deal with. In cases where properties are mandatory, or where a decision is made to implement conditional or optional properties, the use obligations assigned to the sub-properties become applicable and must be followed. This means that if your agency chooses to implement an optional property with mandatory or conditional sub-properties, the mandatory sub-properties must be implemented, and the conditional sub-properties must be implemented if the applicable conditions are met.

The basic rules of thumb for the use of sub-properties are:

- mandatory sub-properties must be used when the property to which they belong is used
- conditional sub-properties are used under defined circumstances when the property to which they belong is used
- agencies can choose, based on their business requirements, whether or not to use optional sub-properties when the property to which they belong is used.

For example:

- it is mandatory to implement property 2 (Identifier) for all entities implemented; and
- when implementing Identifier, you must use the sub-property 2.1 (Identifier String); but
- the use of the sub-property 2.2 (Identifier Scheme) is conditional on whether or not the identifier is taken from a defined scheme.

Here is a more complex example. When you are describing digital records, you must implement conditional property 19. Format. This property is not used when describing non-digital records. All the Format sub-properties are conditional:

- They are only used when describing digital records of Category 'Item'.
- Either 19.1 (Format Name) or 19.3 (Creating Application Name) must be used. If 19.3 (Creating Application Name) is not used, then 19.1 (Format Name) must be used, and if 19.1 (Format Name) is not used, then 19.3 (Creating Application Name) must be used.
- 19.2 (Format Version) must only be used if 19.1 (Format Name) is used.

- 19.4 (Creating Application Version) must only be used if 19.3 (Creating Application Name) is used.
- 19.5 (Format Registry) must be used when information about format or creating applications is taken from a format registry such as the Unified Digital Formats Registry (UDFR).

The sample metadata record in Section 6.7.1 provides a specific example of how the Format property works.

The standard has only one optional property with sub-properties. This is property 16. Coverage. There are also very few optional sub-properties. Only the three sub-properties under 16. Coverage, and the sub-property 17.2 Keyword ID under 17. Keyword are optional. If you decide to implement property 16. Coverage, however, at least one of the three optional sub-properties must be used. Although this may seem counter-intuitive, remember that this is because the information in containers is not captured directly into the parent property, but into its sub-properties.

Table 15 sets out the fifteen properties that have sub-properties, showing entity applicability and use obligation for both properties and sub-properties.

Table 15 Containers — properties containing sub-properties

No	Property name	Obligation	Entity applicability	No	Sub-properties	Obligation
2	Identifier	Mandatory	All	2.1	Identifier String	Mandatory
				2.2	Identifier Scheme	Conditional
3	Name	Mandatory	Record Agent Business Mandate	3.1	Name Words	Mandatory
				3.2	Name Scheme	Conditional
4	Date Range	Mandatory	All	4.1	Start Date	Mandatory
				4.2	End Date	Conditional
6	Related Entity	Mandatory	Relationship	6.1	Assigned Entity ID	Mandatory
				6.2	Assigned Entity ID Scheme	Conditional
				6.3	Relationship Role	Mandatory
7	Change History	Conditional	Relationship	7.1	Property Name	Mandatory
				7.2	Prior Value	Mandatory
				7.3	Relationship ID	Conditional
10	Security Caveat	Conditional	Record Mandate	10.1	Caveat Text	Mandatory
				10.2	Caveat Category	Conditional
11	Permissions	Conditional	Agent	11.1	Permission Text	Mandatory
				11.2	Permission Type	Conditional
12	Rights	Conditional	Record	12.1	Rights Statement	Mandatory
				12.2	Rights Type	Mandatory
				12.3	Rights Status	Conditional
13	Contact	Conditional	Agent	13.1	Contact Details	Mandatory
				13.2	Contact Type	Mandatory
16	Coverage	Optional	Record Mandate (16.3 only)	16.1	Jurisdictional Coverage	Optional
				16.2	Temporal Coverage	Optional
				16.3	Spatial Coverage	Optional
17	Keyword	Conditional	Record	17.1	Keyword Term	Mandatory
				17.2	Keyword ID	Optional

No	Property name	Obligation	Entity applicability	No	Sub-properties	Obligation
				17.3	Keyword Scheme	Conditional
				17.4	Keyword Scheme Type	Conditional
18	Disposal	Mandatory	Record	18.1	Records Authority	Mandatory
				18.2	Disposal Class ID	Conditional
				18.3	Disposal Action	Conditional
				18.4	Disposal Trigger Date	Conditional
				18.5	Disposal Action Due	Conditional
19	Format	Conditional	Record	19.1	Format Name	Conditional
				19.2	Format Version	Conditional
				19.3	Creating Application Name	Conditional
				19.4	Creating Application Version	Conditional
				19.5	Format Registry	Conditional
20	Extent	Mandatory	Record	20.1	Physical Dimensions	Conditional
				20.2	Logical Size	Conditional
				20.3	Quantity	Conditional
				20.4	Units	Mandatory
22	Integrity Check	Conditional	Record	22.1	Hash Function Name	Mandatory
				22.2	Message Digest	Mandatory

6.5.3 Determining which properties and sub-properties to use

Determining which properties and sub-properties to include in your implementation may seem a daunting task. The combination of use obligation, repeatability and whether a metadata tag is a property or a sub-property can be confusing.

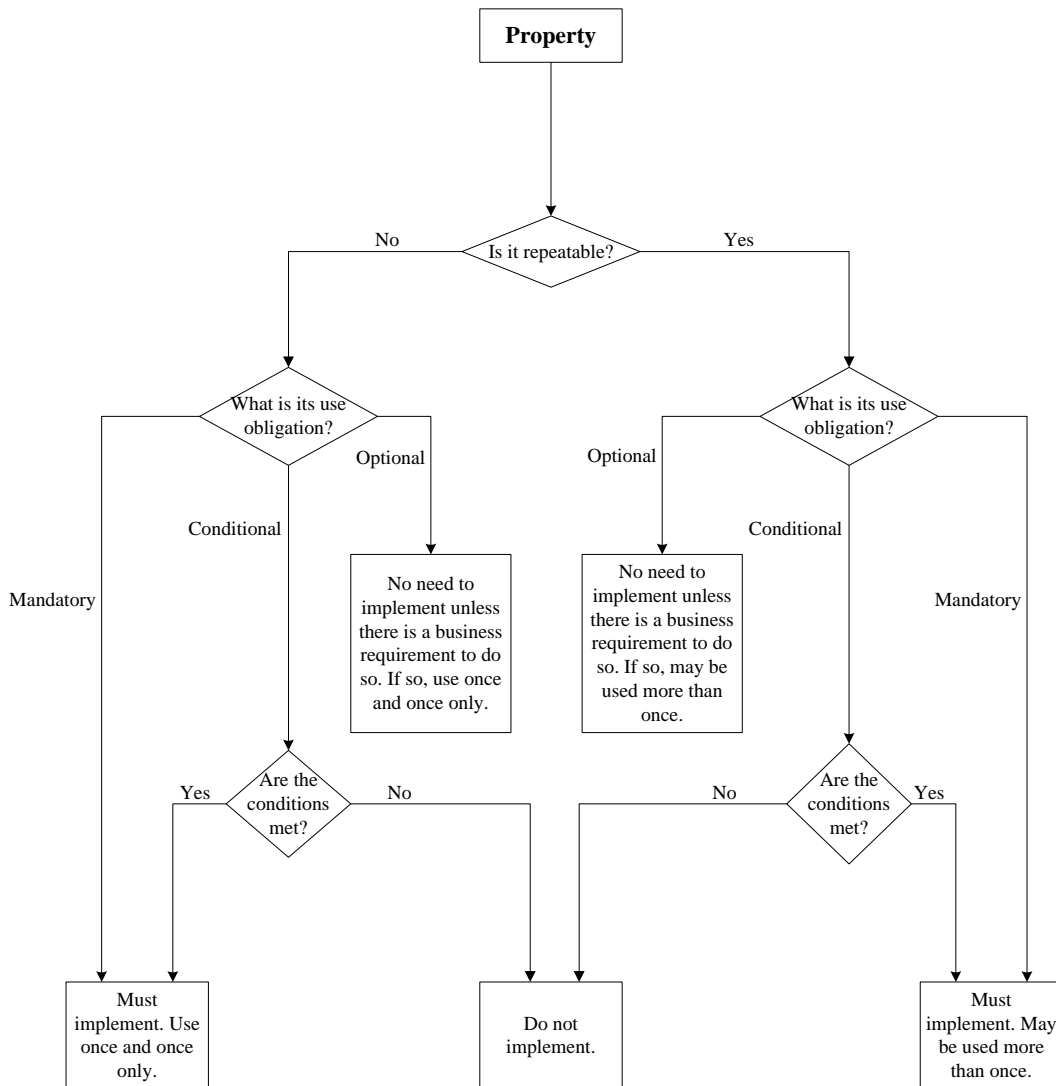
To assist you in the process of determining which properties and sub-properties to implement, we have included a set of tools for you to work out what their obligation status is.

Broadly seen, the decision tool to apply depends on whether the property has sub-properties or not. If the property you wish to describe has no sub-properties use the decision tree in Figure 14. However, if the property does have sub-properties (i.e. it is a container), use Table 16 to work your way through the various combinations of use obligation and repeatability, and relevant actions to take, when implementing containers.

In the decision tree, Figure 14, the following symbols are used:

- a diamond, representing a question
- a named line, representing one of a number of alternative answers to a question (paths to take)
- a rectangle, representing a final course of action to be taken.

Figure 14 Decision tree to work out the obligation status for properties without sub-properties



Before using Table 16 for containers, first find out the obligation status and repeatability of the property at hand (using Table 6). Then, select the appropriate table row using the obligation status (first column of the table) and, moving to the right in the table, select the relevant repeatability status. Keep moving to the right and repeat the same steps for the sub-property columns to work out which action you need to take (last column).

Table 16 Decision table to work out the obligation status for implementing containers (properties with sub-properties)

Property characteristics		Sub-property characteristics		Possible actions		
Obligation	Repeatable?	Obligation	Repeatable?			
Mandatory	Yes	Mandatory	Yes	None No repeatable mandatory containers have repeatable mandatory sub-properties.		
			No	The sub-property must be implemented, but cannot be repeated. The parent property must be repeated for the sub-property to be used again.		
		Conditional	Yes	The sub-property must be implemented if its conditions are met. It can be used as many times as required without repeating the parent property.		
			No	The sub-property must be implemented if its conditions are met, but cannot be repeated. The parent property must be repeated for the sub-property to be used again.		
		Optional	Yes	None No repeatable mandatory containers have optional sub-properties.		
			No			
		Mandatory	No	Mandatory	Yes	None No non-repeatable mandatory containers have repeatable mandatory sub-properties.
					No	The sub-property must be implemented. It must be used once and once only.
Conditional	Yes			The sub-property must be implemented if its conditions are met. It can be used as many times as required within the parent property (which cannot be repeated).		
	No			The sub-property must be implemented if its conditions are met. It must be used once and once only.		
Optional	Yes			None		

Property characteristics		Sub-property characteristics		Possible actions		
Obligation	Repeatable?	Obligation	Repeatable?			
			No	No non-repeatable mandatory containers have optional sub-properties.		
Conditional	Yes	Mandatory	Yes	The sub-property must be implemented if the conditions of its parent property are met. It can be used as many times as required without repeating the parent property.		
			No	The sub-property must be implemented if the conditions of its parent property are met. It must be used once and once only within the parent property.		
		Conditional	Yes	None. No repeatable conditional containers have repeatable conditional sub-properties.		
			No	The sub-property must be implemented if the conditions of its parent property AND its own conditions are met. It must be used once and once only within the parent property.		
		Optional	Yes	None. No repeatable conditional containers have repeatable optional sub-properties.		
			No	The sub-property may be implemented if the conditions of its parent property are met, and there is a business requirement to do so, but it cannot be repeated. The parent property must be repeated for the sub-property to be used again.		
		Conditional	No	Mandatory	Yes	None. No non-repeatable conditional containers have repeatable mandatory sub-properties.
					No	The sub-property must be implemented if the conditions of its parent property are met. It must be used once and once only.
Conditional	Yes			None. No non-repeatable conditional containers have repeatable conditional sub-properties.		
	No			The sub-property must be implemented if the conditions of its parent property AND its own conditions are met. It must be used once and once only.		
Optional	Yes			None. No non-repeatable		

Property characteristics		Sub-property characteristics		Possible actions
Obligation	Repeatable?	Obligation	Repeatable?	
			No	conditional containers have optional sub-properties.
Optional	Yes	Mandatory	Yes	None. No repeatable optional containers have mandatory sub-properties.
			No	
		Conditional	Yes	None. No repeatable optional containers have conditional sub-properties.
			No	
Optional	Yes	The sub-property may be implemented if its parent property is implemented, and there is a business requirement to do so. It can be used as many times as required without repeating the parent property. Note: If all the sub-properties within a parent property are optional, for the parent property to be implemented at least one of the sub-properties must be used.		
	No	None. No repeatable optional containers have non-repeatable optional sub-properties.		
Optional	No	Mandatory	Yes	None. There are no non-repeatable optional containers.
			No	
		Conditional	Yes	
			No	
Optional	Yes			
	No			

Section 6.7 includes examples of how to apply the use obligation and repeatability rules when working with properties and sub-properties.

First, however, we discuss encoding schemes and explain how they are used with metadata properties and sub-properties.

6.6 Using encoding schemes to record property values

An encoding scheme is one mechanism you can implement to ensure that users only need to decide the wording or terms for a minimal number of metadata property values.

Encoding schemes are pre-defined lists of values that assist the user to record the value of a property. Wherever possible, your agency should opt to use an encoding scheme that assists the user in selecting the terms to be used for a specific property or sub-property.

By creating a pre-defined scheme you will ensure that your agency can control the terms used in the metadata property and enforce rules such as use of full names rather than abbreviations, as well as ensuring consistency in spelling.

Encoding schemes provide contextual information or parsing rules that aid in the interpretation of a term value.¹⁷ Put another way, they add meaning to a property by indicating how to interpret the value. This added meaning may take the form of controlled vocabularies, formal notations, or structural rules. Encoding schemes can be designed to be understood by an automated client or agent, or they may aid understanding by a human reader.

There are two types of encoding schemes — vocabulary encoding schemes and syntax encoding schemes.

6.6.1 Vocabulary encoding schemes

Vocabulary encoding schemes indicate that the value is a term from a controlled vocabulary, such as a whole-of-government or agency thesaurus, or a list maintained and controlled by an internal or external authority. Examples of vocabulary encoding schemes include the following:

- Australian Governments' Interactive Functional Thesaurus (AGIFT)
- AGLS Jurisdiction (agls-Juri) scheme
- Entity Type, Category Type and Relationship Name schemes (see AGRkMS Appendix D1, D2 and D4, respectively).

Some vocabulary encoding schemes are extensible, which means that agencies can add to the list of values over time, as gaps become apparent or new needs arise. One example of an extensible scheme is the Document Form scheme (see AGRkMS Appendix D21, p 105–107).

Other vocabulary encoding schemes are not extensible. The intention of non-extensible schemes is to control the number of allowable values, sometimes in accordance with a defined standard, to ensure consistent meaning and understanding of terms, and improved interoperability. Examples of non-extensible schemes include the security classification scheme in the Australian Government Personnel Security Protocol and the Relationship Role scheme (See AGRkMS Appendix D6, p95).

6.6.2 Syntax encoding schemes

Syntax encoding schemes indicate that the value is formatted in accordance with a formal notation or externally defined standard. Values encoded with syntax encoding schemes are primarily machine-processable. Some examples of syntax encoding schemes include:

- Uniform Resource Identifier (URI)¹⁸
- International Standard Book Number (ISBN)¹⁹

¹⁷ Dublin Core Metadata Initiative, *DCMI Glossary* (issued 2005), <http://dublincore.org/documents/usageguide/glossary.shtml>

¹⁸ An addressing technology for identifying resources on the Internet or private intranets. URIs are usually of two types: URLs, which locate resources or URNs, which are persistent names that are address independent.

¹⁹ The ISBN (International Standard Book Number) is a 13-digit number that uniquely identifies books and book-like products published internationally. Each number identifies a unique edition of a publication, from one specific publisher, allowing for more efficient marketing of products by booksellers, libraries, universities, wholesalers and distributors. ISBNs are assigned by ISBN group agencies in 166 countries, coordinated by the International ISBN Agency in London. The Australian ISBN Agency assigns ISBNs in Australia exclusively. <http://www.thorpe.com.au/isbn/>

- RFC5646, based on the Internet Engineering Task Force document *Tags for Identifying Languages*²⁰
- ISO8601, the international standard for the representation of dates and times²¹.

6.6.3 Using encoding schemes with properties

Many of the properties and sub-properties in the standard can be populated with terms from vocabulary encoding schemes, or structured in accordance with the formatting rules laid out in syntax encoding schemes.

Examples of schemes that you may use with properties and sub-properties in the standard are listed with their technical descriptions in the AGRkMS (Section 2.1). Further information about various schemes is provided in Appendix D of the AGRkMS. Note that the lists of schemes included are not exhaustive. Agencies may use whichever schemes are appropriate to their business, provided they document their use either within the metadata records or externally.

It should be noted, however, that for some properties and sub-properties Australian Government agencies are required to use the values from a particular vocabulary encoding scheme. Examples of these include:

- the Category (1) and Security Classification (9) property
- Relationship Role (6.3), Rights Type (12.2) and Permission Type (11.2) sub-properties
- all properties and sub-properties that have numeric dates and/or times as values are required to be formatted in accordance with the syntax encoding scheme ISO 8601 (Standard for the Representation of Dates and Times).

Several examples of scheme usage are included in the sample metadata records in the next section.

6.7 Tying it all together — examples of metadata records

To help tie everything together, we will now look at some examples which demonstrate how to:

- apply the cardinality rules for properties and sub-properties with different combinations of use obligation and repeatability
- use encoding schemes to provide or format values.

We use three examples of metadata records for the following entities:

²⁰ This document describes the structure, content, construction, and semantics of language tags for use in cases where it is desirable to indicate the language used in an information object. It also describes how to register values for use in language tags and the creation of user-defined extensions for private interchange.

<http://tools.ietf.org/html/rfc5646>

²¹ ISO 8601 is the International Standard for the representation of dates and times. ISO 8601 describes a large number of date/time formats. To reduce the scope for error and the complexity of software, it is useful to restrict the supported formats to a small number. This profile defines a few date/time formats, likely to satisfy most requirements. <http://www.w3.org/TR/NOTE-datetime>

- Record entity (with the Category 'Item', in this case a digital document)
- Agent entity (with the Category 'Person', in this case a person working for the organisation)
- Relationship entity (with the Category 'Recordkeeping Event' and Name Scheme 'Creates', in this case recording the event 'person creates document').

You should be aware that, for simplicity, a number of the optional properties are omitted from the example metadata records.

As you go through the sample metadata records, you may find it useful to refer to the technical descriptions of the properties and sub-properties in the AGRkMS (Section 2.1).

6.7.1 Example metadata describing a digital record

Example 24 shows the metadata record that describe a digital document (a Record entity with the Category 'Item').

Example 24 Record entity with Category 'Item'

Property / Sub-property	Value	Explanatory notes
Entity Type:	'Record'	Conditional property (mandatory for multiple-entity implementations); not repeatable within a metadata record. The value is taken from AGRkMS Appendix D1: Entity Type Scheme.
Category:	'Item'	Mandatory, non-repeatable property. The value is taken from AGRkMS Appendix D2: Category Type Scheme.
Identifier: Identifier String: Identifier Scheme:	'2491mx34y' 'System-assigned'	Mandatory, repeatable container. Identifier String is mandatory; Identifier Scheme is conditional on whether or not the ID is taken from a scheme.
Identifier: Identifier String: Identifier Scheme:	'R20091210557' 'System Document ID Scheme'	Neither sub-property is repeatable, so the entire container has to be repeated to capture more than one set of Identifier details.
Name: Name Words:	'Procedures for Fire Wardens: 2010 - 2011'	Mandatory, repeatable container. Name Words is mandatory; Name Scheme is conditional on whether the name words are taken from a scheme. As the name of the document is entered as free text, there is no need to enter a scheme.
Date Range: Start Date:	'2009-12-10T09:55:29'	Mandatory, non-repeatable container. Start Date is mandatory; End Date is conditional, and would only be used when the record is destroyed. The value is formatted in accordance with the ISO 8601 Standard for the representation of dates and times.

Property / Sub-property	Value	Explanatory notes
Description:	'Compulsory two-yearly review and update of emergency and evacuation procedures for fire wardens'	Optional, repeatable property. Can be used to add further contextual information.
Security Classification:	'Unclassified'	Conditional, repeatable property (repeatable to specifically cover Cabinet-in-Confidence material). It must be used if the document has a national or non-national security classification, or it can be used to denote unclassified material. The example document is not security classified, but the organisation has decided to mandate the use of the marking 'Unclassified'. The property cannot be repeated because the document is not Cabinet-in-Confidence.
<u>Rights:</u> Rights Statement: Rights Type:	'This document is for the use of the Chief Fire Warden and Deputy Fire Wardens only, and can only be accessed and modified by the staff currently filling those roles.' 'Use permission'	Conditional, repeatable container. It must be used if there is some policy governing use of and access to the record. If Rights is used, Rights Statement and Rights Type are mandatory. The use of Rights Status is conditional on particular values being assigned to Rights Type. The value for Rights Type is taken from AGRkMS Appendix D12.1: Rights Type Scheme. The sub-properties are not repeatable, so the entire container has to be repeated to capture more than one set of Rights.
<u>Keyword:</u> Keyword Term: Keyword Scheme: Keyword Scheme Type:	'Emergency procedures' 'Australian Emergency Management Terms Thesaurus' 'Subject'	Conditional, repeatable container. It must be used if some kind of classification scheme (such as a thesaurus) is used to assign subject or functions-based keywords to records.
<u>Keyword:</u> Keyword Term: Keyword Scheme: Keyword Scheme Type:	'Evacuation procedures' 'Australian Emergency Management Terms Thesaurus' 'Subject'	If Keyword is used, Keyword Term is mandatory. The use of Keyword Scheme and Keyword Scheme Type is conditional on whether the value in Keyword Term is taken from a formal scheme. Use of Keyword ID is

Property / Sub-property	Value	Explanatory notes
<p>Keyword: Keyword Term: Keyword Scheme: Keyword Scheme Type:</p>	<p>'Wardens' 'Australian Emergency Management Terms Thesaurus' 'Subject'</p>	<p>optional, and it has not been used here. The value for Keyword Scheme Type is taken from AGRkMS Appendix D18: Keyword Scheme Type Scheme. The sub-properties are not repeatable, so the entire container has to be repeated to capture more than one equally weighted Keyword. Keywords at different levels in a hierarchy can be represented together in Keyword Term using multiple values separated by delimiters, e.g. 'Trade; tariff regulation'.</p>

Property / Sub-property	Value	Explanatory notes
Disposal: Records Authority: Disposal Class ID: Disposal Action: Disposal Trigger Date: Disposal Action Due:	'Administrative Functions Disposal Authority (AFDA) '1857' 'Destroy 5 years after procedures are superseded' '2012-01-15' '2017-01-15'	<p>Mandatory container, repeatable for some aggregations of records (series and transaction sequences), but not for files or items. In this case, as the record is a single item, the container is not repeatable.</p> <p>Records Authority is mandatory, with a default value of 'No disposal coverage' if the record is not covered by a current records authority.</p> <p>The other sub-properties are conditional, the first three on there being current disposal coverage for the record, and the last one on the Disposal Action and Disposal Trigger Date being known.</p> <p>In this case, disposal coverage for the item in question is provided under AFDA. The procedures are updated and re-released every two years, in January. The new procedures take effect from 15 January 2010, and are extant until 15 January 2012, when they will be superseded. Therefore the Disposal Trigger Date is 15 January 2012, and the Disposal Action Due date (based on the Disposal Action) is 15 January 2017. The Disposal Action Due date may be used as a trigger to review the action and the status of the record prior to actual disposal.</p> <p>The first three sub-properties are not repeatable. The Disposal Trigger Date is repeatable to cover cases where more than one possible trigger event is specified in the Disposal Action. The Disposal Action Due is repeatable for RNA records to enable the recording of other disposal dates, such as transfer to the National Archives. In this case, neither of the properties need to be repeated.</p> <p>The values in Disposal Trigger Date and Disposal Action Due are formatted in accordance with the ISO 8601 Standard for the representation of dates and times.</p> <p>Note: In reality, the Disposal details would be applied at file rather than individual item level, but the details would apply to each item in the file. For simplicity, it has been applied here directly to the item. Aggregation and inheritance are discussed in detail, with examples, in Section 4.</p>

Property / Sub-property	Value	Explanatory notes
<u>Format:</u> Format Name: Format Version: Format Registry:	'OpenDocument Text Format' '1.0' 'PRONOM - PUID: fmt/136'	<p>Conditional, non-repeatable container. It must only be used if the record is digital.</p> <p>All five sub-properties are conditional, some of them on the use of each other. Either Format Name and Format Version must be used together, or Creating Application Name and Creating Application Version must be used together. In this case, the former combination has been implemented.</p> <p>The use of Format Registry is conditional on the information about the format being taken from a registry. In this case, it has been taken from The National Archives' (UK) PRONOM registry.</p>
<u>Extent:</u> Logical Size: Units:	'194' 'KB'	<p>Mandatory, repeatable container. Physical Dimensions and Logical Size are conditional (the former must be used if the record is in physical form, the latter if the record is digital). As the record is digital, Logical Size has been implemented here.</p> <p>Quantity is conditional on whether an aggregation of records, such as a file or series, is being described. It is not implemented here as the record is a single item.</p> <p>Units is mandatory. The value for Units is taken from AGRkMS Appendix D19: Digital Units Scheme. The sub-properties are not repeatable, so the entire container has to be repeated to capture more than one set of details about a record's extent.</p>
Document Form:	'Procedure'	<p>Optional, non-repeatable property. The organisation has decided that this is a useful property to implement, and has made it mandatory for record items.</p> <p>As the document contains the revised emergency and evacuation procedures for fire wardens, it has been assigned the value of 'Procedure', taken from AGRkMS Appendix D21: Document Form Scheme.</p>

6.7.2 Example metadata describing a person

Example 25 shows the metadata records that describe a person working for the organisation (an Agent entity with Category 'Person').

Example 25 Agent entity with Category 'Person'

Property / Sub-property	Value	Explanatory notes
Entity Type:	'Agent'	Conditional property (mandatory for multiple-entity implementations); not repeatable within a metadata record. The value is taken from AGRkMS Appendix D1: Entity Type Scheme.
Category:	'Person'	Mandatory, non-repeatable property. The value is taken from AGRkMS Appendix D2: Category Type Scheme.
<u>Identifier:</u> Identifier String: Identifier Scheme:	'797-50051' 'APS Number'	Mandatory, repeatable container. Identifier String is mandatory; Identifier Scheme is conditional on whether or not the ID is taken from a scheme. Neither sub-property is repeatable, so the entire container has to be repeated to capture more than one set of Identifier details.
<u>Identifier:</u> Identifier String: Identifier Scheme:	'16334' 'Position Number'	
<u>Name:</u> Name Words: Name Scheme:	'Marshall, Joanna A.' 'Internal Name Format Scheme'	Mandatory, repeatable container. Name Words is mandatory; Name Scheme is conditional on whether the name words are taken from a scheme. The name of the person is entered firstly in accordance with an internal standard used across all the organisation's business systems. The name property is then repeated to capture the name by which the person is more commonly known. This is entered as free text, so no scheme is recorded.
<u>Name:</u> Name Words:	'Jo Marshall'	
<u>Date Range:</u> Start Date:	'2005-07-25'	Mandatory, non-repeatable container. Start Date is mandatory; End Date is conditional, and would only be used to capture the date the person ceases to work for the organisation. The value is formatted in accordance with the ISO 8601 Standard for the representation of dates and times.
<u>Permissions:</u> Permission Text: Permission Type:	'Information Management and Policy Group Access' 'Business'	Conditional, repeatable container. It must be used if the agent has security clearances or other accreditations that govern her

Property / Sub-property	Value	Explanatory notes
<u>Permissions:</u> Permission Text: Permission Type:	'Fire Warden Group Access' 'Business'	access to and use of particular records. If Permissions is used, Permission Text and Permission Type are mandatory. The value for Permission Type is taken from AGRkMS Appendix D11: Permission Type Scheme. The sub-properties are not repeatable, so the entire container has to be repeated to capture more than one set of Permissions. In this case, the person is a member of two different groups, thereby allowing her to access two specific system areas and sets of records.
<u>Contact:</u> Contact Details: Contact Type:	'02 6227 3681' 'Telephone'	Conditional, repeatable container. It must be used unless the agent is a mechanism such as a sensor or a system application. If Contact is used, Contact Details and Contact Type are both mandatory. The value for Contact Type is taken from AGRkMS Appendix D13: Contact Type Scheme. The sub-properties are not repeatable, so the entire container has to be repeated to capture more than one set of Contact details.
<u>Contact:</u> Contact Details: Contact Type:	'02 6227 3774' 'Facsimile'	
<u>Contact:</u> Contact Details: Contact Type:	'jmarshall@hwb.gov.au' 'Email'	
Position:	'Assistant Director, Information Policy'	Optional, repeatable property. It is used here because the organisation has decided that it is useful to record information about the position(s) held by staff members. This individual has two positions. As the property is repeatable, both positions can be recorded.
Position:	'Deputy Fire Warden'	

6.7.3 Example metadata describing the relationship 'person creates digital document'

Example 26 shows the metadata records that describe the creation of a digital document (Example 24) by a person in the organisation (Example 25) described above (a Relationship event with Category 'Recordkeeping Event' and Name Scheme value 'Creates'). This is the relationship that expresses 'person creates document'.

Example 26 Relationship entity with Category 'Recordkeeping Event' and Name Scheme 'Creates'

Property / Sub-property	Value	Explanatory notes
Entity Type:	'Relationship'	Conditional property (mandatory for multiple-entity implementations); not repeatable within a metadata record. The value is taken from AGRkMS Appendix D1: Entity Type Scheme.
Category:	'Recordkeeping Event'	Mandatory, non-repeatable property. The value is taken from AGRkMS Appendix D2: Category Type Scheme.
<u>Identifier:</u> Identifier String: Identifier Scheme:	'200R9775219X' 'System-assigned'	Mandatory, repeatable container. Identifier String is mandatory; Identifier Scheme is conditional on whether or not the ID is taken from a scheme. Relationships usually have only one, system-assigned identifier.
<u>Name:</u> Name Words: Name Scheme:	'Creates' 'AGRkMS D4.2 Recordkeeping Event Relationship Name Scheme'	Mandatory, repeatable container. Name Words is mandatory; Name Scheme is conditional on whether the name words are taken from a scheme. The value is taken from AGRkMS Appendix D 4.2: Recordkeeping Event Relationship Names. The value in Name Words (the name of the recordkeeping event) is taken from an AGRkMS scheme, so the Name Scheme sub-property must be used.
<u>Date Range:</u> Start Date: End Date:	'2009-12-10T09:55:29' '2009-12-10T09:55:29'	Mandatory, non-repeatable container. Start Date is mandatory; use of End Date is conditional on the relationship / event having concluded. Many recordkeeping event relationships happen in an instant, and this can be indicated by using the same date/time for the Start and End Dates. Values are formatted in accordance with the ISO 8601 Standard for the representation of dates and times.

Property / Sub-property	Value	Explanatory notes
<u>Related Entity:</u> Assigned Entity ID: Assigned Entity ID Scheme: Relationship Role:	'797-50051' 'APS Number' '1'	Mandatory, repeatable container. Assigned Entity ID and Relationship Role are mandatory; Assigned Entity ID Scheme is conditional on whether the Assigned Entity ID is taken from a scheme.
<u>Related Entity:</u> Assigned Entity ID: Assigned Entity ID Scheme: Relationship Role:	'2491mx34y' 'System-assigned' '2'	The values in Assigned Entity ID and Assigned Entity ID Scheme will be identical to those in the Identifier String and Identifier Scheme of the relevant participant in the relationship. In the first case, it is the APS number (and scheme) of the person Jo Marshall. In the second case, it is the ID (system-assigned) of the document containing Fire Wardens' procedures. The value in Relationship Role is taken from AGRkMS D6: Relationship Role Scheme, and indicates the direction in which the relationship is read. The sub-properties are not repeatable, so the entire container has to be repeated to capture the details of each Related Entity (participant in the relationship).

7. GLOSSARY OF TERMS AND ACRONYMS

Term or acronym	Definition	Source
Aggregation	Any accumulation of record entities at a level above item, e.g. file or series.	NAA Glossary of records management terms
Application profile	A declaration of the metadata terms an organisation, information resource, application or user community uses in its metadata. In a broader sense, it includes the set of metadata properties, policies and guidelines defined for a particular application or implementation.	DCMI Glossary
Encoding scheme	<p>Schemes that aid in the interpretation of a property value. There are two kinds of encoding schemes: syntax encoding schemes and vocabulary encoding schemes.</p> <p>Use of a syntax encoding scheme indicates that the value is a string formatted in accordance with a formal notation or externally defined standard.</p> <p>Use of a vocabulary encoding scheme indicates that the value is a term taken from a controlled vocabulary, such as a thesaurus.</p>	AGLS Part 1 - 2010
Entity	A grouping of concepts or real-world objects that behave in the same basic way, and can be described by a consistent set of metadata. An entity refers to the whole of the concept or real-world object, and covers all categories and instances of the entity.	Archives NZ Guide – amended
Extensible	Having the potential to be expanded in scope, area or size. The ability to extend a core set of metadata with additional properties.	Archives NZ Guide
Flattening	The process whereby metadata about other entities are brought explicitly within the boundaries of the entities chosen for implementation.	Archives NZ Guide
Hierarchy	An arrangement of objects, people, properties, values, etc., in a ranked or graduated series of levels. Items in a hierarchy are typically thought of as being “above”, “below” or “at the same level as” one another.	Archives NZ Guide – slightly amended

Term or acronym	Definition	Source
Inheritance	A forced nesting of deliberately designed terms used to organise entities, particularly records, agents and business. Inheritance generally enables lower-level entities to take on metadata values from their parent entities.	Archives NZ Guide – slightly amended
Instance	A specific occurrence of an entity, described by a unique single metadata value or set of metadata values.	
Namespace	A machine-readable file that provides definitions of the metadata scheme. Identifying the namespace of a metadata term is required for metadata to be machine-processable. Namespace prefixes are used in the property names to indicate the logical grouping and unique identification of a set of metadata terms from which the property is taken. ²²	AGLS Part 2 - 2010
Container	A property in the metadata schema which is a place holder. It contains no data values, but provides context to the sub-properties defined beneath that hold the data values.	Archives NZ Guide
Property	A specific aspect, characteristic, attribute or relation used to describe an entity. The AGRkMS metadata terms are properties. Sub-properties are also properties	AGLS Part 1 - 2010
Provenance	The agent that created, received or accumulated and used the records in the conduct of business.	NAA Glossary of records management terms
Recordkeeping System	Is any business system that creates, captures and stores records for example EDRMS, HR, Finance systems etc.	
Schema	A machine-processable specification that defines the structure and syntax of metadata in a formal schema language.	AGLS Part 2 - 2010
Scheme	See encoding scheme.	
Sub-property	Properties which more narrowly define other properties.	
Syntax Encoding Scheme	Indicates that the value is a string formatted in accordance with a formal notation or externally defined standard.	AGLS Part 1 - 2010

²² The namespace prefix for AGRkMS terms has not yet been determined.

Term or acronym	Definition	Source
Value	The content of a metadata property which provides information about a characteristic of an entity.	AGLS Part 1 - 2010
Vocabulary Encoding Scheme	Indicates that the value is a term from a controlled vocabulary.	AGLS Part 1 - 2010

APPENDICES

APPENDIX A Summary of entities, properties and sub-properties used in the metadata standard

Table 17 Overview of metadata entities, their properties and sub-properties

No	Metadata properties							AGRkMS	
0 ^a	Record	Agent	Business	Mandate	Relationship	Property/sub-property Use obligation status	Repeat	Details	Encoding scheme
1	Category ⇒ Archives ⇒ Archive ⇒ Series ⇒ File ⇒ Transaction Sequence ⇒ Item	Category ⇒ Institution ⇒ Organisation ⇒ Work Group ⇒ Person ⇒ Mechanism	Category ⇒ Ambient Function ⇒ Function ⇒ Activity ⇒ Transaction	Category ⇒ Legislation ⇒ Regulation ⇒ Standard ⇒ Instrument ⇒ Code of Conduct ⇒ Stakeholder Requirement ⇒ Community Expectation ⇒ Policy ⇒ Business Rule ⇒ System Specification	Category ⇒ Provenance Relationship ⇒ Recordkeeping Event	Mandatory	No	p 24	p 86
2	Identifier	Identifier	Identifier	Identifier	Identifier	Mandatory	Yes	p 25	
2.1	Identifier String	Identifier String	Identifier String	Identifier String	Identifier String	Mandatory	No	p 25	
2.2	Identifier Scheme	Identifier Scheme	Identifier Scheme	Identifier Scheme	Identifier Scheme	Conditional	No	p 26	p 89
3	Name	Name	Name	Name	Name	Mandatory	Yes	p 26	
3.1	Name Words	Name Words	Name Words	Name Words	Name Words	Mandatory	No	p 27	
3.2	Name Scheme	Name Scheme	Name Scheme	Name Scheme	Name Scheme	Conditional	No	p 27	p 91, 93
4	Date Range	Date Range	Date Range	Date Range	Date Range	Mandatory	No	p 28	
4.1	Start Date	Start Date	Start Date	Start Date	Start Date	Mandatory	No	p 28	p 95
4.2	End Date	End Date	End Date	End Date	End Date	Conditional	No	p 29	p 95
5	Description	Description	Description	Description	Description	Optional	Yes	p 29	

No	Metadata properties							AGRkMS	
0 ^a	Record	Agent	Business	Mandate	Relationship	Property/sub-property Use obligation status	Repeat	Details	Encoding scheme
6	-	-	-	-	Related Entity	Mandatory	Yes	p 30	
6.1					Assigned Entity ID	Mandatory	No	p 30	
6.2					Assigned Entity ID Scheme	Conditional	No	p 31	
6.3					Relationship Role	Mandatory	No	p 32	p 95
7	-	-	-	-	Change History	Conditional	Yes	p 33	
7.1					Property Name	Mandatory	No	p 33	
7.2					Prior Value	Mandatory	No	p 34	
7.3					Relationship ID	Conditional	No	p 35	
8	Jurisdiction	Jurisdiction	Jurisdiction	Jurisdiction	-	Optional	Yes	p 35	p 96
9	Security Classification	-	Security Classification	Security Classification	-	Conditional for Record and Mandate, Optional for Business	Yes	p 36	p 97
10	Security Caveat	-	-	Security Caveat	-	Conditional	Yes	p 37	
10.1	Caveat Text			Caveat Text		Mandatory	No	p 37	
10.2	Caveat Category			Caveat Category		Conditional	No	p 38	p 98
11	-	Permissions	Permissions	-	-	Conditional	Yes	p 39	
11.1		Permission Text	Permission Text			Mandatory	No	p 40	p 99
11.2		Permission Type	Permission Type			Mandatory	No	p 40	p 99

No	Metadata properties							AGRkMS	
0 ^a	Record	Agent	Business	Mandate	Relationship	Property/sub-property Use obligation status	Repeat	Details	Encoding scheme
12	Rights	-	-	-	-	Conditional	Yes	p 41	
12.1	Rights Statement					Mandatory	Yes	p 41	
12.2	Rights Type ⇒ Archival Access ⇒ Authorised Public Access ⇒ Copyright ⇒ Disclaimer ⇒ Embargo ⇒ FOI ⇒ Intellectual Property ⇒ Privacy ⇒ Use Permission					Mandatory	No	p 42	p 100
12.3	Rights Status					Conditional	No	p 43	p 101
13	-	Contact	-	-	-	Conditional	Yes	p 43	
13.1		Contact Details				Mandatory	No		
13.2		Contact Type				Mandatory	No		
14	-	Position	-	-	-	Optional	No	p 44	
15	Language	Language	-	-	-	Conditional for Record, Optional for Agent	Yes	p 45	p 102
16	Coverage	-	-	Coverage	-	Optional	Yes	p 45	
16.1	Jurisdictional Coverage					Optional	Yes		
16.2	Temporal Coverage					Optional	Yes		
16.3	Spatial Coverage			Spatial Coverage		Optional	Yes	p 47	p 102

No	Metadata properties							AGRkMS	
0 ^a	Record	Agent	Business	Mandate	Relationship	Property/sub-property Use obligation status	Repeat	Details	Encoding scheme
17	Keyword	-	-	-	-	Conditional	Yes	p 48	
17.1	Keyword Term					Mandatory	No		
17.2	Keyword ID					Optional	No		p103
17.3	Keyword Scheme					Conditional	No		p 103
17.4	Keyword Scheme Type					Conditional	No		
18	Disposal	-	-	-	-	Mandatory	Yes/No	p 51	
18.1	Records Authority					Mandatory	No	p 52	
18.2	Disposal Class ID					Conditional	No	p 52	
18.3	Disposal Action					Conditional	No	p 53	
18.4	Disposal Trigger Date					Conditional	Yes	p 54	
18.5	Disposal Action Due					Conditional	Yes	p 56	
19	Format	-	-	-	-	Conditional	No	p 57	
19.1	Format Name					Conditional	No	p 58	
19.2	Format Version					Conditional	No	p 58	
19.3	Creating Application Name					Conditional	No	p 59	
19.4	Creating Application Version					Conditional	No	p 60	
19.5	Format Registry					Conditional	No	p 60	
20	Extent	-	-	-	-	Mandatory	Yes	p 60	
20.1	Physical Dimensions					Conditional	No	p 61	
20.2	Logical Size					Conditional	No	p 61	
20.3	Quantity					Conditional	No	p 62	
20.4	Units					Mandatory	No	p 62	p 104
21	Medium	-	-	-	-	Conditional	No	p 63	
22	Integrity Check	-	-	-	-	Conditional	No	p 64	p 104

No	Metadata properties							AGRkMS	
0 ^a	Record	Agent	Business	Mandate	Relationship	Property/sub-property Use obligation status	Repeat	Details	Encoding scheme
22.1	Hash Function Name					Mandatory	No		
22.2	Message Digest					Mandatory	No		
23	Location	-	-	-	-	Optional	Yes/No	p 65	
24	Document Form	-	-	-	-	Optional	No	p 66	p 105
25	Precedence	-	-	-	-	Optional	No	p 67	p 107

^a No 0 is the special property that records Entity Type. It only applies to multiple-entity systems

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