Information Management Advice 18 - Managing records in business systems

Part 2: Assessing recordkeeping functionality in business systems

Introduction

Agencies with business systems that contain State records of enduring or high value must implement a management strategy to ensure that all records, including any potentially permanent value records, remain accessible. One strategy is to migrate the records to a new business system.

This Advice will assist agencies to determine if the replacement business system has sufficient inbuilt recordkeeping functionality to maintain records of enduring or high value.

The process outlined here is essentially a gap analysis, comparing the business system with the minimum functional requirements as a benchmark. Before migrating records and decommissioning a legacy system, agencies should assess if the replacement business system has recordkeeping functionality. If there are gaps, the system does not have sufficient recordkeeping functionality. However, agencies may find that when the broader system environment, including business rules and processes, not just software functionality is also considered, recordkeeping requirements are satisfied.

Step One - Benchmarking the business system

Agencies should use this as this self-assessment tool to benchmark business systems which hold State records of enduring or high value. The process involves examining the business system to identify the data elements and digital objects that make up the content of the record and the management information (or metadata) that must be persistently linked to the record. The system being examined may be a legacy system which is to be maintained for the life of the records, or it may be a new or replacement business system.

The self-assessment process could be framed as a series of questions or a checklist. 'YES' and 'NO' responses determine a pass or fail for each requirement. All requirements **must** be met for the system to achieve adequate recordkeeping functionality.

Answering these questions may involve a mix of software demonstration as well as discussions with relevant business managers, business system administrators and system users to understand software functionality and any related processes and procedures. It is also useful to capture any workarounds that staff may use to deal with software.

For an example benchmarking exercise mapping the minimum recordkeeping requirements to Empower HR software, refer to the Case Study.

Requirement	Explanation	Example
System requirements		
1. **Can the system create and keep the digital records you have defined?**	The system **must** keep a fixed and complete version of each record that is defined, whether in documentary form or as a collection of data representing a business transaction. Where the record is made up of more than one component, the system must be able to maintain relationships between all components. Note: some business systems allow for the continual updating of information. In systems where the data is continually updated, the option of exporting records to an external recordkeeping system should be employed.	Many business systems allow for continual updating of data and do not 'fix' or archive records. Such systems may not meet minimum requirements, and so a scheduled migration to an external EDRMS is recommended (export frequency should be based on an assessment of risk).
2. **Can the records in the system be accessed?**	The system **must** be able to store and retrieve the defined records along with their associated metadata and including all components of the records in useable, human-readable form. Note: backups are not suitable systems for maintaining access to enduring or high value records.	An EDRMS such as TRIM allows users to view and/or edit documents. Metadata about the record is maintained and is retrievable in the properties tab for each document. Empower functionality supports the management of the Employee lifecycle from recruitment to termination. Employee and Position History records are linked to documents (such as payslips and leave history) and the audit log of actions (History Table) on the application. These elements are all linked using a tab system.

Requirement	Explanation	Example
3. Can the system restrict or permit access to the defined records by specified individuals or groups?	The system **must** incorporate safeguards based on defined access rules and user identification to limit who can view or access records and associated metadata. Most business systems manage access via user permissions linked to logins.	If the business system contains highly sensitive or confidential records, consideration should be given to exporting them to an external recordkeeping system with more sophisticated access controls. Empower HR allows multiple levels of security. The organisational structure links secure controlled access to employee information.
4. Does the system capture/create and maintain over time the minimum required recordkeeping metadata?	Systems should be configured so that they accumulate metadata for the record as events occur. The metadata **must** remain linked to the record even if the records are migrated out of the original system. The system **must not** permit the removal or deletion of the metadata. Much of the metadata in business systems is pre-set in the system, imported from another system or is generated as a natural part of the operation of the system. Some may be added by system users. Note: Metadata may be applied to individual records or aggregations of records or to a whole system.	Some business systems allow users to add information such as title or name. Empower, for example, requires manual data entry of an employee's name. However most of the other metadata requirements will be assigned by the system and recorded in History Tables. Mapping can assist with ensuring that metadata remains linked to records for as long as required, including through system migrations.
4.1. Point of capture metadata		
4.1.1. Unique identifier	The system **must** be capable of uniquely identifying each record as defined, for example with a system generated reference, a document number or other identifier.	An identifier is automatically assigned to a document registered into TRIM. Empower assigns unique employee number and position number.

Requirement	Explanation	Example
4.1.2. Title or name	The system **must** be capable of applying a title or name to a record. The title should assist in identifying the record and should: • Describe activities and/or subjects documented in the record(s) • Enable searching • Provide contextual information.	Example titles include: • Subject line from an email • System generated report name • Manually entered document title.
4.1.3. Date of creation	The system **must** be capable of capturing and retaining the date of each record's creation to provide evidence of authenticity.	Newer business systems often include capture or create date as mandatory metadata.
4.1.4. The creator (person or system) of digital records	The system **must** be capable of capturing **and** retaining information about who/what created the record. Examine any audit or system logs. Note: this metadata might be gathered from an external identity management system rather than in the system itself.	A person's name, a user ID or a system ID. Most business systems assign a user ID to business activities and transactions.
4.1.5. The business activity or process documented by the record	The system **must** be capable of capturing and retaining information about the business activity or process the record relates to. Typically a business system will not contain an internal classification scheme. For systems that only relate to a limited number of transactions, this metadata may be found in the system documentation, rather than directly associated with every record within the system. This may also be captured in the title (see 4.1.2).	In Empower, file structures can be setup to reflect business unit relationships down to six levels.

Requirement	Explanation	Example
4.1.6. The creating application	The system **must** record the name and version of the software application used to create the record. In many business systems this information will be automatically generated, and will apply across aggregates of records. It may be found in audit trail information.	Many business systems offer report customisation options, including replacing generic logos with company or agency logos. However, the software and version is sometimes recorded in the system audit log.
4.1.7. Record type (e.g. letter / memo / report / contract / fax)	The system **should** be capable of capturing and retaining metadata which indicates the record's type or form. In business systems there may only be a limited number of types – for example reports and transactional records. This is not a mandatory requirement as this metadata can be applied via another element such as title (see 4.1.2) and/or at an aggregate level (e.g. across the entire system).	Empower has the capability to be configured as separate 'applications' (e.g. Recruitment, Pay, Learning and Development, Performance, Health and Safety). Some of these modules such as the Pay and Leave applications have attached audit logs but others do not, particularly those modules that are accessed through Employee Self Service (ESS).
4.2. Process metadata	The system **must** log all subsequent actions, if any, carried out on the record, such as: • Accessing, modifying, transferring of records • The identification of the persons or systems carrying out those actions • The dates those actions were carried out.	In many business systems process metadata is kept in audit logs, showing which officers added, accessed or performed other actions on records in the system.

Requirement	Explanation	Example
4.3. Disposal Metadata	The system **must** be able to destroy some records (records whose retention period has expired) in a systematic and auditable process. The system **must** be capable of capturing and retaining the following metadata for as long as required to account for the disposal of records: • The authorised destruction governing the disposal of the records • The person/role carrying out the disposal. • The date of disposal	Is the deletion of any data or records in the system recorded in the audit log? An EDRMS system such as TRIM will keep the required metadata about records disposal. Most business systems are not configured to meet this requirement. However, if the deletion of data is recorded in the audit log, agencies may be able to apply a Disposal Schedule or other destruction authority across aggregates of records.
5. The system must produce necessary reports and exports	The system **must** be able to export the defined digital records and their associated metadata to another system or to an external medium e.g. a disk or hard drive. • The report/export process should not degrade record relationships, data quality or metadata. • Exports may be a risk based decision and should be subject to a risk management process. • Ideally the records will be exported in non-proprietary formats removing the need to maintain the creating software. • Mappings help with indicating which metadata elements are required to be exported with records.	Agencies once kept summary records in paper form, such as staff service cards. Now agencies use human resource management databases or other automated systems that should provide a similar summary record of employment and service history. In Empower, the summary record for employment and service in an agency not exportable and thus is inadequate to meet the requirements for evidence. However, it is possible to export data into a simple query database. If the metadata elements and business processes that Empower supports are mapped and documented, this requirement may be met.

Case Study: Example mapping of minimum recordkeeping requirements to Empower

Agency A replaced their old HR system with Empower HR & Payroll software, and now intends to decommission the legacy system. All data, including terminated employee history, has been migrated from the old IT system into Empower. Agency A also uses TRIM.

In *Part 1: Checklist for Decommissioning Business Systems*, the agency determined that their old system was: "accessible and contains both short term and long-term/permanent records" and that the "Records are covered by a Disposal Schedule." While some records are only short-term, some records in the system need to be retained permanently for eventual transfer to TAHO (under DA 2157 - 12.11.00 Employment Conditions - PERSONNEL).

From Part 1, the recommended management strategy was "Digital records, including any potentially permanent value records, must be maintained by the agency. Migrate long-term/permanent records and associated metadata to an EDRMS or new business system with inbuilt recordkeeping functionality."

Agency A decided to map the minimum metadata requirements to the replacement system to determine if the system had sufficient recordkeeping functionality to keep Summary employee history records (DA 2157 12.11.01):

Requirement Checklist	Minimum Requirements	Empower
1. **Can the system create and keep the digital records you have defined?**	The system **must** keep a fixed and complete version of each record that is defined, whether in documentary form or as a collection of data representing a business transaction. Where the record is made up of more than one component, the system must be able to maintain relationships between all components.	Partly. Empower keeps summary employee history records documenting the monitoring and management of all employees including: • Name • Date of birth • Date of appointment • Work history details • Position/designation titles • Dates positions held • Location of employment • Rates of salaries/allowances However, the system allows continual updates. To fix the record, a summary history report needs to be registered in TRIM.
2. **Can the records in the system be accessed?**	The system **must** be able to store and retrieve the defined records along with their associated metadata and including all components of the records in useable, human-readable form.	Yes. Employee History links to related employee electronic documentation stored on the client LAN/WAN and Intranet. However, this could be configured to link to TRIM.

Requirement Checklist	Minimum Requirements	Empower
3. If required, can the system restrict or permit access to the defined records by specified individuals or groups?	The system **must** incorporate safeguards based on defined access rules and user identification to limit who can view or access records and associated metadata.	Yes. Multiple levels of security with three types of access control and privacy levels: • Restrict access by payroll e.g. staff and/or executive payrolls • Organisational i.e. which parts of the organisation structure can be accessed • Functional i.e. what application functions can be accessed.
4. Does the system capture/create, accumulate and maintain over time the minimum required recordkeeping metadata? The system must not permit the removal or deletion of the metadata specified in Section 4.		
4.1 Point of capture metadata: To be assigned to records and aggregations of records	4.1.1 Unique identifier	Employee ID
	4.1.2 Title or name	Employee Name
	4.1.3 Date of creation	System Load Date and Employee Start Date
	4.1.4 Who/what created the record	User ID. All users complete a user form, and HR grants access to sections of the database. This user form could be captured in TRIM.
	4.1.5 The business function/process it relates to	Not assigned. However, this is listed in Agency A's Information Asset Register.
	4.1.6 The creating application	Not assigned. Recorded in Agency A's Information Asset Register.
	4.1.7 Record type (e.g. letter / memo / report / contract / fax)	Not assigned. Recorded in Agency A's Information Asset Register.
4.2 Process metadata: Changed access rules, modification to records, transfer of records	4.2.1 The date of the action	Audit log (bulk transactions)
	4.2.2 Identification of who/what undertook the action	Audit log (bulk transactions linked to User ID).
	4.2.3 What action was undertaken	Audit log (bulk transactions)
4.3 Disposal metadata:	4.3.1 The date of disposal	Audit log (bulk transactions).
	4.3.2 The authority governing the disposal of the records	Not assigned. However, Agency A identifies Empower in their version of the Disposal Schedule (DA2157)
	4.3.3 The person/role carrying out the disposal	Audit log (bulk transactions linked to User ID)

Requirement Checklist	Minimum Requirements	Empower
5. Reports and exports	The report/export process should not degrade record relationships, data quality or metadata.	The summary employee record for employment and service is not exportable as a complete record. An exported database with all relationships, queries and metadata mapped may meet requirements.

The benchmarking process showed that Empower software can be configured to meet minimum required recordkeeping functionality only if it is considered within the broader system environment.

The Records Manager and Systems Administrator conducted an analysis of the system and performed metadata mappings for the data tables that make up the summary employee records. Empower was listed in Agency A's Information Asset Register (see *Advice 39: Developing an Information Asset Register*) and the findings of the system analysis captured in TRIM as a PERMANENT record.

Agency A implemented a process to capture regular reports of summary employee data in TRIM. Before each major software upgrade and before decommissioning, all tables that make up the summary employee records will be exported into an open-source archival format such as Extensible Markup Language (XML). This process satisfies record retention requirements for Permanent records.

Records must now be maintained in Empower and TRIM until they are ready to be transferred to TAHO. The records in the old HR system can be sentenced as source records using the Disposal Schedule for Source Records (DA 2159) and the system can be decommissioned. See *Part 3: Sentencing records in business systems* for more advice on sentencing the records.

Step Two - Strategies to bridge gaps in recordkeeping capability

Where the business system is assessed as not meeting the minimum functional requirements, this may be a fundamental inadequacy of the system or because the system has not been configured to perform that functionality.

To address any gaps, agencies should determine if requirements can be built (or retrofitted) into the design of the software or if system add-ons must be developed. Examples include technology fixes, new policies and procedures and increased user training. For a list of practical techniques, see *Toolkit: 4. Strategies for improving recordkeeping functionality in business systems.*

One common strategy is to link a business system with an EDRMS such as TRIM, and perform regular scheduled actions such as capture reports in approved formats (e.g. PDF/A, RTF or XML). For more information on preservation formats consult *Guideline 19: Digital Preservation Formats*.

Agencies should consider the context in which the business system operates when making decisions about remedial work that may be required. Any decisions to apply technology fixes are risk based decisions and should be subject to a risk management assessment. Agencies are encouraged to include these minimum recordkeeping requirements in all functional requirements specifications for all new business systems to reduce recordkeeping risks.

Is the business system the best place for all the records?

Where records are identified as having enduring or high value, consideration should be given to whether export from the business system to an external dedicated recordkeeping system is in fact a better option than retaining the records in the business system.

Over time, records in business systems can be subject to a range of risks such as alterations, data cleansing, de-commissioning, upgrades or migrations of the system which can affect the data contained in the system. In addition, records in business systems can suffer from a lack of visibility and/or control by the organisation's records management program. Records captured into dedicated recordkeeping systems such as an EDRMS can be managed using more sophisticated functionality and are at a lesser risk of loss or damage as a result of technology obsolescence and other threats.

Next Steps

Agencies intending to decommission business systems that contain State records of enduring or high value must determine if the legacy system or any replacement system has sufficient recordkeeping functionality to ensure that the records remain accessible.

If there are gaps, the system does not have sufficient recordkeeping functionality. Agencies should contact TAHO for further advice.

If agencies determine that minimum recordkeeping requirements are met and documented, follow the checklist steps in *Part 1* of this Advice. Once all data and records in the system have been:

- Migrated into a new system that meets minimum recordkeeping requirements,
- Copied and captured into the agency's EDRMS,
- Destroyed,
- Or transferred to TAHO

The legacy system can be decommissioned using standard IT processes for decommissioning.

Self - Assessment Summary

Complete the checklist in *Part 1: Checklist for Decommissioning Business Systems* before using this self-assessment tool to benchmark business systems which hold State records of enduring or high value required to be retained for longer than 5 years.
Before migrating State records from a legacy system to be decommissioned, agencies should use this tool to assess if the replacement business system has sufficient recordkeeping functionality.
Agencies are encouraged to include these recordkeeping requirements in all functional requirements specifications for new business systems.
All requirements must be met to achieve adequate recordkeeping functionality. If there are gaps, the system does not have sufficient recordkeeping functionality.
Agencies may find some recordkeeping requirements are satisfied when the broader system environment (including business rules and processes, not just software functionality) is also considered.
Any decisions to apply remedial fixes to business systems should be subject to a risk management assessment.

> For enduring or high value records, TAHO recommends preserving the records in a dedicated recordkeeping system such as an EDRMS.

Recommended Reading

- Guideline 8 - Management of source records that have been copied, converted or migrated
- Guideline 17 - Managing recordkeeping risks associated with Cloud Computing.
- Guideline 19 - Digital Preservation Formats
- Advice 9 - Disposal of Scheduled Records
- Advice 10 - Disposal of Unscheduled Records and Destruction Authority checklist for unscheduled records
- Advice 14 - Recordkeeping Metadata Standard
- Advice 18 - Part One: Checklist for decommissioning business systems
- Advice 25 - Management of Backups
- Advice 29 - Advice for Agencies on Managing Legacy Records
- Advice 37 - Keeping Digital Records Accessible
- Advice 38 - Information Custodians and Digital Continuity
- Advice 39 - Developing an Information Asset Register
- Form AOT 48 - Application to Dispose of State Records

Further Advice

For more detailed advice, please contact:

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Acknowledgements

- State Records NSW Recordkeeping in Brief 42 - Checklist for assessing business systems (2010)

- International Council on Archives, Principles and Functional Requirements for Records in Electronic Office Environments – Module 3: Guidelines and Functional Requirements for Records in Business Systems (2008) published at www.ica.org

- Thanks to Angela Males, Sharon England and Justin Giles-Clark for their assistance with the Case Study.

Information Security Classification

This document has been security classified using the Tasmanian Government Information Security classification standard as PUBLIC and will be managed according to the requirements of the Tasmanian Government Information Security Policy.

Document Development History
Build Status

Version	Date	Author	Reason	Sections
1.0	28-04-2014	Samara McIlroy	Initial release	All

Amendments in this Release

Section Title	Section Number	Amendment Summary
		This is the first release of this document.

Issued: May 2014

Ross Latham
State Archivist