

## *Archive Records Management System (ARMS): Functional Requirement*

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*Literature Review*

### **Abstract**

**Background of the Study:** This paper present the functional requirement in Archive Records Management System (ARMS) that provide a comprehensive record keeping management system based on the organization function according to the business activities and process.

**Purpose:** The purpose of this article is to describe the core functional requirement for record keeping system to support users in performing their task that related to electronic record management system.

**Method:** The method used in this article are based on the previous research, guidelines and standards.

**Findings:** Furthermore, this article similarly aim to evaluate and identify the core functional requirement of archive records management system based on the standards use. This article intent to make user aware towards the core functional requirement in managing electronic records system to fulfil the needs and meet based on proper requirements. Subsequently, through completion this article, the research limitation and difficulties in this study is there are too many requirement of electronic record keeping system available that make users are confused to differentiate between requirements. Meanwhile, the user does not know to choose the right requirement that meet organization function and activities. Other than that, it is quite hard to keep core functional requirement sustain in line with the compliance in organization.

**Conclusion:** The originality this article is to provide a clear content and original requirement based on Archive Records Management System implementation for record professional to recognize the high levels of competencies as well as effectiveness reflection in handling Archive Record Management System (ARMS).

**Keywords:** ARMS; Electronic Records Management System; record management; electronic record; record keeping; functional requirement

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## Introduction

A comprehensive records management must focus first on medium on which the information is stores and second functional requirement in records management system. Data, information, knowledge, documents and records are sometimes confusing people and it is interpreted differently meaning based on people background. Records management is activities that required a systematically controlling record life cycle and requirement that start from creation, distribution, use, maintenance, and disposition. This is supported by (National Archives of Malaysia, 2003; The National Archives of Scotland, 2013) state records management is “the systematic control of an organization’s records, throughout their life cycle, in order to meet operational business needs, statutory and fiscal requirements, and community expectations. ISO standard 15489: 2001 defines Records Management as the field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, including the processes for capturing and maintaining evidence

Records will be divided into three forms which are paper, non-paper and electronic. Electronic records is something that related to device or operating with the aid of many small components such as text or images copied on magnetic tape or magnetic or optical disk or held in online databases (electronic records; formerly known as machine-readable records); as three-dimensional models, scientific specimens or other objects; or as combinations of any of the above formats in an electronic form such as multimedia (Electronic Records and Records Management Practices, 2010; Yeo, 2007). A string on that, Archive Records Management System (ARMS) is a system created by UiTM from Faculty of Information Management that help user to store the data in web-based N-tiered application, based on JAVA technology. To ensure the effectiveness of ARMS, this electronic records system are compliance with Records Management Standards ISO 16175, MS 2223:2009 and Pekeliling Perkhidmatan Bil. 5 Tahun 2007. The function of ARMS are to several listed function, such as, a) management of record / file repository according to classifications and Records Disposal Schedule; b) powerful search and view of records functions; c) support multiple digital file formats eg. pdf, mp4, wav, dwg, avi and etc); d) usage based on user functions and profile; e) integration with office automation software; eg: Microsoft Office & Libra Office; f) distribution of records / files electronically & securely; g) any transactions are tracked by the system by the system to ensure authenticity; h) built-in Business Process Management (Workflow); i) Highly Secured.

By compliance with the core functional requirement in electronic records management system, the effective management of corporate information allows fast, accurate and reliable access to records, ensuring the timely destruction of redundant information and the identification and protection of vital and historically important records. However, record life cycle is a key in records management to produce a systematic control of the business transaction in any organization.

## Electronic Records

Electronic records system is a computerized data system through collecting, processing, transmitting and disseminating data that compliance with functional requirement (Electronic Records and Records Management Practices, 2010). This article adopted by ARMS implementation that focus on the requirement needed for electronic records management system and the functional of the requirement. According to National Archives of Malaysia (2003), Electronic record management system is “applying records management principles to electronic records that are on disks, tapes, or any form of magnetic or optical media.” Besides,

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electronic record management system design must base on good records management principle. Electronic record keeping system is different from other system such as transaction processing for financial system on etc. However, the electronic record management system have a same process which are planning, controlling, organizing and other managerial activities related to record life cycle concept in term of creation, maintenance, use, and disposition of electronically created records for the function business activities that provide evidence (Bantin, 2008). Even so there have five (5) of electronic implementing in records management system by (Packalén, 2015) which are identify employees with the qualifications to implement the system and train staff in its proper use, or hire outside consultants with the necessary expertise; Create a time-line for the implementation project, with specific goals and objectives for each step in the process; Perform an inventory review of all paper-based documents to be entered into the system. These will need to be scanned for permanent digital storage; Research providers of electronic document management services, and choose a company with special expertise in the field of education; Carry out the plan created at the outset of the project, including the installation of software, the creation of user accounts with specific permissions for specific users, the training of all staff and employees in the proper use of the system, the scanning and entry of existing paper documents in the system, and the transition of all newly generated documents to the electronic format. Meanwhile, the requirement of the document system must be depend on how organization process.

Since this article aim to provide reader with functional requirement in archive record system management and awareness with the functional requirement for electronic record, this requirement for electronic records management system necessary lead to full fill the specification that can be useful to the user. According to ISO Records Management Standard 15489 determine three (3) primary characteristic of records that must be managed by electronic record keeping system which is authenticity, reliability, and integrity. Authenticity is something about to prove as evidence. So to ensure the records is authenticity, the record must be in original form without any modified. Reliability can be authority indeed the content of the record is accurate and trusted. Besides, integrity is records are protected without any edited. However, have some suggestion from (Philip, 2008) to meet the test of integrity the record keeping system must establish controls that over the creation, transmission, use, custody, and preservation from of the records. Requirement is one of the critical thing that can give an authority to the system function.

### **Introductory for Archives Records Management System (ARMS)**

This article discuss a matter about the requirement and functional requirement for ARMS. It is based on a requirement guideline existing which provides a complete policy to apply. A worthy obligation that can implemented to achieve a successful ERMS. A good record keeping practice is one of the thing need to consider to ensure a good result can produce in the future. A good record keeping need a comprehensive requirement for record keeping management system (ARMS) based on their business activity and process. A comprehensive requirement allowed the system designer to understand the element required in ARMS. This article will state five (5) basic of requirement available in ARMS and other standards from Archives New Zealand (2010), International Council on Archives, Modular Requirements for Record System (MoReq2010R), Norwegian Archive (Noark) Standard for Records Management and lastly is Public Record Office United Kingdom. Meanwhile, every requirement have their own basic functions of the creation such as capture, identification, and classification of the record itself and compliance as well as ARMS that compliance with MS-ISO 16175, ISO

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2223:2009 and *Pekeliling Perkhidmatan Bil. 5 Tahun 2007*. Here the content will discuss the structure of the requirement and related standard that have been used to produce a complete requirement.

The purpose and objective of the requirement generally focus to produce a systematic Electronics Documents & Records Management System (EDRMS). According to Archives New Zealand (2010) the essential purpose of the requirement is focusing on the creation and how to manage the digital records. Besides, there also list seven (7) objective for this project as can refer to the standards. However, According to International Council on Archives (2008), they state only four (4) objective that mention the reason component requirement develop because of ICA project demand on the improvement in electronic record preparation, reduce cost in record management and lastly is to produce one standard requirement in managing electronic record. Next, Modular Requirements for Record System (MoReq2010) highlighted the objective for ERMS requirement is to produce one simple comprehensive requirement that friendly user based on organization and business process. Even so MoReq2010R identify the basic functionality which are compliant ERMS, to define the frequent processes and to produce a standardize standard as mention in ICA. It is different compared to Norwegian Archive (Noark, 2009) Standard for Records Management, the objective for requirement ERMS not specified in the guideline article despite the objective state more on transfer export that only focus on process document export to metadata. This is supported by one of Public Record Office UK (2002) that also mention ERMS need organized in single unit such as the ERMS must link to metadata to the functionality related. In ARMS, the objective of the system Implementation are because to several objectives, namely, a) to help organization to replace paper records to digital format thus helping organization to reduce paper usage; b) to reduced physical record storage area; c) to eliminates records duplication, misplaced and losses; d) to allow digital & non-digital documents to be captured, classified, store, manage & dispose; e) to allow the deliveries of internal or external records/documents internally and externally electronically; f) help organizations to maintains its Institutional Memory; g) go Green ICT implementation; h) to reduce the overall cost of managing records.

Every requirement that have been create there have standard related that use and referrer by the creator and generally related each. As mention from the guideline, Archive New Zealand and the National Archives of Australia involved in develop requirement with ICA-Req with leadership from International Council on Archives (ICA) and now subsequently publish as ISO 16175. All the requirement basically line up with the International Standard on Information and Documentation records management principles. ISO 23081 – 1: 2006 is a guideline for metadata reference in any requirement from any sources. As well mention in the guideline need to refer from US DoD 5015.2 and MoReq2 for software functionality in making the comprehensive guideline for ICA. Meanwhile, the related standard in International Council on Archives (2008) divide by three module and each module refer to difference standard. All the requirements in Module linking with the records management principles in ISO 15489 Information and Documentation. For example, second module in ICA has developed and supported from Australasian Digital Recordkeeping and the high-level metadata element from ISO/TS 23081 – 2: 2007, Information and Documentation. However, Modular Requirements for Record System (MoReq2010) are cited as DLM Forum Foundation, MoReq2010. MoReq2010 have a relationship with in term of reference with Norwegian Archive (Noark). Bringing Noark as close to MoReq2 has also been a resolve to the MoReq2 itself in making the requirement. For Archive Records Management System (ARMS) is compliance with Records Management Standards MS ISO 16175-2:2012, MS ISO 2223-1:2009, MS ISO 2223-2:2009,

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and Pekeliling Perkhidmatan Bil. 5 Tahun 2007. MS ISO 16175-2:2012 is information and documentation that being principles and functional requirements for record in electronic office environment and part 2 is refer to guidelines and functional requirement for digital records management system. Besides, MS ISO 2223-1:2009 (part 1) is more to general that also known as ISO 155589-1:2001, IDT. For part 2 in the same standard is more to guideline that also known as ISO 155589-2:2001, IDT. Last but not least, for Public Record Office UK (2002) they not state any related reference for their requirement in the guideline. It is possibly the related standard in produce the requirement for Public Record Office UK is referring another standard but did not mention clearly in the guideline. Below show the standard compliance only from several of requirement:-

Table 1. Records Management Standard Compliance

Guideline Name	Records Management Standard Compliance
Archive New Zealand	ISO 15489, Parts 1 and 2 (2001) International Standard on Records Management Processes – Metadata for Records Part 1 – Principles and Part 2 – Conceptual and Implementation Issues ISO 23081 (2006 and 2007). ICA Requirements (known as ICA-Req & ISO 16175)
National Archives of Malaysia	ICA Requirements (known as ICA-Req & ISO 16175)
International Council on Archive (known as ICA-Req & ISO 16175)	US DoD 5015.2 and MoReq2 ISO 23081 – 1: 2006 ISO 15489 ISO/TS 23081 – 2: 2007 Modular Requirements for Record System (MoReq2010)
Archive Records Management System (ARMS)	International Council on Archive (known as ICA-Req & ISO 16175) MS ISO 2223-1:2009 MS ISO 2223-2:2009 Pekeliling Perkhidmatan Bil. 5 Tahun 2007

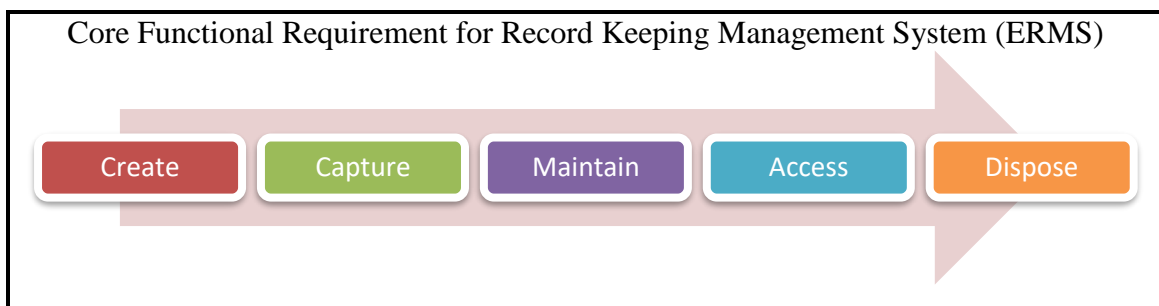


Figure 1. Core Functional Requirement of ARMS

Functional requirement is represent and explain the requirement of ERMS. Generally, the purpose of functional requirement is to acknowledge system designer the significant thing in ERMS to come out with a comprehensive ERMS requirement that need to compliant by the

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user. For this literature review, it will review the functional requirement based on Archive Records Management System (ARMS) and others guideline. There are core type for functional requirement according (National Archives of Malaysia, 2011) version 3 which are create, maintain, disseminate and administer. However, guideline from Public Record Office UK (2002) state the core function requirement for ERMS have ten (10) which are record organization; record capture, declaration and management; search, display and presentation; retention and disposal; access control; audit; reporting; usability; design and performance; compliance with other standards. For Archive Records Management System (ARMS), core functional requirement are create, capture, maintain, access and dispose. Hence, for this review will discuss selected core functional requirement from different guideline.

Table 2. Compliance with Core Functional Requirement Checklist Based on ARMS Process.

<b>Guideline Name</b>	<b>Create</b>	<b>Capture</b>	<b>Maintain</b>	<b>Access</b>	<b>Dispose</b>	<b>Compliance</b>
Archive New Zealand	✓	✓	✓	✓	✓	✓
National Archive Malaysia	✓	✓	✓	✓	✓	✓
International Council on Archive (known as ICA-Req & ISO 16175)	✓	✓	✓	✓	✓	✓
Archive Records Management System (ARMS)	✓	✓	✓	✓	✓	✓

Table 2 above represent the checklist of core functional requirement based on ARMS process that have a similarity with other guideline state above. However, the capture in table 2 and 3 is a process to categorized and recognized records to ensure the content, structure and context of creation are moved according to time period with the right location. This capture also supported by ICA that cite ERMS need for capturing the data, separate and determine records to control the content, structure and context of creation whether it suit or not. This process to assist the complete, authentic and usable records (ICA, 2008). Records aggregations under National Archive Malaysia is about relation between electronic records and surroundings in which were created and recorded in metadata links. Aggregations usually controlled by classification in ARMS. Based on table 3 below, ICA; Archive New Zealand and ARMS Aggregations represent the available relationships between ERMS and the environment that means they have created and recorded in the metadata. Meanwhile, the aggregations of ERMS will give impact to the relationships of records characteristics. The relationship existence between the ERMS will differ as their content, objective/scope, structure, and format. (National Archive Malaysia, 2011; ICA, 2008) state classification is to managed record and aggregates to be a set of serial of file. Hence, the information in ARMS are managed as record object and

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also aggregates the object according to series. Thus, however it is depend on how the organization need to know and determine whether the record is function, activity or transaction based on organization process.

For maintaining, ARMS need to always in maintaining to ensure the performance always in usability and to control record are produce is a comprehensive result. Appropriately disposal need to establish the accurate security control. The content and context of the record or document must be under control access (National Archive Malaysia, 2011). For retention and disposal, focus more on disposal of records that will destruct or transfer for a review period. According to archive UK (2002) state the retention and disposal must be able of constraining the quality to specify and keep in disposal schedules in the rule base on to authorized the users.

The function of disseminate to locate the record, search and navigation tools are required by employing to know the techniques to provide for beginner. Searching is the procedure to distinguishing the records through user-defined so that the records can be retrieved easily while the render is human activity to represent the record, normally in visual display screen or in hard copy format and it is allow the users to print the appropriate copies of records.

Administer is searching procedure to distinguishing the records through user-defined so that the records can be retrieved easily while the render is human activity to represent the record, normally in visual display screen or in hard copy format and it is allow the users to print the appropriate copies of records. Table 4 show the obligation level for each functional requirement in ARMS and other guideline in this article.

Table 3. Details Process on Core Functional Requirement

Functional Requirement	Guideline Name				
	Archive Zealand	New	National Archive Malaysia	International Council Archive (known as ICA-Req & ISO 16175)	Archive on Records Management System (ARMS)
Capture	Capture, Identification, Classification,		Capture, Records aggregations, Identification (registration), classification, Business Classification Scheme	Capture, Identification, Classification,	Capture, Identification, Classification,
Maintain	Managing Authentic and Reliable Records, Hybrid records management, Retention and disposal		Managing Authentic and Reliable Records, Controls and Security, Hybrid Records Management,	Managing Authentic and Reliable Records, Hybrid records management, Retention and disposal	Managing Authentic and Reliable Records, Hybrid records management, Retention and disposal

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Functional Requirement	Guideline Name			
	Archive Zealand	New National Archive Malaysia	International Council on Archive (known as ICA-Req & ISO 16175)	Archive Records Management System (ARMS)
Disseminate	Search, Retrieve and Render (Display)	Retention and Disposal Search, Retrieve and Render (Display)	Search, Retrieve and Render (Display)	Search, Retrieve and Render (Display)
Administer	Administration	Administration	Administration	Administration

Table 4. Obligation level for each Core Functional Requirement

Functional Requirement	Guideline Name			
	Archive Zealand	New National Archive Malaysia	International Council on Archive (known as ICA-Req & ISO 16175)	Archive Records Management System (ARMS)
<b>Capture</b>				
Capture process	Must	Must	Must	Must
Point of capture metadata	Must	Must	Must	Must
Aggregation of electronic records	Must & Should	Must	Must & Should	Must & Should
Bulk importing	Must	Must	Must	Must
Electronic document formats	Must	Must	Must	Must
Compound records	Must	Must	Must	Must
Email	Must	Must	Must	Must
Identification	Must & Should	Must & Should	Must & Should	Must & Should
Classification	Must, Should & May	Must	Must, Should & May	Must, Should & May
Classification level	Must & Should	Must	Must & Should	Must & Should
Classification process	Must	Must	Must	Must
Record volumes	Must	Must	Must	Must
<b>Maintain</b>				
Access and security	Must	Must	Must	Must
Access control	Must	Must	Must	Must
Establishing security control	Must	Must	Must	Must
Assigning security levels	Must	Must	Must	Must

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Functional Requirement	Guideline Name							
	Archive New Zealand	National Archive Malaysia	International Council Archive (known as ICA-Req ISO 16175)	on Records Management System (ARMS) &	Archive Records Management System (ARMS) &			
Executing security controls	Must	Must	Must	Must	Must	Must	Must	Must
Security categories	Must	Must	Must	Must	Must	Must	Must	Must
Records management process metadata	Must	Must	Must	Must	Must	Must	Must	Must
Tracking record movement	Must	Must	Must	Must	Must	Must	Must	Must
<b>Hybrid Records Management</b>								
Management of electronic and non-electronic records	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should
<b>Retention and disposal</b>								
Disposition authorities	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should
Migration, export and destruction	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should
Retention and disposal of electronic and non-electronic records	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should
<b>Disseminate</b>								
Search, retrieve and render	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should
Rendering: displaying records	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should
Rendering: printing	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should	Must & Should
Rendering: other	Must	Must	Must	Must	Must	Must	Must	Must
Rendering: re-purposing content	Must	Must	Must	Must	Must	Must	Must	Must
<b>Administration</b>								
Administrator functions	Must	Must	Must	Must	Must	Must	Must	Must
Metadata administration	Must	Must	Must	Must	Must	Must	Must	Must
Reporting	Must	Must	Must	Must	Must	Must	Must	Must
Back-up and recovery	Must	Must	Must	Must	Must	Must	Must	Must

Table 4 above state 3 key term in each requirement to show the significant each. The three key term are must, should and may. The key term of requirement records that established by ISO 9001:2008 standard (ISO 9001, 2008 that qualify the efficient management system for ERMS operation. Each key term show the significant the requirement either it must, should or may using the requirement in ERMS for the organization. Based on all the requirement will be discuss is compliance with ICA, the result are same. Below show details functional requirement checklist based on ARMS process from few of guideline:

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## Discussion and Limitation

Based on the review of functional requirement in ERMS, it is a thing for records professional to evaluate and produce a clear guidance and direction for organization that necessary to effective implementation. Since we know that Australia is one of the country that have a comprehensive system in managing their record, it will be such a good example in everything we do. However, it quit challenging where working sector in Malaysia still think that record professional is not a necessary position in the organization. In addition, economy also give a big impact regarding cost and budget to build up one comprehensive ERMS including in higher record professional in handling that, system maintenance and etc. The outcome from this review there do not have any latest requirement to be referrer which is all the guideline of the requirement available from 2013 below. Besides, there are too many guideline come from elderly sources that come out with the same content that need to compliance. Meanwhile, the creator come out the requirement regarding to the original requirement and standard related each. However, it will be systematically if the requirement come out only from one official guideline that need to submissive. As a result, potentially valuable records may be at risk. So to ensure electronic record management system successfully we need to follow the concept of functional requirement appropriately and realize the significant of requirement to the system based on the organization function. Based on the review we necessarily to be conveyance the systematic requirement that intent to help and lead the organization to follow the right standard and methods in ARMS implementation. Hence it is become well when the standard and policy from the one concept and principle that can avoid user feel confuse in choosing the standard.

## Conclusion

In implementing Archive Records Management System program required records professional to cover the necessary scope of tasks. According to all the scope of task are mentioned by professional, organization needs a person in record background (professional) to assure all the task will managed effectively. Without records professional, the entire task hard be done by common workers without training or experience. It is because all the tasks related to confidential records, only records professional or expert in this field will know how to manage and maintain the system management properly. However, in use electronic records in management, the development of ICT and networked communities need to pave the way for greater electronic transactions online. Because of that, there have several greater challenges as more and more in electronic records are created. This is a part of the article that found regarding the issues of managing NARA is taking action to respond to long-standing problems associated with managing and preserving electronic records in archives. In 2001, NARA completed an assessment of government wide records management practices. This assessment concluded that although agencies are creating sufficient records and maintaining them appropriately, most electronic records remain unscheduled, and permanent records of historical value are not being identified and provided to NARA for preservation and archiving. A major for this study it is most the requirement is quite difficult to train in Malaysia. The reason is record manager still a new position in working sector in Malaysia. Record manager is not a priority position compared to other position such as finance, human resources and etc. However, have several company that earnest with this position. Most of them prefer to keep the record in other organization or higher another organization by following the retention schedule that have been discuss according to organization/company itself.

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