

Electronic Records Management System Requirements

Marko Lukičić
Ericsson Nikola Tesla
Krapinska 45, Zagreb, Croatia
marko.lukicic@ericsson.com

Vlado Sruk
Faculty of Electrical Engineering and Computing, University of Zagreb
Unska 3, Zagreb, Croatia
vlado.sruk@fer.hr

Summary

This paper describes objectives and achievements of Enterprise Document and Records Management (EDRM) System standards in Europe through a work on MoReq2 specification. MoReq2 is a comprehensive catalogue of generic requirements for an Enterprise Records Management (ERM) system. It builds on the original MoReq specification, which was published in 2001. Specification is intended for use in public and private sector organizations which wish to use ERM systems.

First, we introduce ERM systems by discussing record definition and ERM key characteristics. The short overview of most popular European standards for managing electronic records is given, as well as MoReq specification, its purpose, organization and content. Subsequently the final MoReq2 specification and its modules are presented.

Key words: MoReq2, specification, Enterprise Records Management, standards

Introduction

With the use of computers, Internet and World Wide Web, our ability to share, understand and generate digital information has increased over the last few years. Thus, its level of importance in everyday business is higher than ever before. However, this change is having a great impact on common understandings about information, communication and knowledge raising many crucial questions such as: What is reliable information? How do we communicate effectively? How do we develop and maintain knowledge in our archives? Before considering a business solution, these questions have to be answered in three different domains: technological, organizational and governmental.

Challenges in the technological domain have to cope with problems of manipulating and securing massive volumes of geographically distributed business critical and sensitive data. Organizational challenges include reform of business processes and ways of handling and storing paper documents in classical archives. To enable an archive to be aware of digital data and to take over retention, management, retrieval and disposal processes of electronic data, it is necessary to redefine user roles and its responsibilities too. Challenges in the governmental domain present the greatest obstacle in implementing an electronic archive. Its critical task is to ensure legality and trustworthiness of digital data in respect to legislative and regulative.

The key benefits of the electronic archives are well known. Data can be easily and centrally managed and secured. The digital form of documents eliminates costs of physical storage because it doesn't require special necessities as large personnel, big rooms secured from fire, flood, freezing or high temperature that could cause the occurrence of fungi, etc., and it bypasses the barriers of distributed offices. However, the main reason of implementing a digital archive is to achieve pure electronic business backbone. A business information system based on electronic archive enables organizations to automate the whole process from data acquisition or generation, to its processing, classification and archival as a true and legal evidence of business activity¹.

The Enterprise Records Management (ERM) systems are designed as a result of this necessity. Its main purpose is to provide a backbone for building the digital archive capable of managing electronic and physical records. Main functions of ERM systems are: content creation and capture, storing content, content retrieval, short- and long-term preservation and content disposition and disposal.

Today, such systems have become necessary for forming the electronic writing office, also known as the paperless office²³. The key role of ERM systems is to reduce the response times for information requests, eliminate paper redundancy and duplication, and finally remove paper from the records management cycle while maintaining legality and trustworthiness of digital data in respect to legislative and regulative.

¹ Cornu, Jean-Michel. DLM-Forum. Guidelines on best practices for using electronic information. Office for Official publications of the European Communities. ISBN:92-828-2285-0. Luxembourg. 1997.

² Baumann, Stephan; Malburg, Michael; Meyer Auf'm Hofe, Harald; Wenzel, Claudia. From paper to a corporate memory. KI-97 Workshop on KBS for Knowledge Management in Enterprises. Freiburg, Germany. 1997 Sep 9-12; p. 16.

³ Volarevic, Marijo; Strasberger, Vito; Pacelat, Elvis. A Philosophy of the Electronic Document Management. Proc. of the 22nd International Conference on Information Technology Interfaces; 2000 Jun 13-16; Pula, Croatia. Zagreb: SRCE University Computing Centre, University of Zagreb; 2000. p. 141-146.

Enterprise Records Management Systems

There is no general definition what ERM systems are. Nowadays, definitions are mainly short descriptions of products for managing electronic records defined by the enterprise content management system vendors. However, ERM functionalities are mainly dictated by requirements defined by the national archives. And these requirements are results of long evolution and tradition in managing and organizing physical records in archives. Thus, differences between particular ERM systems are mainly in algorithm realization (ex. security algorithms), technology support (ex. integration with other systems) and in additional functionalities (ex. extended object model). Still, there is one document that has become most referenced in recent years when considering ERM system definition: ISO 15489-1:2001 (ISO) standard⁴.

Record

The ISO 15489-1 standard defines a record as: „recorded information, in any format, that is created, received and maintains as evidence and information by an organization or person, in pursuance of legal obligations or in the transaction of business“. There are two key points that must be noted in ISO 15489-1 definition of a record. First, definition is opened for all types of records (ex. digital records, paper records, physical objects, etc.). And second, record is an evidence of business action, transaction or any other activity (ex. contract).

By ISO definition, to be authoritative, records must be:

- Authentic (ex. to have been created or send by the purported person);
- Reliable (trusted contents which accurately reflect the documented activity);
- Have integrity (records must be complete and unaltered);
- Useable (records can be located, retrieved, presented and interpreted).

It is important to recognize similarities and differences between documents and records as shown in Table 1.

Table 1: Differences between documents and records.

Document	Record
A “piece” of information you can handle or manage	A “piece” of information you can handle or manage
May be important, or not	Represents important evidence of decision or act
Under the management of its “owner” (usually author)	Under corporate management
Can be changed at will	Cannot be changed
Can be deleted at will	Cannot usually be deleted

⁴ ISO 15489: Information and documentation – Records management. Reference number: ISO 15489-1:2001(E). International Organization for Standardization. 2001.

Records Management

Besides records, ISO 15489-1 standard defines records management as: "the field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposal of records, including processes for capturing and maintaining evidence of an information about business activities and transactions in the form of records."

ERM systems are systems that ensure management of records (as defined in ISO records management definition), whether they are in electronic or physical format, while ensuring all records characteristics (as defined in ISO record definition). By the ISO standard, ERM systems should provide:

- Reliability of complete, organized, accessible and protected records;
- Protected integrity by authority control systems;
- Compliance with legislative, regulative and appropriate business requirements;
- Reflected comprehensive range of appropriate business activities;
- Systematic creation, preservation and management of records.

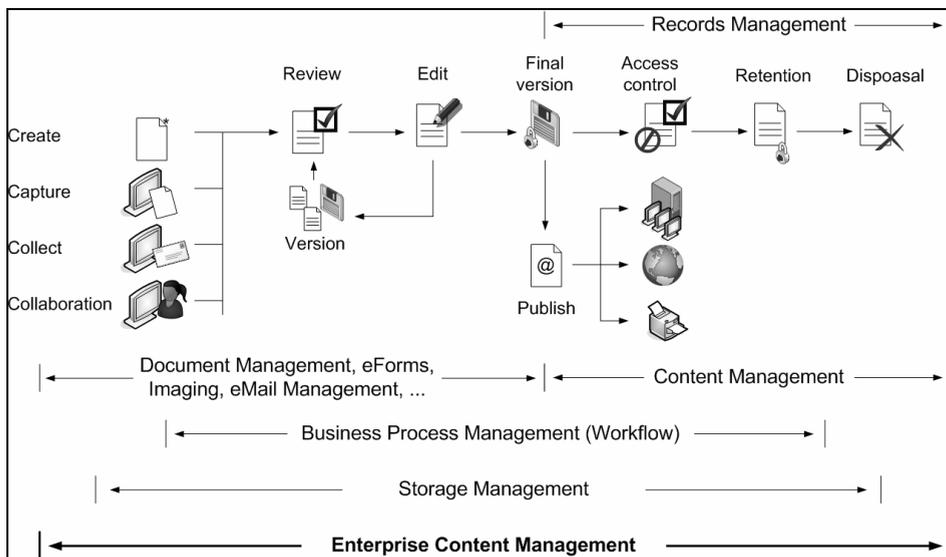


Figure 1: The Document and Record lifecycle in an ECM environment.

Nowadays, ERM systems are usually integrated with an Electronic Document Management (EDM) system to form an Enterprise Document and Records Management (EDRM) system. Synergy of those two systems combines document oriented collaboration functionalities of EDM systems with classification, compliance, preservation and disposition and disposal functionalities of ERM systems. Business Process Management (BPM) systems may be used as a bridge between a case file in ERM system and appropriate case file workflow.

Other technologies such as electronic forms (eForms) can be used as additional tools for user interface customization and records capture automation.

ERM (or EDRM) systems typically fall in Enterprise Content Management (ECM) system – system for managing all organizational information assets over their lifecycle, Figure 1.

Records management standards

Although national archives indirectly shape functionalities of ERM systems, there are still pending functionality problems to be solved. The main problem is differences in practices between national archives of different countries. Despite the similarity of records management practices among European Union (EU) countries, there are still minor dissimilarities, which require individual implementation of specific functionality⁵.

Moreover, almost every EU country has prescribed its own standard for records management. Because of non-existent records management standard at EU level, major ERM vendors mainly choose to certify its ERM systems for British PRO/TNA standard only. This retarded digitization of archives, and indirectly implementation of true electronic businesses, in smaller EU countries.

In continuation, we bring the short overview of most popular records management standards in EU countries.

DOMEA (Germany)⁶. DOMEA concept (Document Management and Electronic Archiving in Electronic Business, also known as “Paperless Office Concept”) is the most important guideline for the implementation of electronic records in Germany. It consists of three main sections: Organization concept, Requirements catalogue and expansion modules. Although IT vendors are not obligated to certify its ERM systems against DOMEA, there are 170,000 approved DOMEA licenses in Germany, Austria and Switzerland.

ELAK (Austria)⁷. ELAK (Electronic Act) is a program of the Austrian Federal Government for a simplification and consolidation of the federal internal management of records. In addition to DOMEA, the ELAK concept describes requirements and functions of the ERM systems in more technical detail. Moreover, it provides examples what has to be considered in invitations for public tenders.

⁵ PICTURE consortium. Integrating and Strengthening the European Research Area. ICT Research for Innovative Government. Project No 027717. PICTURE consortium. 2007.

⁶ Bundesministerium des Innern. DOMEA Concept. Organisational Concept 2.0. Document Management and Electronic Archiving in Electronic Courses of Business. Koordinierungs- und Beratungsstelle der Bundesregierung für Informationstechnik in der Bundesverwaltung, KBSt. ISSN 0179-7263. November 2005.

⁷ Bundesministerium für öffentliche Leistung und Sport. ELAK-Konzept. Funktionsbeschreibung. November 2001. URL:<http://www.digitales.oesterreich.gv.at/site/5286/default.aspx>

Gever (Switzerland)⁸. The Swiss Gever is collection of five standards that introduces management of electronic records and paper based records administration abandonment. The five standards are: Business Administration, Methods and functions with regard on legal defaults, Business model GEVER Federation, Service catalogue of GEVER applications and GEVER metadata.

Protocollo Informatico/CNIPA (Italy)⁹. CNIPA (National Centre for Information Technologies in Public Administration) is the government organization responsible to give support to the Italian public administrations in creating information systems to further improve the quality of services and keep the administrative costs down. Protocollo Informatico is published by CNIPA that describes the electronic protocol as a framework of resources used by administrations for managing documents.

ReMANO (Netherlands)¹⁰. ReMANO is a catalogue of software specifications for ERM systems in Dutch government bodies. It is published in 2004 by "Nederlands Instituut voor Archiefonderwijs en – onderzoek".

NOARK (Norway)¹¹. NOARK-4 is functional requirements specification for ERM and case management systems used in all public authorities in Norway.

PRO/TNA (United Kingdom)¹². The PRO/TNA document is developed by Public Records Office (The National Archive). Its main purpose is to provide a tool for benchmarking ability of government departments to support electronic records management. Although, PRO/TNA was the most comprehensive and popular standard in EU, it is replaced with MoReq specification.

MoReq specification

Though there are a large number of records management national standards in EU, the absence of the EU-wide standard complicates an interoperable delivery of European electronic government services to public administrations, business and citizens. This was in confrontation with i2010 eGovernment Action Plan

⁸ eCH, eGovernment-Standards. eCH-0037 Hilfsmittel GEVER Vorgaben Bund. Verein eCH. April 2005.

⁹ Centro Nazionale per l'Informatica nella Pubblica Amministrazione, CNIPA. Protocollo informatico. CNIPA. URL: http://www.cnipa.gov.it/site/it-IT/Attivit%C3%A0/Protocollo_informatico/

¹⁰ Nederlands Instituut voor Archiefonderwijs en – onderzoek. Softwarespecificaties voor Records Management Applicaties voor de Nederlandse Overheid (ReMANO). Archiefschool. Mart 2004.

¹¹ Riksarkivet - The National Archives of Norway. Norwegian recordkeeping system, Version 4 (NOARK). Functional description and specification of requirements. Riksarkivet. 2000.

¹² Public Record Office, United Kingdom. Requirements for Electronic Records Management Systems. The National Archives. 2002.

which one of main objectives is to accelerate the delivery of tangible benefits for citizens and business through eGovernment¹³.

The need for a comprehensive specification of ERM system requirements for government authorities was first articulated by DLM Forum in 1996. DLM Forum (Donnees Lisibles par Machine) is a multi-disciplinary forum constituted by European Commission. Its main goal is to investigate, promote and implement - in close cooperation with Member States - possibilities for wider cooperation in the field of electronic archives both between the Member States and at EU level.

In 1999 DLM Forum issued the following action point: development of a reference model for managing electronic documents and records in public administration.

The work on specification began in 2000 and it was completed in 2001. MoReq, first became available electronically in 2001, was published by the European Commission as an INSAR (Information Summary on Archives publication) supplement in early 2002.

The specification contains functional and non-functional requirements for ERM systems. Functional requirements cover following topics: overview of ERM system functionalities, classification scheme, control and security, retention and disposal, capturing records, search, retrieval and rendering, administrative functionalities and other functionalities. Non-functional requirements, such as the metadata model, can vary enormously between environments. Thus, MoReq specification identifies and describes non-functional requirements only in outline.

The specification suggests that ERM system should be introduced not only to Administrators and Archivists (that is, staff responsible for records management), but to all general offices and operational staff that are involved in a creation, receiving and retrieving of the records. Therefore, MoReq specification embraces records management closely-related requirements such as document and case management. However, these requirements are described in less detail than functional requirements.

Because of its comprehensiveness, MoReq becomes accepted and used worldwide. However, some problems have been raised in the last few years. The main problem is that MoReq is not a formal standard but a guideline. Non-existence of the testing regime disables ERM system vendors to provide conceivable proof of MoReq compliance. Furthermore, there has been no advancement since 2001. Technology has moved on. And the lack of governance caused uncontrolled MoReq translations referenced in particular ERM systems. Something had to be done.

¹³ European Communities. i2010 eGovernment Action Plan. Communication from the Commission, of 25 April 2006, i2010 eGovernment Action Plan - Accelerating eGovernment in Europe for the Benefit of All. 2006. <http://europa.eu/scadplus/leg/en/lvb/l24226j.htm>

The MoReq2 project

The revision of MoReq specification was proposed by Ian MacFarlane in "Plans for MoReq, a report on scoping of a MoReq 2" paper¹⁴. This document contains key conclusions of DLM Forum discussion about MoReq revision. In 2006, DLM Forum published "Scoping report for the development of the Model Requirements for the management of electronic records (MoReq2)". This document outlines details of changes in the old document. The overall aims for the MoReq2 development, as described in Scoping report, are to develop extended functional requirements within a European context, and to support a compliance scheme by:

- Strengthening from MoReq what have in the interim become key areas and covering important new areas of requirements with clarity;
- Ensuring that the functional requirements are testable and developing test materials to enable products to be tested for compliance with the requirements;
- Making the requirements modular to assist application in the various environments in which they will be used.

As stated in the report, to provide compatibility with earlier version, MoReq2 is to be an evolutionary update to the original MoReq, not a radically different product.

The MoReq2 project started in 2007, and the MoReq2 specification is formally published at the beginning of 2008.

MoReq2 specification

The MoReq2 specification is a collection of required and optional functional and non-functional requirements for the ERM systems. While required functionalities are mandatory for MoReq2 compliance, optional requirements correspond for desirable but not mandatory characteristics of the ERM systems.

Required and optional requirements are grouped in core module (mandatory module for MoReq2 compliance) and optional modules (ERM system providers may choose to additionally certify software for particular optional modules).

Core module contains requirements regarding classification scheme and file organization, controls and security, retention and disposition, capturing and declaring records, referencing, searching, retrieval and presentation, and ERM system administration.

Optional modules are: Management of Physical (Non-electronic) Files and Records, Disposition of Physical Records, Document Management and Collaborative Working, Workflow, Casework, Integration with Content Management Systems, Electronic Signatures, Encryption, Digital Rights Management,

¹⁴ Ian MacFarlane. The Plans for MoReq (Model requirements for the management of electronic records): A Report on the Scoping of the MoReq2. *DLM Forum Conference*. Budapest. 2005. http://ec.europa.eu/transparency/archival_policy/dlm_forum/doc/12_macfarlane_06-10-05am.pdf.

Distributed Systems, Offline and Remote Working, Fax Integration and Security Categories¹⁵.

The metadata requirements present another important part of MoReq2 specification. MoReq2 metadata, based on Dublin Core Metadata Element Set, includes indexing information and other data needed for effective records management, such as access restriction information. As is not possible to define all the metadata requirements for all possible kinds of ERMS implementation, MoReq2 suggests minimum requirements, which are intended as the starting point for customization and expansion. These minimum requirements are closely related to lists of specific metadata “elements” which the ERM systems must be able to capture and process.

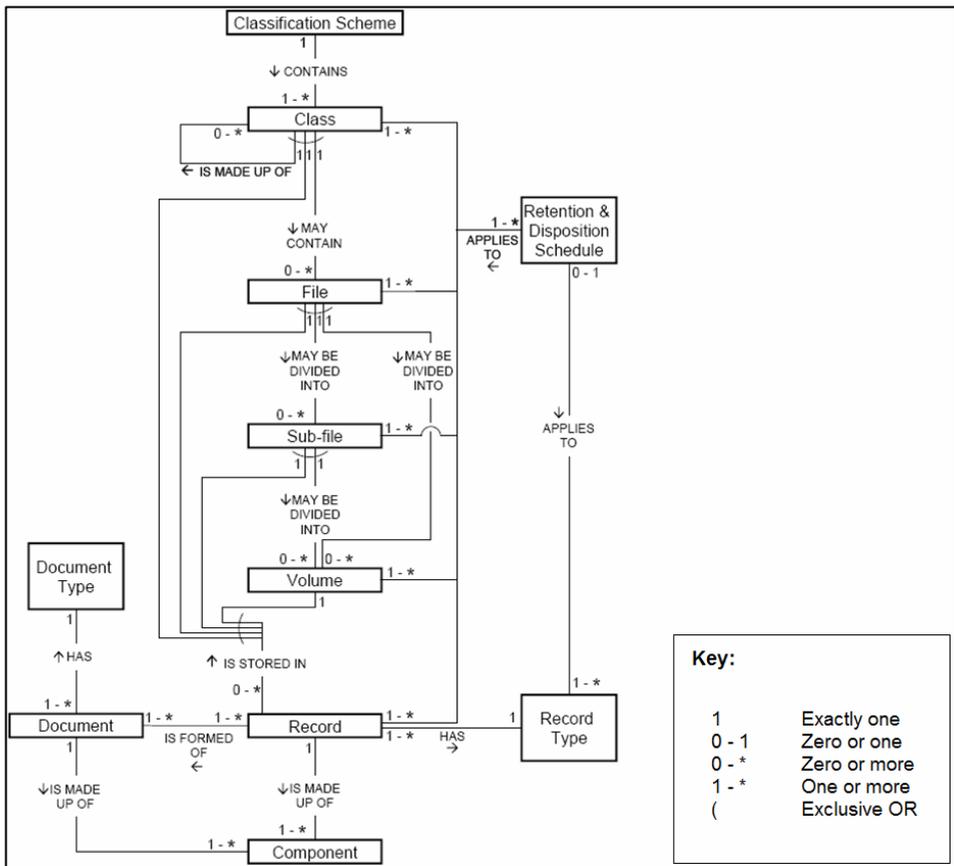


Figure 2: MoReq2 entity-relationship model.

¹⁵ Cornwell Affiliates plc. Model Requirements for the management of electronic records. MoReq2 specification. Office for Official publications of the European Communities as INSAR supplement VIII. Bruxelles. Luxembourg. 2008.

Sub-files and components are new entities added to the MoReq object model, Figure 2. Sub-file is an intellectual subdivision of a file. It is often used in case management environments. Typical examples of sub-files are "invoices", "assessments" and "correspondences". Component is a bit stream that, alone or combined with other bit streams, makes up a record or document. Typical example of a component is a JPEG image of an HTML document.

Hybrid file, file that contains electronic and physical records, is omitted from object model. Therefore MoReq2 allow classes, files, sub-files and volumes to contain electronic records and physical records together, in any combination.

A special care was taken regarding specification localization. As each country may have need for specific requirements regarding managing electronic records, in MoReq2 structure is imbedded "Chapter zero". This chapter can be used to represent specific needs of a particular country. The only restriction on expanding MoReq2 specification with this chapter is that content of the chapter should not contradict the content of the rest of MoReq2.

Conclusion

With the increase of produced information and wide diversity of information formats, challenges for the management of electronic records have never been greater. To cope with implementations of new technologies and to achieve trustworthy of digital records in respect to legislative and regulative, particular countries started introducing specifications regarding managing of electronic records. However, multiplicity of different specifications makes interoperability of data between administrations of EU countries difficult.

MoReq2 represents a step forward in the process of unifying records management software standards and practices across Europe. It provides governments and corporations a single approach to managing their most important records. Thus, MoReq2 will significantly contribute to the accomplishment of greater interoperability between administrations, business and citizens, that is the achievement of the goals of the Europe Union's i2010 eGovernment action plan.

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