

One consolidated view of information management references

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ABSTRACT

The actual landscape of relevant business and technical references in information management comprises multiple views. For example, standards such as ISO15489 or ISO30300 represent the high level concerns of information as a record of evidences of the acts of an organization, while MoReq2010 and ISO16175 define at a lower level requirements systems must consider for that. On in some way complementary views, ISO16363 defines a process to assess digital repositories and ISO18128 describes a method for assessing risks to records processes and systems. We must then recognize it is fundamental to recognize that the problem of information management can be seen from multiple perspectives and consequently solutions might need to consider requirements from different areas of expertise or concerns. Besides core concerns of information management, a correct analysis also might have to consider other specific views such as information systems, software engineering, risk management, etc. Therefore, information management practices should also consider fundamental references from those areas of expertise, such as for example the ISO2700 series of standards for information security, ISO/IEC TR 15504 for assessing the delivery capabilities of an organization, ISO/IEC 15288 to address processes lifecycle and stages, ISO 9000 for quality, etc. This proliferation of references hinders organizations to determine in a straightforward manner two fundamental business-related concerns: (1) guidance of best practices, meaning what references should be considered for each purpose, and (2) to what extent do their actual processes and systems already comply with such. That already led to the definition of national references (e.g. NOARK in Norway, e-Arq in Brazil, or SAHKE2 in Finland), adding value to the existing knowledge but consequently increasing the entropy. This paper reports a first attempt by the authors to consolidate this referential landscape, focusing mainly in the identification of the main relevant concerns and views.

Categories and Subject Descriptors

- Information systems ~ Information systems applications
- Information systems ~ Digital libraries and archives

General Terms

Management, Standardization.

Keywords

Information Management, Standards, References, Information Management Concerns, Recordkeeping, Digital Archives

1. INTRODUCTION

A reference document describes relevant details for consultation about a specific subject. In any business or activity, reference documents are of vital importance since they can provide a common understanding of the subject in focus. Additionally, adhering to practices described in reference documents may support safety, reliability and interoperability among products, services and systems. Standards are a particular type of reference documents that are typically used by regulators and legislators to ensure best practices among businesses.

Before using a reference document it is necessary to understand its context and purpose. In other words, reference documents are defined to specific stakeholders with specific concerns on a specific context. Therefore, before the adoption of a reference document, it is necessary to understand how the context where the reference document is going to be used compares to the context the document was intended. Context differences might result on different adoptions of the document or in the worst case scenario it might indicate that the reference document is not suitable for adoption.

When discussing the concern of information management it is possible to identify several reference documents. ISO Technical Committee (TC) TC46 is responsible for publishing standards about information and documentation. The Committee is structured into five subcommittees (SC). The SC4, SC8 and SC9 focus on standards for libraries and related organizations respectively about technical interoperability, statistics and performance, and identification and description. SC10 publishes standards that describe and define requirements for document storage and conditions for preservation. Finally, ISO subcommittee TC46/SC11 has until now published 17 ISO standards about archives/records management. From another area of expertise, the TC 20/SC 13 develops data and communication standards for spaceflight and is responsible for several standards widely used in archival and data preservation such as the ISO 14721 [2], ISO 16363 [8], and ISO 20652 [10]. Additionally, references such as MoReq2010 [17] are also widely used for the definition of systems in information management.

This diversity of reference documents hinders organizations to determine in a straightforward manner which references should be considered and for which purpose. In other words, organizations struggle to understand how the reference documents' knowledge should be applied to their specific context. This paper proposes to mitigate the problem by identifying and describing the different contexts that information management reference documents assume. It ends by identifying relations and gaps between

different contexts that might indicate relations between different reference documents.

2. SYSTEM, STAKEHOLDER, CONCERN, AND PURPOSE

To compare and relate different contexts we need to reach a common understanding of what influences and dictates the context. Using the definitions on [16], the context is what “determines the setting and circumstances of all influences upon a system” where system refers to:

“Systems that are man-made and may be configured with one or more of the following: hardware, software, data, humans, process, procedures, facilities, materials and naturally occurring entities” [16].

Apart from the context, systems have stakeholders, i.e., parties with specific concerns in the system. Through their concerns, stakeholders have various purposes to a system. Therefore, the context of a system “is bounded and understood through the identification and analysis of the system’s stakeholders and their concerns” [16]. Figure 1 illustrates the concepts defined and their relations.

Taken into consideration the definition of system described above it is possible to conclude that a reference document describes relevant details for consultation about a specific system situated in a specific context. Stakeholders express interest in the systems described on the reference documents by expressing concerns and purposes upon the system. Due to the fact that the context of a system is bonded to its stakeholders and concerns, in the next sections the paper analyses the intended stakeholders and concerns of the reference documents.

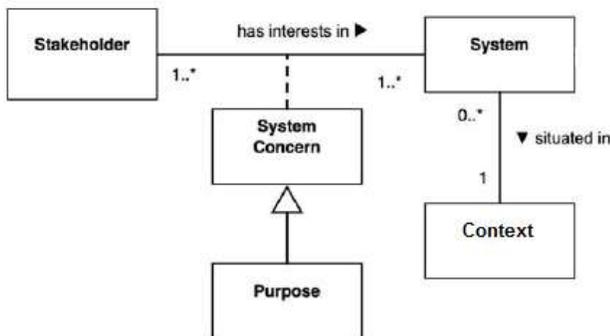


Figure 1. Relations between the concepts of context, system, stakeholder, concern and purpose [16].

3. THE “RECORDS MANAGEMENT” CONTEXT

Records Management is typically referred along with ISO 15489 [3, 4] entitled “Records management” from TC46/SC11. The standard, which is on the core of many reference documents about records management, 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 processes for capturing and maintain evidence of and information about business activities and transactions in the form of records” [3].

In other words, ISO 155489 describes relevant details about a records management system (not to be confused with records system – an information system responsible by the managing the record lifecycle).

The aforementioned subcommittee (TC46/SC11) of the ISO organization is responsible for most of the reference documents typically adopted when discussing a records management system. Additionally, MoReq2010 [17] has known increasing attention as a reference document that describes and defines a set of requirements for a records system. We analysed the aforementioned reference documents to identify the intended stakeholders and concerns.

Table 1 describes the output of the analysis.

We can conclude that:

- ISO 15489 [3, 4] and ISO 30300 [14, 15] standards series discuss and describe the same concerns. The latter describes the concerns in more detail but all the concerns of the former are discussed in ISO 30300 series of standards. A more detailed analysis would be needed to understand: (1) the extent of the overlap between the standards, and (2) if the standards do not contradict themselves when describing the same concerns.
- The same conclusion above can be inferred to ISO 16175 [5, 6, 7] and MoReq2010 [17]. A more detailed analysis would be needed to evaluate the overlap between the references.

It is important to note that an association between a concern and a reference document was only identified whenever the concern is discussed in detail in the document. For example, the concern of having a risk assessment for records processes and systems is mentioned on ISO 15489 [3, 4] and ISO 30300 series of standards [14, 15] but is only described on ISO 18128 [9].

4. THE “ARCHIVE” CONTEXT

The Open Archival Information System (OAIS) is defined as:

“An Archive, consisting of an organization, which may be part of a larger organization, of people and systems, that has accepted the responsibility to preserve information and make it available for a Designed Community” by the ISO 14721 [2].

The standard developed by the Consultative Committee for Space Data Systems (CCSDS) is the core of several standards published under the ISO subcommittee ISO/TC 20/SC 13 and known for defining best practices for an Archive. Due to the fact that most of the standards published by the subcommittee are specific to spaceflight, only a subset of them are referenced when discussing information management. Apart from the ISO 14721 [2] that describes what should constitute an Archive, ISO 16363 [8] and ISO 20652 [10] are also well know. The former describes how to assess the trustworthiness of digital repositories, the latter describes the relationship between an information producer and an Archive. This paper analysed the aforementioned reference documents to identify the intended stakeholders and concerns.

Table 2 describes the output of the analysis. Through the analysis it is possible to conclude that the concerns described in ISO 14721 [2] are also described in ISO 16363 [8]. However, the purpose of the two reference documents is complementary since the latter is intended as a checklist to asses that all concerns described in ISO 14721 [2] were considered in a repository.

Table 1. Analysis of classes of stakeholders and concerns of the view “Records Management”

Stakeholders	Concerns
<i>Organizations Managers¹</i>	<ul style="list-style-type: none"> • Ensure that a records management policy is defined, documented and communicated [3, 4, 11, 13, 14] • Ensure records management responsibilities and authorities are defined and assigned [3, 4, 14] • Ensure records managers have the necessary skills and competences [3, 4, 14] • Ensure that the records management policy is aligned with the organization goals and context [14, 15] • Ensure the proper allocation of resources to records management [4, 14, 15] • Ensure the monitor and review of the records management policy [14, 15]
<i>Records Managers²</i>	<ul style="list-style-type: none"> • Ensure the correct implementation of a records management programme (records management strategy) aligned with the records management policy [3, 4, 14, 15] • Ensure the monitor and control of records management processes [3, 4, 14, 15] • Ensure that a record system implementation methodology is defined and implemented [3, 4, 14, 15] • Ensure the reliability, authenticity, usability and integrity of metadata associated with records [11, 12]
<i>IT Managers³</i>	<ul style="list-style-type: none"> • Ensure the reliability, usability and integrity of record systems [3, 4, 5, 6, 7, 11, 12, 14, 15, 17]
<i>Risk Managers</i>	<ul style="list-style-type: none"> • Ensure the assessment of risks for records processes and systems [9]
<i>Auditors</i>	<ul style="list-style-type: none"> • Ensure the records management programme is compliant with records management requirements [3, 4, 14, 15]

Table 2. Analysis of classes of stakeholders and concerns of the view “Archive”

Stakeholders	Concerns
<i>Producer</i>	<ul style="list-style-type: none"> • Ensure the information provided is preserved according to specific requirements [2, 10]
<i>Management</i>	<ul style="list-style-type: none"> • Ensure that information is preserved according to the agreed requirements [2, 8] • Ensure that an Archive policy is defined, documented and communicated [2, 8] • Ensure the Archive responsibilities and authorities are defined and assigned [8] • Ensure staff of the Archive have the necessary skills and competences [8] • Ensure the proper allocation of resources to the Archive [2, 8] • Ensure proper technology and infrastructure support [2, 8] • Ensure the monitor and review of the Archive policy [2, 8] • Ensure the communication and transparency between stakeholders [2, 8] • Ensure that the preserved information is understandable for the designated community [2, 8] • Ensure that the preserved information is available to the designated community [2, 8]
<i>Consumer</i>	<ul style="list-style-type: none"> • Ensure the access to the information requested [2]

¹ Also referenced as “top management”, “senior management” and “executives”.

² Also referenced as “records management professional”

³ Also referenced as “system administrators”

5. A CONSOLIDATED VIEW

This section analyses the relationships between the aforementioned reference documents. As stated before, a system and its context are bounded to its stakeholders and concerns. In the previous sections we identified stakeholders and concerns described in several reference documents in order to understand the purpose and goals of their described systems.

It is important to note that concerns represent the Ends of the system, i.e. concerns are desired results and visions of what the system can and should be to their stakeholders [1]. Ends are achieved through Means, i.e. “devices, capabilities, regimes, techniques, restrictions, agencies, instruments, or methods that may be called upon, activated, or enforced to achieve Ends” [1]. In fairness, the analysed reference documents do not only described Ends (concerns) but also Means to achieve them. While in some references (e.g. ISO 15489 [3, 4], ISO 16363 [8], ISO 23081 [11, 12], and ISO 30300 series standards [14, 15]) Means and Ends are described along, others such as the ISO 16175 [5, 6, 7], ISO 26122 [13], or MoReq2010 [17], clearly focus on the Ends.

5.1 Relating Concerns

Judging merely by the identified stakeholders names (records management references do not provide definitions for their stakeholders so comparison of definitions is not possible), it could be easy to conclude that the records management and Archive references do not have related stakeholders between them. However, through the analysis of the concerns it is possible to identify several overlaps. In fact, if we compare the “Organization Managers” concerns in records managements and the

“Management” concerns in the Archive we can see that both refer to (a) definition and communication of policies, (b) assignment of responsibilities and authorities, (c) training of skills and competences, (d) allocation of resources, and (e) monitor and review of policies. The difference between the concerns are the object of focus: while records management focus on records, the Archive focus on information. However, if we ignore the terminology and focus on the definition of the terms, we can also observe an overlap. Record is defined as “information created, received, and maintained as evidence and information by an organization or person, in pursuance of legal obligations or in the transaction of business” [ISO 15489]. Information in the Archive references is defined as “any type of knowledge that can be exchanged”. In conclusion, Archive references focus on a very broad concept of information where records can be included. In other words, Archives are concerned on the capture, preservation and access of records as any other type of knowledge that can be exchanged. Therefore, in theory, the Ends to achieve the Archive Means can also be applied to achieve the Records Management Means.

5.2 Addressing Concerns

If we ignore the object of focus of the aforementioned references, the processes inferred on the concerns are also common in several businesses or practices. This represents evidence that information management can be seen from different perspectives and consequently their Means should consider requirements from different views.

Table 3 presents the views identified in the reference documents along with a non-exhaustive list of reference documents from those views.

Table 3. “Records Management” and “Archive” related views and reference documents

Related View	Inferred practices from the analysed references documents	Reference Documents
<i>Project Management</i>	<ul style="list-style-type: none"> Policy Design and Implementation Assignment of Responsibilities Resource Training Allocation of Resources 	<ul style="list-style-type: none"> ISO 29383:2010 – Terminology Policies – Development and implementation ISO 21500:2012 – Guidance on Project Management Project Management Body of Knowledge (PMBOK) by the Project Management Institute Projects IN Controlled Environments, version 2 (PRINCE2)
<i>Process Maturity and Compliance</i>	<ul style="list-style-type: none"> Goal-Process Alignment Process Monitor Process Quality 	<ul style="list-style-type: none"> Capability Maturity Model Integration (CMMI) ISO 9000 – Quality Management Series of Standards ISO 15504 – Information Technology – Process Assessment ISO 19011:2011 – Guidelines for auditing management system
<i>Risk Management</i>	<ul style="list-style-type: none"> Risk Assessment 	<ul style="list-style-type: none"> ISO/Guide 73:2009 – Risk Management – Vocabulary ISO 31000:2009 – Risk Management Series of Standards
<i>IT and Management</i>	<ul style="list-style-type: none"> Ensure the reliability, usability and integrity of systems 	<ul style="list-style-type: none"> All standards from the ISO subcommittee ISO/IEC JTC 1/SC 40 – IT Service Management and IT Governance Information Technology Infrastructure Library (ITIL)
<i>Data Management</i>	<ul style="list-style-type: none"> Ensure the reliability, authenticity, usability and integrity of metadata Data capture, preservation and access 	<ul style="list-style-type: none"> Data Management Body of Knowledge (DMBOK) by DAMA International

6. CONCLUSIONS AND FUTURE WORK

This paper analyses different reference documents through the identification of stakeholders and their concerns. The analysis supports an overall understanding of the references and their relations. Additionally, it allowed the identification of relations between reference documents using the same terminology and produced by the same stakeholders. However, when comparing similar reference documents produced by different stakeholders it was not possible to identify equivalent stakeholders. Further analysis allows us to conclude that although the identified stakeholders are different their concerns are similar. Additionally, it was possible to infer and identify several related views to the analysed body of knowledge.

Future work needs to include a more detailed analysis on: (1) the used terminology and their definitions in order to identify similar and equivalent terms, and (2) the extent and type of relation between the reference documents, i.e. identify possible overlaps or contradictions on the extensive body of knowledge. Future work will be performed on the European Project entitled “European Archival Records and Knowledge Preservation” (E-ARK⁴) where a knowledge centre for information governance is being developed. The service will consist in an online information system that will allow the consolidation and access of reference documents in order to derive best practices. The system will be designed according to reference techniques in the area of requirements engineering, and business analysis and design, such as the Business Motivation Model (BMM) [1] and the ISO 42010 [16] referenced and used in this paper.

7. ACKNOWLEDGMENTS

This research was co-funded by FCT – Fundação para a Ciência e a Tecnologia, under project PEst-OE/EEI/LA0021/2013 and by the European Commission under the Competitiveness and Innovation Programme 2007-2013, E-ARK – Grant Agreement no. 620998 under the Policy Support Programme.

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⁴ For more details please consult: <http://www.eark-project.com/>

