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Information and documentation — Implementation guidelines for digitization of records

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Information and documentation — Implementation guidelines for digitization of records

Information et documentation — Mise en œuvre des lignes directrices pour la numérisation des enregistrements

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TR 13028 was prepared by Technical Committee ISO/TC 46, *Information and documentation*, Subcommittee SC 11, *Archives/records management*.

This Technical Report was based on Archives New Zealand's *Recordkeeping Standard S6: Digitisation Standard*, published in January 2006.

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Introduction

With the shift to managing records in digital systems, many organizations are digitizing paper and/or other non-digital records. To manage themselves effectively, organizations need to create full and accurate records of their activities and maintain these records over time for subsequent reference. These considerations are valid regardless of the records' storage media.

Digitization is the process of converting hard-copy, or other non-digital, records into a digital format, such as taking digital photographs of non-digital source records or imaging non-digital source records (also known as scanning).

When converting records into digital objects, they are commonly:

a) captured as static pictures (raster image) represented by pixels;

b) processed by optical character recognition technology which converts the pixels into digital representations which are searchable, editable and manipulable; or

c) captured into both formats.

Digitization can broadly be categorized into two types:

— business-process digitization: ongoing, routine digitization as part of daily business processes;

— digitization projects: project-based bulk digitization of legacy records.

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Information and documentation — Implementation guidelines for digitization of records

1 Scope

This Technical Report:

— establishes guidelines for creating and maintaining records in digital format only, where the original paper, or other non-digital source record, has been copied by digitizing;

— establishes best practice guidelines for digitization to ensure the trustworthiness and reliability of records and enable consideration of disposal of the non-digital source records;

— establishes best practice guidelines for the trustworthiness of the digitized records which may impact on the legal admissibility and evidential weight of such records;

— establishes best practice guidelines for the accessibility of digitized records for as long as they are required;

— specifies strategies to assist in creating digitized records fit for long-term retention;

— establishes best practice guidelines for the management of non-digital source records following digitization.

This Technical Report is applicable for use in the design and conduct of responsible digitization by all organizations undertaking digitization, either business process digitization or back capture digitization projects for records management purposes, as outlined in ISO 15489-1:2001 and ISO/TR 15801:2009.

This Technical Report is not applicable to:

a) capture and management of born-digital records;

b) technical specifications for the digital capture of records;

c) procedures for making decisions about records' eventual disposition;

d) technical specifications for the long-term preservation of digital records;

e) digitization of existing archival holdings for preservation purposes.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15489-1:2001, *Information and documentation — Records management — Part 1: General*

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ISO/TR 15801:2009, *Document management — Information stored electronically — Recommendations for trustworthiness and reliability*

ISO 23081-1:2006, *Information and documentation — Records management processes — Metadata for records — Part 1: Principles*

ISO 23081-2:2009, *Information and documentation — Managing metadata for records — Part 2: Conceptual and implementation issues*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15489-1:2001, ISO/TR 15801:2009, ISO 23081-1:2006 and ISO 23081-2:2009 and the following apply.

3.1
born digital records
records which are created in digital form, without a non-digital equivalent

NOTE 1 This term is used to differentiate born digital records from:

— digital materials which might have been created as a result of converting non-digital source material;

— non-digital materials which might have originated from a digital source but have been printed to paper or otherwise converted into analogue form.

NOTE 2 Adapted from Reference [21].

3.2
business information system
automated systems that create or manage data about an organization's activities

NOTE 1 Business information systems are (often multiple or related) applications whose primary purpose is to facilitate transactions between an organizational unit and its customers, e.g. an e-commerce system, client-relationship management system, purpose-built or customized database, and finance or human resources systems. Business information systems typically contain dynamic data that are commonly subject to constant updates, able to be transformed (manipulated) and hold current data. For the purposes of this Technical Report, the term business information system includes electronic records management systems. A business information system will create records, but might or might not manage them according to records management requirements. An electronic document and records management system is a specific type of business information system with the dedicated functionality of managing an organization's records and information resources.

NOTE 2 Adapted from Reference [11].

3.3
business-process digitization
routine digitization of records and incorporation into business information systems where future actions take place on the digitized record, rather than on the non-digital source record

NOTE 1 For the purposes of ongoing management of authoritative records, the version of the record on which the business action took place, or which evidences the business action, is the version that needs to be managed as the official record. In all cases, organizations need to analyse their business processes to identify and manage the record that evidences the business action. Therefore:

— where the digitized record is the record the business relied on in undertaking its business actions, or which evidences the action, the digitized version needs to be regarded as the official record for management purposes;

— where the action has been completed on a non-digital record prior to the digitization process, the non-digital record is the one on which the action has been taken and which evidences the action and the digital record is the copy;

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— where the digitized record is converted back to analogue form for the purposes of further business action, the paper version of the digitized record may be required for management in specific processes in addition to the digitized record.

NOTE 2 Such digitization may take place in conjunction with the operation of an electronic document and records management system.

NOTE 3 Adapted from Reference [16].

3.4
destruction
process of eliminating or deleting records, beyond any possible reconstruction

[ISO 15489-1:2001]

3.5
digitization
means of converting hard-copy or non-digital records into digital format

NOTE Examples of digitization include scanning or imaging, taking digital photographs of the non-digital source records, or converting analogue voice recordings to digital media.

[SOURCE: Reference [16]]

3.6
digitization project
retrospective, back-capture of existing sets of non-digital records to enhance accessibility and maximize re-use

NOTE 1 In such projects, the business action has been completed on non-digital form of the record prior to digitization and for ongoing management purposes the non-digital record on which the business action took place, or which evidences the action, remains the official record of action.

NOTE 2 The non-digital source records for both forms of digitization should be subject to an assessment process to determine whether there are good reasons to retain them prior to any consideration of disposition. Once non-digital records are converted into digital records, many of the management and preservation issues for born-digital records apply.

[SOURCE: Reference [16]]

3.7
disposition
range of processes associated with implementing records retention, destruction, or transfer decisions which are documented in disposition authorities or other instruments

[SOURCE: Reference [14]]

3.8
non-digital source record
document or record that has been copied, converted or migrated or will be the input for such a process

NOTE A non-digital source record can be an original record or it can be a reproduction that was generated by an earlier copying, conversion or migration process.

[SOURCE: Reference [16]]

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4 Benefits and risks of digitization

4.1 Benefits of digitization

Digitization offers the following potential benefits to organizations:

— capacity of more than one person to access the images concurrently;

— networked access enabling access from multiple locations at any time;

— greater integration with business information systems;

— capacity to transmit images within a structured workflow, thus assisting work processing;

— elimination of hybrid (both paper and digital) systems which can cause confusion to users who require access to the whole history of a matter;

— capacity to re-use existing resources limited in their re-use by their format, e.g. very large maps or material held on microfilm or magnetic tape;

— application of consistent classification and indexing for document retrieval particularly for hybrid files;

— integration with existing organizational disaster recovery and back-up regimes;

— provision of a protected and secured rendition;

— potential to reduce physical storage space occupied by hard-copy records;

— potential to increase organizational productivity.

4.2 Risks of digitization

There are a number of risks associated with implementing a digitization process:

— short-term cost savings in space may be negated when balanced with longer-term costs in maintaining the accessibility of digital images over time;

— technology and technical standards used to create digital images may significantly affect longevity and capacity to re-use the images in the future;

— legislative, regulatory or other requirements to maintain authentic and reliable representations of non-digital source records may limit the capacity to deploy commonly offered digitization features (such as image manipulation, etc.);

— it may not be appropriate to destroy the non-digital source records after the digitization process, especially where there are good reasons to retain the records in their non-digital form, e.g. records with importance for national or personal identity or other societal or cultural significance;

— it may not be permissible to destroy the non-digital source records after the digitization process for legislative reasons (by law, some specific classes of records have to be retained in their original format and in some instances non-digitized records may even need to be retained along with their digitized counterparts for a period of time).

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5 Preliminary considerations

5.1 Digitization project viability assessment

The rationale for digitizing should be carefully aligned to a business case geared at improving the organization's ability to carry out its functions. The business case should clearly outline the benefits and anticipated business or cost efficiencies. The business case should take into account appropriate project budgets, resource commitments and be realistically costed. Digitization can involve extensive document preparation and indexing, which can comprise the majority of a digitization budget. Organizations should not be misled by a lack of consideration of on-going costs into thinking that digitization is a cheap option. Digitization undertaken as a space and cost saving device may not be justified, especially when the costs of future migration projects are factored in.

Annex A provides a set of questions to assist in assessing the viability of digitization for non-digital records.

5.2 Master copies and derivatives

Master copies of digitized records are those maintained as a separate and inviolable record in a safe storage environment, usually executed to the highest technical specifications available at the time and subsequently used for the production of derivatives.

Derivative versions, where required, should be made during the digitization process. Master copies should be made available for the creation of subsequent derivative images, where necessary.

A master record may not be necessary for business-process digitization, where the digitized record:

— is the version used for making business decisions;

— is evidence of a business action; or

— acts as supporting reference material.

Any decisions on creating master and derivative images are dependent on analysis of the legislative framework in which the organization operates. The record to be managed to ensure ongoing evidence of business activities is the version of the record on which the business action took place, (or the record evidencing a business action), regardless of whether this is the digitized version or the non-digital source record (or both). Before destroying masters or derivatives, organizations should conduct analyses of their business processes to ensure that the appropriate format of the record on which the business action takes place, or which evidences the action, is identified and the record in that format/s is managed according to any jurisdictional records legislation or regulatory requirements.

6 Best practice guidelines

6.1 General

A full list of the best practice guidelines are provided in the Checklist of best practice guidelines given in Annex B.

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6.2 Planning processes

6.2.1 Project documentation

All digitization and digitization processes should be planned, scoped and documented. The project documentation should include:

— scope definition: with clear identification of business drivers, objectives, scale, size and constraints of the project;

— statement of the purpose and expected uses of the digitized records, illustrated if necessary with examples;

— statement of benefits: clear identification of the benefits anticipated from the digitization;

— statement of user needs and impacts: for example, how the digitized records are to be used, accessed and how this impacts on users;

— statement of technical standards adopted: including format, compression and metadata;

— equipment and resources to support the digitization;

— processes for the planning, control and execution of the digitization, including those undertaken prior to, during and after digitization;

— quality control processes;

— strategies for integrating the digitized image into work processes to support the business action taking place;

— strategies for the ongoing management of the digitized records and non-digital source records for as long as they are required to be maintained;

— strategies regarding the legal requirements for digitization of the record types in question.

6.2.2 Selection of a digitization approach

6.2.2.1 General

An appropriate digitization approach should be selected, documented and implemented. A number of approaches or a combination of approaches, to digitization can be adopted. The way these decisions are approached can be different for business-process digitization and for digitization projects and can vary across organizations.

Prior to digitization, consideration of third party copyright issues, legal requirements to retain the original paper or other non-digital records as well as other constraints inherent in the record should be resolved.

Regardless of which approach to digitization is adopted, the following should apply:

— the digitization approach selected should be documented;

— quality control processes should be implemented regardless of the digitization approach adopted;

— the digitization approach should be regularly reviewed for continuing compliance with the requirements of the legal environment, relevance and cost effectiveness.

Decisions on each of the areas given in 6.2.2.2 to 6.2.2.4 will contribute to the overall approach employed.

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