TECHNICAL REPORT

ISO/TR 17797

First edition
2014-10-01

Electronic archiving — Selection of digital storage media for long term preservation

Archivage électronique — Sélection d'un support de stockage numérique pour une préservation à long terme

Reference number
ISO/TR 17797:2014(E)

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**

4 Methodology **1**

5 Choice of storage system/media **2**

6 Hard disk drive **3**
6.1 General 3
6.2 Reasons for failure 3
6.3 Quality indicators 4
6.4 Technical arrangements 7
6.5 Control tools 8

7 Magnetic tape **9**
7.1 General 9
7.2 Reasons for failure 9
7.3 Quality indicators 10
7.4 Technical arrangements 10
7.5 Control tools 11

8 Solid state drive (SDD), flash memory **11**
8.1 General 11
8.2 Reasons for failure 12
8.3 Quality indicators 12
8.4 Technical arrangements 12
8.5 Control tools 13

9 Optical discs (recordable and rewritable) **14**
9.1 General 14
9.2 Reasons for failure 14
9.3 Quality indicators 14
9.4 Technical arrangements 15
9.5 Control tools 16

10 General requirements for long-term preservation **17**
10.1 General 17
10.2 Media traceability 17
10.3 Optimal storage identification 17
10.4 Duplication of storage 17
10.5 Media stocktaking 17
10.6 Periodic inspection 18

11 Selection of media **18**
11.1 General 18
11.2 Volume of information 18
11.3 Size of individual items 18
11.4 Retention period of the information 19
11.5 Capacity of the media 19
11.6 Technology already in use within the organization 19
11.7 Retrieval and accessibility requirements 19
11.8 Exposure to threats to media 20
11.9 Costs 20
11.10 Records management, regulatory, and discovery 20
11.11 Technology refresh cycle/software migration 20

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11.12 Industry acceptance and maturity 20
Annex A (informative) **RAID** **21**
Annex B (informative) **SMART** **23**
Bibliography **24**

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 171, *Document management applications*, Subcommittee SC 1, *Quality*.

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Introduction

A significant proportion of digital information generated by different human activities will need to be stored for a long period of time and in some cases for as long as it is possible. Where 'long-term' is used in this Technical Report, a storage period of not less than the anticipated life of the storage media is assumed.

The media currently used to store digital information for the long-term have not been analysed and manufactured for this purpose but mainly developed to maximize transfer rates, density recording, and access time. All these parameters have to be taken in perspective when long-term preservation is the requirement, not just simple backup purposes.

In general, current information management systems might not be conducive to the satisfactory achievement of long-term preservation. For long-term preservation, there needs to be the development of special resources and complex procedures with often increased costs when compared with 'normal' information management systems (duplication of files, refreshing storage, equipment redundancy, monitoring systems, heavy maintenance, frequent and risky migration, high energy consumption, etc.).

Even when a system is designed for long-term preservation, the day-to-day requirements for access and management of the stored digital information needs to be taken into consideration.

When designing systems for long-term preservation, it is necessary to have specific pathways with the objective of providing qualified storage media on criteria such as reliability and stability; this would ensure that the sustainability of digital information leads to optimize the solution for both long-term preservation and access to digital information.

The context of the requirement for long-term digital preservation needs to establish conditions and recommendations for media that is specially manufactured with a guaranteed potential of stability and reliability.

The main criteria involved in the long-term preservation of digital information can be summarized as follows:

a) intrinsic stability of storage media;

b) stability of physical and/or chemical modifications of media produced by record processing;

c) quality and reliability of recording process;

d) preservation of access path to information and metadata;

e) preservation of access tools (i.e. any special software needed to use digital items that have not been migrated to a long-term or standardized format);

f) quality of information;

   — compliance with format specification;

   — data integrity.

Only the first three criteria from the list above are considered as part of this Technical Report.

It is noted that the objective is not to make rules or specifications for use on information management systems as several International Standards, such as ISO 14641-1, ISO 15489-1, and ISO/TR 15489-2, fill this role.

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Electronic archiving — Selection of digital storage media for long term preservation

1 Scope

This Technical Report gives guidelines on a selection of the most appropriate storage media for use in long-term electronic storage solutions. It includes a discussion on magnetic, optical, and electronic storage.

2 Normative references

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

ISO 12651-1, *Electronic document management — Vocabulary — Part 1: Electronic document imaging*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12651-1 and the following apply.

3.1
refreshment
data migration where the media is replaced with equivalent media such that all storage hardware and software functionality is unchanged

Note 1 to entry: Refreshment cycles are based on the predicted life span of the medium.

[SOURCE: ISO 13008:2012]

3.2
migration
process of moving digital information, including their existing characteristics, from one hardware or software configuration to another without changing the format

Note 1 to entry: Migration can also include converting to a more current computing environment, involving changes to hardware/software configurations.

[SOURCE: adapted from ISO 13008]

3.3
storage medium
device on which digital information can be recorded

Note 1 to entry: Device can designate a support, a combined support and media player, or a set recorder.

4 Methodology

The characteristics required for storage media should be clearly established regarding the following criteria:

— reliability;

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