SLOVENSKI STANDARD
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Informatika in dokumentacija - Proces konverzije in migracije digitalnih zapisov

Information and documentation -- Digital records conversion and migration process

Information et documentation -- Processus de conversion et migration des documents d'activité numériques

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Foreword

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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.

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 13008 was prepared by Technical Committee ISO/TC 46, *Information and documentation*, Subcommittee SC 11, *Archives/records management*.

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Introduction

This document provides guidance for the conversion of records from one format to another and the migration of records from one hardware or software configuration to another. It contains applicable records management requirements, the organizational and business framework for conducting the conversion and migration process, technology planning issues, and monitoring/controls for the process. It also identifies the steps, components and particular methodologies for each of these processes, covering such topics as workflow, testing, version control and validation.

Due to the rapid pace of technological change, and digital preservation requirements, many records in digital form will, at some point, need to be converted from one format to another, or migrated from one system to another to ensure their continued accessibility and processability.

This is not to suggest that conversion and migration are the only approaches to preserving digital records. Other methods, such as emulation, do exist or are under development. Conversion and migration are, however, two of the more prevalent methods of digital preservation. While this document does not address digital preservation per se, the conversion and migration processes can have an impact on a digital preservation strategy. How an organization chooses to set up the conversion and migration processes (which format to employ, the level of control needed and so on) largely influences its view of the record. There is no single, one-size-fits-all preservation method. However, institutions recognize the benefit of standardized procedures; many test beds and task forces have been established to explore and research conversion, migration, emulation and refreshment, among other preservation procedures, to determine what should work best.

Conversion and migration represent separate approaches to preserving digital records. It is important to implement them in a managed way to prevent any degradation or loss in the authenticity, reliability, integrity and usability of the records, thus ensuring an "authoritative record" as described in ISO 15489-1:2016, 5.2.2. This document outlines the program components, planning issues, recordkeeping requirements and procedures for performing the conversion and migration of digital records so as to preserve their authenticity, reliability, integrity and usability so that they continue to act as evidence of business transactions. In cases where conversion and migration are carried out at the same time, all requirements and guidance in this document apply.

From the outset, note that it is not necessary to adopt all of the procedures recommended in this document to ensure that records management requirements are met. The decision regarding which procedures to adopt depends on such factors as the type of conversion or migration to be performed and the level of risk the organization is willing to accept. In addition, organizations would be well advised to incorporate future planning for further conversion and/or migration of records among requirements for managing enterprise electronic recordkeeping systems.

Before starting a conversion or migration project, individuals designated as "key" to the process need to be aware of records management requirements. The term "recordkeeping criteria/requirements" in records and information management means an adherence to a set of principles that relate to record integrity, authenticity, reliability and usability. Adherence to these principles ensures that record content, context and structure are maintained and that a given record's standing as evidence of business activity is not compromised. The principles apply regardless of how long the record is retained.

This document does not specifically address conversions and migrations as a routine, ongoing business-as-usual work.

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Information and documentation — Digital records conversion and migration process

1 Scope

This document specifies the planning issues, requirements and procedures for the conversion and/or migration of digital records in order to preserve the authenticity, reliability, integrity and usability of such records as evidence of business functions, processes, activities and transactions. These procedures do not comprehensively cover:

— backup systems;

— preservation of digital records;

— functionality of trusted digital repositories;

— the process of converting analogue formats to digital formats and vice versa.

2 Normative references

There are no normative references cited in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
access
right, opportunity, means of finding, using, or retrieving information

[SOURCE: ISO 5127: 2017, 3.11.1.01]

3.2
attribute
characteristic of an object or entity

Note 1 to entry: Adapted from ISO/IEC 11179-3:2003.

[SOURCE: ISO 23081-1:2017, 3.3]

3.3
authenticity
quality of a *record* that can be proven to be what it purports to be, to have been created or sent by the *agent* purported to have created or sent it, and to have been created or sent when purported

[SOURCE: ISO 30300:2020, 3.2.2]

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3.4
content information
set of information that is the original target of preservation or that includes part or all of that information

[SOURCE: ISO 19165-1:2018(en)]

3.5
conversion
changing *records* from one format to another

[SOURCE: ISO 30300:2020, 3.4.5]

3.6
data cleansing
process used to improve data quality by detecting and correcting (or removing) defects and errors in data

[SOURCE: ISO 5127:2017(en), 3.1.11.21]

3.7
data object
discrete data, considered as a unit, representing an instance of a data structure that is known or assumed to be known

[SOURCE: ISO/IEC 2382:2015, 2121425]

3.8
emulation
recreation of the functionality and behaviour of an obsolete digital system (3.1.1.13) , using software (3.1.12.14) (called emulator) on current computer systems

Note 1 to entry: Emulation is a key digital preservation (3.12.1.19) strategy.

[SOURCE: ISO 5127:2017(en), 3.12.1.20]

3.9
encryption
(reversible) transformation of data by a cryptographic algorithm to produce ciphertext, i.e. to hide the information content of the data

Note 1 to entry: Adapted from [ISO/IEC 18033-6:2019(en), 3.8]

3.10
file format
encoding of a file type that can be rendered or interpreted in a consistent, expected and meaningful way through the intervention of a particular piece of software or hardware which has been designed to handle that format

Note 1 to entry: A file may (or may not) be a container containing zero or more files of various formats. File formats may be defined by a specification, or by a reference software system. Many file formats exist in forms with minor variations and many also in more than one version. Typing of file formats should be interpreted generously rather than strictly, but sufficiently precisely to distinguish versions where such distinctions have significant interpretive consequences.

[SOURCE: PRONOM Vocabulary Specification, The National Archives UK, 2011]

3.11
integrity
quality of being complete and unaltered

[SOURCE: ISO 30300:2020, 3.2.8]

3.12
metadata for records
structured or semi-structured *information*, which enables the *records processes* through time and within and across *organizations*

[SOURCE: ISO 30300:2020, 3.2.9]

3.13
migration
moving *records* from one hardware or software configuration to another

[SOURCE: ISO 30300:2020, 3.4.10]

3.14
originating
initial manifestation of something

3.15
preservation
measures taken to maintain the *useability*, *authenticity*, *reliability* and *integrity* of *records* over time

Note 1 to entry: Measures include principles, policies, rules, strategies, processes and operations.

[SOURCE: ISO 30300:2020, 3.4.11]

3.16
record
information created or received and maintained as *evidence* and as an *asset* by an *organization*, in pursuit of legal obligations or in the course of conducting business

Note 1 to entry: Records are normally used in plural.

Note 2 to entry: In a management system standard (MSS) implementation, the records created to conduct and direct the management system and to document its implementation are called documented information.

[SOURCE: ISO 30300:2020, 3.4.10]

3.17
refreshment
digital migration where the effect is to replace a media instance with a copy that is sufficiently exact that all archival storage hardware and software continues to run as before

[SOURCE: ISO 19165-1:2018(en), 3.31]

3.18
reliability
quality of a *record* that can be proven to be complete and accurate

[SOURCE: ISO 30300:2020, 3.2.11]

3.19
replication
digital migration where there is no change to the packaging information, the content information, and the preservation description information

Note 1 to entry: The bits used to represent these information objects are preserved in the transfer to the same or new media instance.

Note 2 to entry: Adapted from ISO 14721:2012.

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3.20
representation information
information that maps a data object into more meaningful concepts

[SOURCE: Adapted from ISO 19165-1:2018]

3.21
Source Record
document or record that has been copied, converted or migrated or will be the input for such a process

Note 1 to entry: Adapted from ISO/TR 13028:2010, 3.8

3.22
useability (preferred term)
usability (admitted term)
property of being able to be located, retrieved, presented and understood

Note 1 to entry: Useability may also refer to the extent to which a system, product, or service can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.

[SOURCE: ISO 30300:2020, 3.2.12]

3.23
validation
the process of evaluating a system or component to ensure compliance with the functional, performance and interface requirements

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[SOURCE: ISO/IEC 14776-121:2010, 3.1.108]

4 Organizational and business framework

4.1 General

This clause addresses the drivers that often prompt the need for the conversion or migration of digital records, the issues that organizations should consider when evaluating the need for conversion or migration of their records, and the steps taken in developing a conversion and migration program. It discusses the decision making and resource allocation associated with the conversion or migration within the organizational framework, as well as the technical infrastructure that supports the conversion and migration processes and which should be used to ensure the records' authenticity and integrity for as long as they are needed.

4.2 Conversion and migration drivers

4.2.1 General

A variety of drivers can compel an organization to convert or migrate its digital records. Some records have longer retention requirements than a software application or storage medium can sustain, prompting organizations to convert or migrate their records while supporting systems are still viable. Some records may need to be converted or migrated because the corresponding media becomes contaminated. Organizations might also choose to convert or migrate records proactively on the basis of operational factors relating to record volume, access, storage efficiency, business and technology cycles, or organizational change (such as outsourcing, mergers or acquisitions). In extreme circumstances, organizations might be compelled to convert or migrate records in response to regulatory or legal actions.