International Standard

ISO 16919

Space data and information transfer systems — Requirements for bodies providing audit and certification of candidate trustworthy digital repositories

Systèmes de transfert des informations et données spatiales — Exigences pour les organismes d'audit et de certification des référentiels numériques potentiellement de confiance

Second edition
2025-03

Reference number
ISO 16919:2025(en)

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Published in Switzerland

Foreword

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This document was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 652.1-M-3, December 2024) and drafted in accordance with its editorial rules. It was assigned to Technical Committee ISO/TC 20, *Aircraft and space vehicles,* Subcommittee SC 13, *Space data and information transfer systems* and adopted under the “fast-track procedure”.

This second edition cancels and replaces the first edition (ISO 16919:2014), which has been technically revised.

The main changes are as follows:

— updated references to latest versions of documents, ISO 17021:2015, ISO 16363 and ISO 14721;

— updated to be consistent with the structure of the latest version of ISO 17021-1, for example, removal of section 8.3 Directory of Certified Clients;

— clarified use of remotes audits in Section 9;

— added CCSDS required subsections in Annex B.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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1 INTRODUCTION

1.1 PURPOSE

The main purpose of this document is to define a CCSDS Recommended Practice (and ISO standard) on which to base the operations of the organization(s) which assess the trustworthiness of digital repositories using the latest version of CCSDS 652.0/ISO 16363 (reference [1]) and provide the appropriate certification. This document specifies requirements for bodies providing audit and certification of digital repositories, based on the metrics contained within ISO/IEC 17021-1 (reference [4]) and reference [1]. It is primarily intended to support the accreditation of bodies providing such certification.

ISO/IEC 17021-1 provides the bulk of the requirements on bodies offering audit and certification for general types of management systems. However, for each specific type of system, specific additional requirements will be needed, for example, to specify the standard against which the audit is to be made and the qualifications which auditors require.

This document provides the (small number of) specific additions required for bodies providing audit and certification of candidate trustworthy digital repositories. Trustworthy here means that they can be trusted to maintain, over the long-term, the understandability and usability of digitally encoded information placed into their safekeeping.

In order improve readability the section numbers are kept consistent with those of ISO/IEC 17021-1. Some subsections are applicable as they stand, and these are simply enumerated; otherwise additions to subsections are explicitly given. In the former case the sections may consist of just a few sentences. As a result this document must be read in conjunction with ISO/IEC 17021-1.

1.2 SCOPE

The requirements contained in this CCSDS Recommended Practice need to be demonstrated in terms of competence and reliability by any organization or body providing certification of digital repositories.

1.3 APPLICABILITY

This document is meant primarily for those setting up and managing the organization performing the auditing and certification of digital repositories.

It should also be of use to those who work in or are responsible for digital repositories seeking objective measurement of the trustworthiness of their repository and wishing to understand the processes involved.

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1.4 RATIONALE

There is a hierarchy of standards concerned with good auditing practice (references [3]-[5]). This document is positioned within this hierarchy in order to ensure that these good practices can be applied to the evaluation of the trustworthiness of digital repositories.

ISO/IEC 17021-1 *Conformity assessment — Requirements for bodies providing audit and certification of management systems* (reference [5]) is an International Standard which sets out criteria for bodies operating audit and certification of organizations' management systems. If such bodies are to be accredited as complying with ISO/IEC 17021-1 with the objective of auditing and certifying candidate trustworthy digital repositories in accordance with reference [1], some requirements that are additional to ISO/IEC 17021-1 are necessary. These are provided by this document.

The text in sections 4 to 10 in this document follows the structure of ISO/IEC 17021-1, with specific additions on the application of ISO/IEC 17021-1 for certification of candidate trustworthy digital repositories.

1.5 STRUCTURE OF THIS DOCUMENT

This document is divided into informative and normative sections and annexes.

Sections 1-2 of this document give a high-level view of the rationale, the conceptual environment, some of the important design issues and an introduction to the terminology and concepts.

- Section 1 gives purpose and scope, rationale, a view of the overall document structure, and the acronym list, glossary, and reference list for this document. These are normative.
- Section 2 provides an overview of auditing practices. This is informative.
- Section 3 is reserved for future use.
- Section 4 states the principles that apply.
- Sections 5 to 10 provide the normative rules against which an organization providing audit and certification of candidate trustworthy digital repositories may be judged, based on ISO/IEC 17021-1 (reference [4]).
- Annex A specifies the trusted digital repository management system competencies for certification body personnel for specific certification functions.
- Annex B is a CCSDS-required informative discussion of the security implications of applying this CCSDS Recommended Practice.

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1.6 DEFINITIONS

1.6.1 ACRONYMS AND ABBREVIATIONS

CAB	conformity assessment body
CCSDS	Consultative Committee for Space Data Systems
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
OAIS	Open Archival Information System
TDR	Trustworthy Digital Repository
TDRMS	Trustworthy Digital Repository management system
SANA	Space Assigned Numbers Authority

1.6.2 TERMINOLOGY

1.6.2.1 General

Digital preservation interests a range of different communities, each with a distinct vocabulary and local definitions for key terms. A glossary is included in this document, but it is important to draw attention to the usage of several key terms.

In general, key terms in this document have been adopted from the Open Archival Information System (OAIS) Reference Model (reference [2]). One of the great strengths of the OAIS Reference Model has been to provide a common terminology made up of terms ‘not already overloaded with meaning so as to reduce conveying unintended meanings’. Because the OAIS has become a foundational document for digital preservation, the common terms are well understood and are therefore used within this document.

The OAIS Reference Model uses ‘digital archive’ to mean the organization responsible for digital preservation. In this document, the term ‘repository’ or phrase ‘digital repository’ is used to convey the same concept in all instances except when quoting from the OAIS, and is used to denote any type of digital repository; it may be a Trustworthy Digital Repository (TDR), a candidate TDR, a lapsed TDR, or one not seeking certification. It is important to understand that in all instances in this document, ‘repository’ and ‘digital repository’ are used to convey digital repositories and archives that have, or contribute to, long-term preservation responsibilities and functionality.

1.6.2.2 Glossary

For the purposes of this document, the terms and definitions given in ISO/IEC 17021-1 (reference [4]), references [1], [2], and [3], and the following apply.

Trustworthy Digital Repository, TDR: A repository which has a current certification.

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1.6.3 NOMENCLATURE

The following conventions apply throughout this Recommended Practice:

a) the words ‘shall’ and ‘must’ imply a binding and verifiable specification;

b) the word ‘should’ implies an optional, but desirable, specification;

c) the word ‘may’ implies an optional specification;

d) the words ‘is’, ‘are’, and ‘will’ imply statements of fact.

1.7 CONFORMANCE

An organization which provides audit and certification for TDRs conforms to this recommended practice if it fulfils all the binding and verifiable specifications in this document.

1.8 REFERENCES

The following publications contain provisions which, through reference in this text, constitute provisions of this document. At the time of publication, the editions indicated were valid. All publications are subject to revision, and users of this document are encouraged to investigate the possibility of applying the most recent editions of the publications indicated below. The CCSDS Secretariat maintains a register of currently valid CCSDS publications.

[1] *Audit and Certification of Trustworthy Digital Repositories*. Issue 2. Recommendation for Space Data System Practices (Magenta Book), CCSDS 652.0-M-2. Washington, D.C.: CCSDS, December 2024 or later. [Equivalent to ISO 16363:2012 or later]

[2] *Reference Model for an Open Archival Information System (OAIS)*. Issue 3. Recommendation for Space Data System Practices (Magenta Book), CCSDS 650.0-M-3. Washington, D.C.: CCSDS, December 2024 or later. [Equivalent to ISO 14721:2012 or later]

[3] *Quality Management Systems—Fundamentals and Vocabulary*. 4th ed. International Standard, ISO 9000:2015. Geneva: ISO, 2015.

[4] *Conformity Assessment—Requirements for Bodies Providing Audit and Certification of Management Systems—Part 1: Requirements*. International Standard, ISO/IEC 17021-1:2015. Geneva: ISO, 2015.

[5] *Conformity Assessment—Vocabulary and General Principles*. 2nd ed. International Standard, ISO/IEC 17000:2020. Geneva: ISO, 2020.

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