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Informatika in dokumentacija - Sistem identifikatorjev digitalnega objekta

Information and documentation — Digital object identifier system

Information et documentation — Système d'identifiant numérique d'objet

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Information and documentation — Digital object identifier system

Information et documentation — Système d'identifiant numérique d'objet

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 46, *Information and documentation*, Subcommittee SC 9, *Identification and description*.

This second edition cancels and replaces the second edition (ISO 26324:2022), which has been technically revised. The main changes are as follows.

— case-sensitiveness of DOI names is clarified;

— the list of common representations of DOI names is updated; and

— the specification of, and procedures associated with, the system metadata associated with each DOI Name (Annex B) are revised to reflect current practice; and

— Annex D is replaced with a summary of changes across editions of this document.

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.

Introduction

The digital object identifier (DOI®[1)]) system, which was first deployed in 1998, provides an infrastructure for persistent unique identification of objects of any type.

DOI is an initialism for “digital object identifier”, meaning a “digital identifier of an object” rather than an “identifier of a digital object”. In this document, the term “digital object identifier” refers to the system defined in this document, unless otherwise stated.

Objects within the DOI system, i.e., referents, are identified by their DOI names. A DOI name is an opaque string, which does not have a discernible meaning on its own and is for use by humans and machines alike. Each DOI name is registered by a registrant.

To support diverse applications worldwide, a DOI name uses characters from the Unicode character set. More specifically, it can use any Unicode character intended to be written, printed, or otherwise displayed in a form that can be read by humans – formally referred to as a *Graphic character*.

With this flexibility comes ambiguities when representing or exchanging DOI names. For example:

— the character "Á" (LATIN CAPITAL LETTER A WITH ACUTE) can be encoded either on its own or as the character "A" (LATIN CAPITAL LETTER A) followed by the combining character ◌́ (COMBINING ACUTE ACCENT);

— multiple schemes (UTF-8, UTF-16 or UTF-32) can be used when serializing a DOI name to bytes for interchange between machines;

— the glyph "Å" can either correspond to the ANGSTROM SIGN or the LATIN CAPITAL LETTER A WITH RING ABOVE.

To avoid these pitfalls, this document specifies the syntax of a DOI name as a sequence of *Unicode code points*, where each code point is an integer between 0 and 0x10FFFF, and the fundamental unit of encoding in Unicode; and describes several representations appropriate for interchange and visual representation.

The assignment and administration of DOI names is handled by the DOI system, which offers a useful set of functionalities, including:

— persistence, if material is moved, rearranged, or bookmarked,

— interoperability with other data from other sources,

— extensibility by adding new features and services through management of groups of DOI names,

— single management of data for multiple output formats (platform independence),

— class management of applications and services, and

— dynamic updating of metadata, applications and services.

The DOI system is designed to work over the Internet. A DOI name is permanently assigned to an object to provide a resolvable persistent network link to current information about that object, including where the object, or information about it, can be found on the Internet. While information about an object can change over time, its DOI name will not change. A DOI name can be resolved within the DOI system to information related to the identified object such as the location of metadata or a location of the object.

The DOI system enables the construction of automated services and transactions. Applications of the DOI system include but are not limited to managing information and documentation location and access; managing metadata; facilitating electronic transactions; persistent unique identification of any form of any data; and commercial and non-commercial services.

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1) DOI® is a registered trademark. The Handbook published by the ISO 26324 Registration Authority (see Clause 8) contains information on trademark issues. The name and contact information of the ISO 26324 Registration Authority can be found at https://www.iso.org/maintenance_agencies.html.

An object associated with a DOI name is described unambiguously by system metadata, to support identification and description. The data model supports interoperability between applications.

The scope of the DOI system is not defined by reference to the type of content (format, etc.) of the referent, but by reference to the functionalities it provides and the context of use. The DOI system provides, within networks of DOI applications, for unique identification, persistence, resolution, metadata and interoperability with other identifier schemes.

Information and documentation — Digital object identifier system

1 Scope

This document specifies the syntax, description and resolution functional components of the digital object identifier system. It specifies the general principles for the creation, registration and administration of DOI names (where DOI is an initialism for "digital object identifier").

This document defines the syntax for a DOI name, which is used for the identification of an object of any material form (digital or physical) or an abstraction (such as a textual work) where there is a functional need to distinguish it from other objects.

The DOI name does not replace, nor is it an alternative for, an identifier used in another scheme, such as the schemes defined by ISO/TC 46/SC 9. This document describes how the DOI system can be used in conjunction with another identifier scheme (for example, to provide additional functionality, such as resolution, where this is not already available), and how the character string of that other scheme can be integrated into the DOI system through system metadata or the DOI syntax or both.

This document does not specify particular technologies to implement the syntax, description and resolution functional components of the digital object identifier system.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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/IEC 10646, *Information technology — Universal coded character set (UCS)*

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
DOI system
social and technical infrastructure for the assignment and administration of *DOI names* (3.3) as identifiers in computer-readable form through assignment, resolution, referent description, administration, etc.

3.2
code point
any value in the Unicode codespace

[SOURCE: ISO/IEC 10646]

Note 1 to entry: In running text, an individual Unicode code point is expressed as U+n, where n is four to six hexadecimal digits, using the digits 0–9 and uppercase letters A–F (for 10 through 15, respectively); and a formal Unicode name is shown in small capitals.

3.3
DOI name
opaque string (3.9) that specifies a unique object within the *DOI system* (3.1)

Note 1 to entry: A DOI name consist of a sequence of code points specified by the DOI syntax .

Note 2 to entry: The terms “identifier” and “number” are sometimes but not always used in the same sense and are to be avoided where ambiguity can arise. The unqualified use of “DOI” alone can also be ambiguous. Therefore “DOI” is always used in conjunction with a specific noun such as DOI name or *DOI system* (3.1) unless the meaning is sufficiently clear from an earlier mention or the specific context.

3.4
object
entity within the scope of the *DOI system* (3.1) that can be digital, physical or abstract

Note 1 to entry: Digital, physical or abstract forms of an entity can be of relevance in information and documentation (e.g. resources, people or agreements).

Note 2 to entry: A particular object identified by a specific DOI name is the referent of that DOI name.

3.5
DOI syntax
rules for the form and sequence of *code points* (3.2) comprising any *DOI name* (3.3), specifically the form and sequence of *code points* (3.2) of a prefix element, separator and suffix element

3.6
directory indicator
unique *opaque string* (3.9) allocated to a registrant for the purpose of assignment of *DOI names* (3.3), forming part of the prefix element of the *DOI syntax* (3.5) but having no other implied meaning

3.7
registrant code
unique *opaque string* (3.9) forming part of the prefix element of the *DOI syntax* (3.5) but having no other implied meaning

3.8
system metadata
specific data associated with the referent of a *DOI name* (3.3), based on a data model that enables the referent to be associated with data of any desired degree of precision and granularity to support identification and description

Note 1 to entry: system metadata is specified in Annex B.

3.9
opaque string
sequence of *code points* (3.2) that has no meaning discernible by simple inspection

Note 1 to entry: To discover meaning, there is a need to refer to metadata.

3.10
registrant
person or organization that has requested and received the registration of a particular *DOI name* (3.3)

3.11
interoperability
ability of independent systems to exchange meaningful information and initiate actions from each other, in order to operate together to mutual benefit

Note 1 to entry: In particular, interoperability constitutes the ability for loosely-coupled independent systems to be able to collaborate and communicate. See Reference [14] for further information about interoperability.