INTERNATIONAL STANDARD

ISO 24165-1

First edition
2021-09

Digital token identifier (DTI) — Registration, assignment and structure —

Part 1: Method for registration and assignment

PROOF/ÉPREUVE

Reference number
ISO 24165-1:2021(E)

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Published in Switzerland

Contents

Page

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 68, *Financial services*, Subcommittee SC 8, *Reference data for financial services*.

A list of all parts in the ISO 24165 series can be found on the ISO website.

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

With the rise in popularity of peer-to-peer payment systems, relying less on centralized authorities and instead on aspects of cryptography, decentralized processing and a distributed network for the maintenance of a shared record of transaction activity, the need to identify the digital tokens issued, traded, transacted or stored on these networks has grown. Stakeholders in the trading community, service providers, custodians and regulatory bodies have identified numerous use cases where a standard identifier for accounting, research, tracking and management of these digital tokens would improve efficiency and eliminate confusion in the marketplace.

However, the nature of these new types of digital asset means they do not fit within the structure of existing ISO identifiers, in part because they possibly lack clear reference to an issuing authority and will therefore not be considered the liability of an issuing authority or corporate governing body. These digital assets, in many cases, are cross geographic and monetary governance jurisdictions.

Though these digital assets are sometimes referred to as cryptocurrencies, virtual currencies or digital currencies, the term 'currency' has a specific meaning as defined by ISO 4217. This definition is in conflict with the nature of the digital tokens identified within this document due to the reasons described above; namely, the lack of monetary authority and geographic location.

Where traditional financial instruments or currencies are tokenized for electronic exchange and issued by a legal entity or a monetary authority responsible for it, other International Standards, such as ISO 6166 or ISO 4217, can apply. To eliminate confusion for users of this document, care has been taken to provide a clear definition and eligibility criteria for assignment of a digital token identifier (DTI).

This document is addressed to applicants seeking to identify digital tokens conforming to the definition provided in this document. The data elements used to distinguish one set of digital tokens from another, are, wherever possible, objective and publicly available. This document only covers fungible tokens. When mentioning "token" singular, this document refers to all tokens with the same attributes and identifiers; for example, a specific ISIN identifies the issuance of a financial instrument, such as IBM, and refers to all the IBM shares. Inclusion in the registry and the issuance of an identifier signifies, therefore, only the existence of the token and its 1:1 relationship to its identifier.

The ISO 24165 series is organized into the following parts:

— ISO 24165-1 describes the method of registration and assignment of a DTI.

— ISO 24165-2 describes the data elements required for registration and display on the DTI registry.

Digital token identifier (DTI) — Registration, assignment and structure —

Part 1: Method for registration and assignment

1 Scope

This document defines the assignment and generation of a random, unique, fixed-length identifier for digital tokens in response to a request for registration that conforms to specified application guidelines (see also ISO 24165-2).

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 24165-2, *Data elements for registration and display on the DTI registry*

ISO/IEC 7064:2003, *Information technology — Security techniques — Check character systems*

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 http://www.electropedia.org/

3.1
asset
anything that has value to a stakeholder

[SOURCE: ISO/TS 17573-2:2020, 3.9]

3.2
block
data structure comprising a *block header* (3.5) and *block data* (3.4)

Note 1 to entry: For the purposes of this document, the division of data elements in a block between block header and block data is illustrative. Other methods of organizing the data elements typically contained in block header and block data may be utilized.

[SOURCE: ISO 22739:2020, 3.2, modified — Note 1 to entry added.]

3.3
blockchain
distributed ledger (3.11) with *confirmed blocks* (3.2) organized in an append-only, sequential chain using cryptographic links

Note 1 to entry: Blockchains are designed to be tamper-resistant and to create final, definitive and immutable ledger records.

[SOURCE: ISO 22739:2020, 3.6]

3.4
block data
data structure comprising zero or more transaction records or references to transaction records

[SOURCE: ISO 22739:2020, 3.3]

3.5
block header
data structure that includes a cryptographic link to the previous *block* (3.2)

Note 1 to entry: A block header can also contain a *timestamp* (3.14), a nonce and other *distributed ledger technology* (3.12) platform-specific data, including a hash value of corresponding transaction records.

[SOURCE: ISO 22739:2020, 3.4, modified]

3.6
consensus

agreement among *distributed ledger technology* (3.12) nodes that i) a transaction is validated and ii) the *distributed ledger* (3.11) contains a consistent set and ordering of validated transactions

Note 1 to entry: Consensus does not necessarily mean that all distributed ledger technology nodes agree.

Note 2 to entry: The details regarding consensus differ between *blockchain* (3.3) designs and this is one key distinguishing characteristic between one design and another.

[SOURCE: ISO 22739:2020, 3.11]

3.7
consensus mechanism
rules and procedures by which *consensus* (3.6) is reached

Note 1 to entry: This definition is not limited to high-level categories of consensus mechanisms, such as proof-of-work or proof-of-stake, but also includes all specific rules for validating transactions and achieving *consensus* (3.6). For example, Bitcoin Cash and Bitcoin are both *blockchains* (3.3) utilizing proof-of-work, but they have different consensus mechanisms; Bitcoin Cash increased the maximum block size relative to Bitcoin, which was a change in the consensus mechanism that caused the 2017 fork that resulted in the creation of Bitcoin Cash.

[SOURCE: ISO 22739:2020, 3.12, modified — Note 1 to entry added.]

3.8
currency
medium of exchange of value, defined by reference to the geographical location of the monetary authorities responsible for it

[SOURCE: ISO 4217:2015, 3.2]

3.9
digital asset
asset (3.1) that exists only in digital form or which is the digital representation of another asset

[SOURCE: ISO 22739:2020, 3.20]

3.10
digital token
fungible (3.13) *digital asset* (3.9) which uses *distributed ledger technology* (3.12) for its issuance, storage, exchange, record of ownership or transaction validation and is not a *currency* (3.8)

Note 1 to entry: Digital assets described by non-standard terms, including but not limited to cryptocurrency, virtual currency, digital currency, utility token, security token, cryptoasset, payment token, stablecoin or coloured coin, can be considered digital tokens for the purposes of this document.

3.11
distributed ledger
ledger that is shared across a set of *distributed ledger technology* (3.12) nodes and synchronized between the distributed ledger technology nodes using a *consensus mechanism* (3.7)

Note 1 to entry: A distributed ledger is designed to be tamper-resistant, append-only and immutable, containing confirmed and validated transactions.

[SOURCE: ISO 22739:2020, 3.22]

3.12
distributed ledger technology
DLT
technology that enables the operation and use of *distributed ledgers* (3.11)

[SOURCE: ISO/IEC 18014-1:2008, 3.23]

3.13
fungible
capable of mutual substitution between the individual units of *digital assets* (3.9)

3.14
timestamp
time variant parameter which denotes a point in time with respect to a common time reference

[SOURCE: ISO/IEC 18014-1:2008, 3.12]

4 Eligibility criteria for application

4.1 Applicant eligibility requirements

Applicants submitting requests for a digital token identifier (DTI) may be any organization, natural person, group or groups. The process to request a DTI is open to anyone, provided they follow the requirements of this document. However, submission of an application does not imply rights of ownership or legal relationship of the applicant to the digital token, or the DTI once assigned. Should a dispute arise regarding the accuracy of the required information, a dispute process shall be made available and guidelines for the adjudication of disputes shall be provided on the Registration authority (RA) website: https://www.iso.org/maintenance_agencies.html.

4.2 Digital token eligibility requirement

Digital tokens conforming to the definition provided in this document shall be eligible for the assignment of an identifier and inclusion in this registry. A digital representation of a currency defined by ISO 4217 is out of scope for DTI assignment. A digital token may, in some cases, be eligible for a DTI and eligible for an ISIN as described by ISO 6166. In this case, if the digital token meets the criteria for DTI assignment, a DTI shall be assigned. The assignment of a DTI does not prevent nor preclude the assignment of an ISIN or another identifier.[1)]

1) The structure of the DTI allows for it to represent the basic number constituents of an ISIN (ISO 6166:2021, 4.1 b) should a future edition of ISO 6166 support this usage or some other method as determined by the advisory group on best practices.

An (informative) sample list of digital assets demonstrates conformity to the digital token definition provided by this document and thus eligibility for identification. This list can be found on the RA website: https://www.iso.org/maintenance_agencies.html.

4.3 Preliminary issuance provision

An application for a DTI may be submitted prior to issuance and distribution of the digital token. In these situations some required application information will possibly not yet be available. Where a DTI is requested prior to the availability of all required application details, a DTI may still be issued pursuant to the RA guidelines for provisional registration and DTI assignment, and its provisional status shall be noted as per the notational requirements of the registry.

5 Application information

5.1 General

An application shall consist of two required parts: applicant information and digital token technical information. A third part, descriptive information, may be supplied by the applicant or by other parties, and may be published to the registry.

5.2 Applicant information

The applicant shall supply contact information.

The contact information provided by the applicant shall not be published on the registry but may be made available upon request.

5.3 Digital token technical information

Digital tokens shall be assigned an identifier following the verification of required data as specified in ISO 24165-2.

5.4 Descriptive information

An (informative) list of descriptive information an applicant or other party may supply is specified by the RA.

6 Digital token identifier code structure

6.1 Constituents

The basic number is eight characters (alphanumeric) in length but excludes vowels (A, E, I, O, U) and the letter Y, and zero shall not be the first character.

The basic number shall be randomly generated and semantically meaningless.

In cases where a randomly generated identifier inadvertently appears to be semantically meaningful, that identifier may be discarded at the discretion of the designated body and a new identifier assigned.

A check character shall be computed using the method specified in Annex A.

6.2 Uniqueness

A duplicate check shall be performed.

A DTI once assigned to a digital token shall not be reused.

