PD ISO/TR 6039:2023

BSI Standards Publication

Blockchain and distributed ledger technologies — Identifiers of subjects and objects for the design of blockchain systems

Documents
Document Sharing Hub

Full document details: PD ISO/TR 6039:2023

National foreword

This Published Document is the UK implementation of ISO/TR 6039:2023.

The UK participation in its preparation was entrusted to Technical Committee DLT/1, Blockchain and Distributed Ledger Technology.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

This publication is not to be regarded as a British Standard.

© The British Standards Institution 2023
Published by BSI Standards Limited 2023

ISBN 978 0 539 16507 4

ICS 35.030; 35.240.40; 35.240.99

Compliance with a Published Document cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 June 2023.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: PD ISO/TR 6039:2023

TECHNICAL REPORT

ISO/TR 6039

First edition
2023-06

Blockchain and distributed ledger technologies — Identifiers of subjects and objects for the design of blockchain systems

Technologies des chaînes de blocs et technologies de registre distribué — Identifiants des sujets et des objets pour la conception des systèmes de chaînes de blocs

Reference number
ISO/TR 6039:2023(E)

Documents
Document Sharing Hub

© ISO 2023

Full document details: PD ISO/TR 6039:2023

COPYRIGHT PROTECTED DOCUMENT

© ISO 2023

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

© ISO 2023 – All rights reserved

Documents
Document Sharing Hub

Full document details: PD ISO/TR 6039:2023

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Considerations for the design of blockchain systems ... **2**
4.1 General ... 2
4.2 Reference Architecture ... 3
4.3 Decentralized Identifiers ... 4
5 Identifiers of subjects ... **5**
5.1 General ... 5
5.2 Identifiers of natural persons ... 5
5.2.1 Public sector identifiers ... 5
5.2.2 Private sector identifiers ... 6
5.3 Identifiers of legal entities ... 6
5.3.1 Public sector identifiers ... 6
5.3.2 Private sector identifiers ... 8
6 Identifiers of objects ... **9**
6.1 Introduction ... 9
6.2 Identifiers of objects used in multiple industries (“horizontals”) ... 10
6.2.1 Supply chain ... 10
6.2.2 Telecom ... 13
6.2.3 Internet ... 15
6.2.4 Patents and trade marks ... 16
6.2.5 Postal services ... 16
6.3 Identifiers of objects used in specific industries (“verticals”) ... 16
6.3.1 Logistics industry ... 16
6.3.2 Agricultural and food industry ... 20
6.3.3 Financial industry ... 26
6.3.4 Healthcare industry ... 28
6.3.5 Media industry ... 29
6.3.6 Electronic devices industry ... 31
6.3.7 Automotive industry ... 32
6.3.8 Mining industry ... 34
6.3.9 Chemical industry ... 34
6.3.10 Land administration and real estate ... 35
Annex A (informative) **Identifier standards as issued by government agencies and SDOs** ... **36**
Annex B (informative) **Identifier categories** ... **37**
Annex C (informative) **List of agricultural vocabularies published by ISO** ... **38**
Bibliography ... **41**

© ISO 2023 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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 307, *Blockchain and distributed ledger technologies*.

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.

© ISO 2023 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

Introduction

This document, which is on the available standards and registers of identifiers of subjects and objects issued by government agencies and standard development organizations (SDOs) (see Annex A), is intended to support designers with the innovation process for their development of (international) blockchain systems for multiple purposes. It also supports the interoperability of those systems with non-blockchain systems because identifiers are mission critical building blocks of information technology systems including the blockchain systems.

Identifiers can identify "subjects" (with rights and obligations) or "objects" (without rights and obligations). This distinction is relevant in legal systems of any country in case at least two subjects of the same or of multiple countries are involved.

Subclause 4.3 addresses decentralized identifiers that leverage blockchain (see W3C [1]). This document is not a report on those "decentralized identifiers" standards and registers.

This document is intended to support designers of blockchain and other systems.

Identifiers issued by the public sector and used in information technology systems are mostly products of a national history (including national legislation) and were mostly not designed for a computer age. This historical legacy hinders the development of global standards and registers on the identification of subjects and objects.

© ISO 2023 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

Documents
Document Sharing Hub

Blockchain and distributed ledger technologies — Identifiers of subjects and objects for the design of blockchain systems

1 Scope

This document provides an overview of identifiers [and their standards and register(s)] relevant for the design of blockchain systems and the interoperability of those systems with non-blockchain systems.

The following criteria were used for inclusion of identifiers in this document:

— Identifiers (and their standards and registers) issued by the public sector for subjects and objects such as citizen numbers, business registration numbers or land registration numbers;

— Identifiers that are internationally recognized and fulfil one of the following criteria:

  — An identifier is an international standard of an SDO (Standard Development Organization);

  — An identifier is a de facto standard according to the norms of the industry involved (even if it is not an international standard of an SDO).

— Identifiers that have relevance for DLT systems as it fulfils one of the following criteria:

  — An identifier that has been used without DLT, but has proven to solve the problems of DLT services using DLT;

  — An identifier that was designed with the usage of DLT in mind from the beginning.

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 22739, *Blockchain and distributed ledger technologies — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 22739 and the following apply.

ISO and IEC maintain terminology 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
attribute
characteristic or property of an entity

[SOURCE: ISO/IEC 24760-1:2019, 3.1.3, modified — Example deleted.]

© ISO 2023 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

3.2
credential
set of data presented as evidence of a claimed or asserted identity and/or entitlements

[SOURCE: ISO/IEC 29115:2013, 3.8, modified — Note to entry deleted.]

3.3
decentralized identifier
DID
globally unique persistent identifier that does not require a centralized registration authority and is often generated and/or registered cryptographically

[SOURCE: W3C Decentralized Identifiers (DIDs) v1.0]

3.4
decentralized identifier subject
DID subject
entity identified by a DID and described by a DID document

[SOURCE: W3C Decentralized Identifiers (DIDs) v1.0]

3.5
entity
item inside or outside an information and communication technology system such as a person, organization, a device, a subsystem, or a group that has recognizable distinct existence

3.6
identifier
attribute or set of attributes that uniquely characterizes an identity in a domain

Note 1 to entry: An identifier can be a specifically created attribute with a value assigned to be unique within the domain.

[SOURCE: ISO/IEC 24760-1:2019, 3.1.4, modified — Note to entry deleted.]

3.7
object
entity without rights and obligations

3.8
subject
entity with rights and obligations

3.9
verifiable credential
tamper-evident credential that has authorship that can be cryptographically verified

[SOURCE: W3C Verifiable Credentials Data Model v1.1]

4 Considerations for the design of blockchain systems

4.1 General

Designers of a blockchain system make choices for the design of their application such as:

— Which subjects will be included in the DLT service?

— Are the subjects only from one country (such as healthcare insurance) or from multiple countries (such as for the international supply chain)?

© ISO 2023 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

— Are the identifiers of subjects of the public sector mandatory for the DLT service or are other options possible (central or decentralized identifiers)?

— Which objects are planned to be included in the DLT service?

— Are the preferred identifiers standards available?

— Are the identifier data registers available and accessible?

— Do the available identifiers and attributes have the required data quality for the DLT service?

— Is the DLT system and its identifiers intended to be used with two (or more) DLT systems and/or with non-DLT systems and/or should interoperability of the two or more systems or applications be ensured to exchange information (data)?

An overview of subjects (natural persons and legal entities) and an overview of objects such as products, assets, locations, documents, legal rights, and messages are included in this document. Objects are owned by one or more subjects. In this document the object identifiers are distinguished in object identifiers of "horizontal industries" (used by any industry) and object identifiers used by "vertical industries" (used by a specific industry). Annex B provides an overview of identifier categories.

4.2 Reference Architecture

As specified in ISO 23257, [6] DLT data can be classified according to its source as shown in Figure 1.

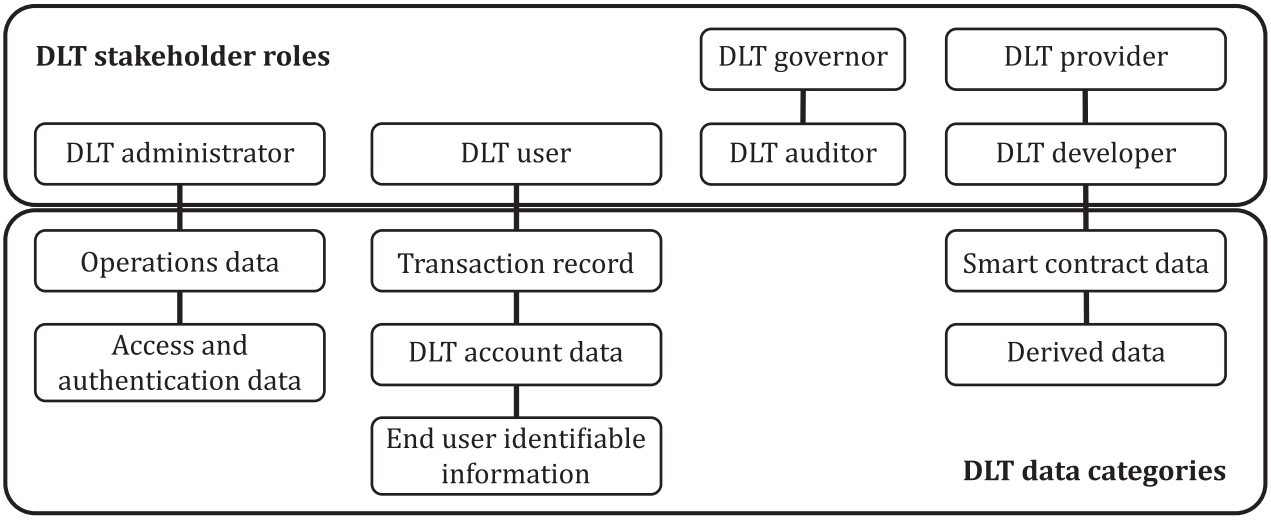
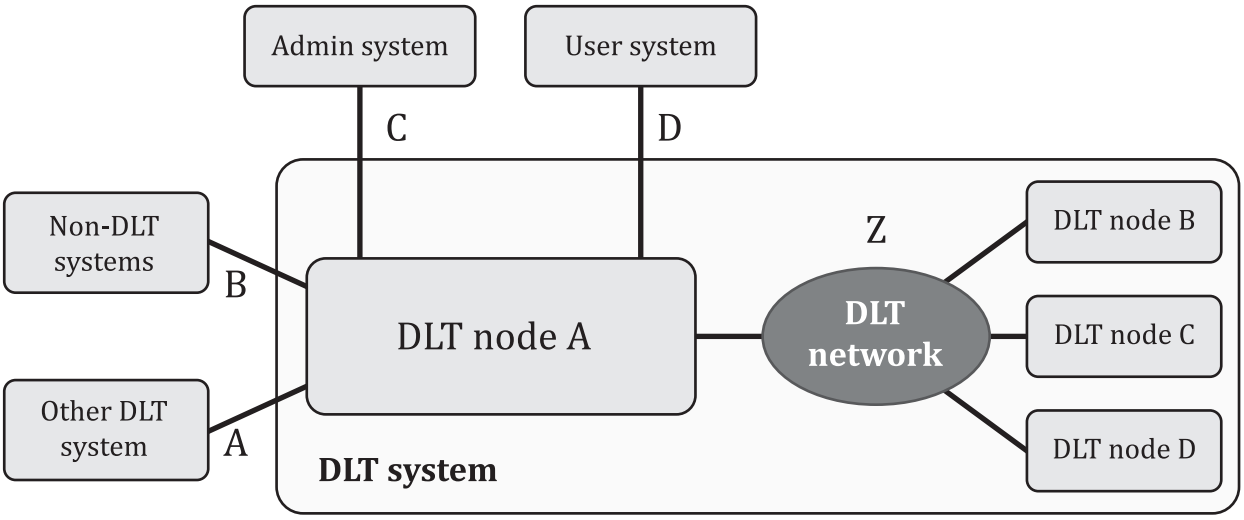


Figure 1 — Data categories from DLT stakeholder role perspective

The data sources identified here align with the six DLT roles identified in ISO 23257 [6] as DLT subjects: administrators, users, providers, developers, governors and auditors. Among these, administrators, users and providers are typically the most relevant roles to use case definition. Stakeholders achieve their aims by means of role-based interactions with the DLT system: A specific example could be the data flows of subjects involved in the international supply chain: the exporter and its bank, the customs of the exporter, the freight forwarders, the customs of the importer, the importer and its bank, all those subjects need high quality identifiers of their business partners (and so the customs) involved and of the goods that are shipped.

© ISO 2023 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023



SOURCE: ISO/TR 3242:2022, Figure 4

Figure 2 — Off-chain/on-chain data flow model

The identifier data (and relevant attributes) of subjects and objects are the data connectors to ensure an efficient end-to-end digital process, mostly via multiple digital ecosystems of the market participants involved. The passing of reference identifiers in the dataflow across on-chain and off-chain systems contributes to the immutable, enhanced trust environment of a DLT system.

Interoperability requires high quality and accurate data (including of identifiers) that are key to correctly recording and tracking the data-related operations of stakeholders to avoid operational risks. There are many definitions of data quality. ISO 8000-8 [7] and ISO/IEC 25012 [8] are excellent references for designers to review the data quality of the identifiers that they will include in their design.

4.3 Decentralized Identifiers

Designers could consider the use of decentralized identifiers for their DLT systems. In response to regulatory differences in relation to data privacy (for natural persons identifiers, attributes and data) and governance across global trade ecosystem, two concepts have emerged to address compliance: self-sovereign identity management and decentralized identifiers.

Decentralized identifier is an old and established concept. Examples include using a public key or a transformation of it as an identifier and using Universally Unique Identifier.[10] Many addresses used in blockchain systems, such as for cryptocurrencies fall into this category.

W3C has published a framework [Decentralized Identifiers (DIDs) of 19 July 2022][1] acknowledging a need in some circumstances for a globally unique identifier that is “self-sovereign”, that is, one that does not depend on any issuing authority and defining Decentralized identifiers (DIDs) as a new kind of identifier that enables verifiable, decentralized identity.

For the design process, a clear view of which subjects and objects is relevant to consider in the DLT system and if all market participants involved will be committed to use a DLT system with decentralized identifiers. The designers need also to understand if the DLT system is a stand-alone system or needs to interact with other DLT systems and/or with non-DLT systems of one or more market participants. See Figure 2 where interoperating DLT and non-DLT systems can be usefully modelled.

Decentralized identifiers are often used in a verifiable credential and are associated with subjects such that the verifiable credential can be easily ported from the repository to another without the need to reissue the credential. W3C has defined that anything can be a DID subject: person, group, organization, physical thing, digital thing, logical thing, etc.”

© ISO 2023 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

The verification of "identifiers (and their attributes)" contained in verifiable credentials with the registers involved is mission critical to ensure the identification of subjects and objects.

This document does not have verifiable credentials in its scope but it lists categories of identifiers and attributes that can be contained as claims in verifiable credentials.

5 Identifiers of subjects

5.1 General

The United Nations members are sovereign states.[12] Countries stipulate in their legislation how identifiers for their citizens and legal entities are issued and who is allowed to use those identifiers for which public or private purpose. The government agencies involved that issue the identifiers are regarded the authoritative source of the identifiers and their attributes.

Subjects are entities with rights and obligations according to the legislation of the country involved. There are two categories of subjects in countries: natural persons and legal entities for which government agencies issue unique identifiers.

Governments agencies use their (unique) identifiers (and attributes) for the communication with their citizens for their services and for e-government services inclusive for their social benefits programs. For communication with legal entities, government agencies use the identifier (and attributes) issued by the business register of their jurisdiction. Government agencies sometimes use additional identifiers for specific functions such as tax numbers, VAT numbers, etc. Government identifiers are in general an integral part of the authentication process for citizens and legal entities to get access to e-government services.

Businesses have their own onboarding process for their customers, suppliers and partners and use a CRM (Customer Relationship Management) system with identifiers. The identifier is used for many business processes such as the invoicing process, reconciliation of payments data, access to helpdesks, loyalty schemes and the authentication of the customers, suppliers and partners to specific e-commerce or e-service of the business involved. In several industries, an industry identifier is used for joint business processes often based on a rulebook, master agreement and/or a common platform.

This clause gives an overview of public and private identifiers (and attributes) designers could consider to use for their CRM systems and applications

5.2 Identifiers of natural persons

5.2.1 Public sector identifiers

5.2.1.1 National identity number

The United Nations mention that the civil registration systems for the citizens of a jurisdiction have three basic functions:

1) A legal and administrative function;

2) A statistical function;

3) The identity management function.

The identity management function assumes that civil registration provides accurate input into an identity management systems or population register. The identity management system also services a legal and identity function. The legal and administrative function of the provision of credentials enable individuals to prove their identity.

The United Nations stresses that "Everyone has the right to be recognized as a person before the law, as enshrined in Article 6 of the Universal Declaration on Human Rights"[13].

© ISO 2023 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

The national identification number is used by government agencies as a means of tracking their citizens, permanent residents and temporary residents for the purpose of work, taxations, government benefits, education, healthcare and other official functions. The issuing of the identification number is stipulated by the legislation of the country involved. Each country has its own standard for the identifier (and attributes) of the citizen record. The access to registers with citizens data is limited by the laws of the country involved. The UN published guidelines on the legislative framework for civil registrations. [14] The UN publishes no overview of "national identification numbers". See Reference [15] for more information on national identification numbers.

The OECD provides an overview of "tax identification numbers" (TIN) of many of the UN member countries, or the functional equivalent for their citizens with the rules of the country involved in relation to the issuance, structure, use and validity of its TIN. See Reference [16] for more information.

The authentication schemes of/for government agencies include directly or indirectly the citizen number issued by the government involved.

5.2.1.2 Passport

The ICAO (International Civil Aviation Organization) issues the specifications for machine readable passports. A passport is a travel document (so an object) issued by a government, primarily for the purpose of travel, to certify the personal identity and nationality of its holder. The ICAO specifications[17] include mandatory data elements such as:

— the issuing state or organization (in code);

— the passport number must uniquely identify the document from all other machine readable documents issued by the state;

— a primary and a secondary identifier as defined by the state.

ISO/IEC 7501-1 [18] defines machine readable passports.

5.2.2 Private sector identifiers

Businesses and NGOs design(ed) their own identifier (and attributes) for the registration of their natural person customers or members. These identifiers can include industry standards (such as part of the credit card number). Businesses (such as organizations in the financial industry) must also often include an identifier issued by a public sector agency of the country involved in the files of their customers. These identifiers mostly can only be used for specific purposes allowed or prescribed by the legislation of the country involved.

5.2.2.1 ISO 24366 Financial services — Natural Person Identifier (NPI)

ISO 24366 [19] specifies a machine-readable, unambiguous natural person identifier (NPI) and the relevant reference data to uniquely identify the natural person relevant to any financial transaction rather than the personal identifying information.

5.3 Identifiers of legal entities

5.3.1 Public sector identifiers

5.3.1.1 Identifiers of legal entities registered in business registers

All countries have legal entities (with rights and obligations) of several legal forms (see 5.3.2.1) that are in general registered with an identifier in a business register or other public register of that country. Not all countries have a complete register of all legal entities of all their legal forms. All business registers have their own (national) identifier standard for legal entities and do not use a standard of an international SDO (Standard Development Organization). All business registers have their own rules on the access to the data of legal entities and if a fee is required to get access to (part of) the data.

© ISO 2023 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

The G20-FSB mandated the Global Legal Entity Identifier Foundation (GLEIF) to take care of the "Registration Authorities List",[20] which includes over 770 business registers, and other relevant registers of which the data are available free of charge for any user. The register of the Registration Authorities is available.

The OECD makes an overview available[16] to many UN member countries of their "tax identification numbers" (TIN) for legal entities or their functional equivalents with the rules of the country involved in relation to the issuance, structure, use and validity of its TIN.

5.3.1.2 ISO 20275 Financial services — Entity legal forms (ELF)

ISO 20275 [21] specifies the elements of an unambiguous scheme to identify the distinct entity legal forms in a jurisdiction. Its aim is to enable legal forms within jurisdictions to be codified and thus facilitate the classification of legal entities according to their legal form. See Reference [22] for the ELF register of all legal forms of the UN sovereign states.

5.3.1.3 ISO 17442-1 Financial services — Legal entity identifier (LEI) — Part 1: Assignment

ISO 17442-1 [23] specifies the minimum elements of an unambiguous legal entity identifier (LEI) scheme to identify the legal entities relevant to any financial transaction.

It is applicable to "legal entities", which include, but are not limited to, unique parties that are legally or financially responsible for the performance of financial transactions or have the legal right in their jurisdiction to enter independently into legal contracts, regardless of whether they are incorporated or constituted in some other way (e.g. trust, partnership, contractual). It includes governmental organizations, supranationals and individuals when acting in a business capacity, but excludes natural persons. It also includes international branches as defined in ISO 17442-1:2020, 3.5.

The LEI is designed for automated processing. It can also be conveniently used in other media interchange when appropriate (e.g. paper document exchange).

NOTE Examples of eligible legal entities include, without limitation:

— all financial intermediaries;

— banks and finance companies;

— international branches;

— all entities that issue equity, debt or other securities for other capital structures;

— all entities listed on an exchange;

— all entities that trade financial instruments or are otherwise parties to financial transactions, including business entities, pension funds and investment vehicles such as collective investment funds (at umbrella and sub-fund level) and other special purpose vehicles that have a legal form;

— all entities under the purview of a financial regulator and their affiliates, subsidiaries and holding companies;

— sole traders (as an example of individuals acting in a business capacity);

— counterparties to financial transactions.

See Reference [24] for the register of issued LEIs.

ISO 17442-2 [25] specifies a standardized way of embedding the legal entity identifier (LEI) code, as represented in ISO 17442-1, in digital certificates, represented by the International Telecommunications Union (ITU) Recommendation X.509 and its equivalent International Standard, ISO/IEC 9594-8.

ISO 17442-2 specifies the structure of a public key certificate conforming with ISO/IEC 9594-8 in which the LEI is embedded.

© ISO 2023 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

5.3.1.4 ISO 5009 Financial services — Official Organizational Roles (OOR) — Scheme for official organizational roles

ISO 5009 [26] specifies an unambiguous scheme to list official organizational roles by jurisdiction in a standardized way.

It is not the purpose of ISO 5009 to compare or align official organizational roles across different countries or jurisdictions, so as not to limit the usage or relevance of ISO 5009. To understand the powers associated with each official organizational role, users of ISO 5009 can consult applicable regulation or legislation, documents of the legal entity in which the official organizational role exists and procedures specific to each organizational entity.

5.3.1.5 Traders Identification Number (TIN)

The TIN is the technical standard of the World Customs Organization (WCO) for a globally unique identification of AEO (Authorized Economic Operators). See Reference [27] for more information.

5.3.1.6 Economic Operators Registration Identification Number (EORI)

The Economic Operators Registration and Identification number (EORI)[28] is required for businesss and people in the EU customs territory as an identification number in all customs procedures when exchanging information with customs administrations. Non-EU economic operators also need an EORI number for specified purposes in relation with the EU customs.

5.3.1.7 EU VAT Identification Number (IOSS)

The EU IOSS (Import One Stop Shop) VAT Identification Number allows suppliers in e-commerce selling imported goods to buyers in the EU to collect, declare and pay the VAT to tax authorities at the moment the goods are imported to the EU. See Reference [29] for more information.

5.3.1.8 EuroGroups Register (EGR)

The EGR consists of all statistical units that are related to enterprise groups, which have at least one unit in the EU. The EGR access is restricted to official SBR statisticians in EU NSOs (National Statistical Organizations). See Reference [30] for more information.

5.3.1.9 Global Groups Register (GGR)

The GGR ID and the GGR register of the United Nations covers the world's 100 largest multinational enterprises (MNE) groups. The GR identifies the MNE groups and their legal structures across countries. See Reference [31] for more information.

5.3.2 Private sector identifiers

5.3.2.1 Global Location Number (GLN)

The GS1®[1)] GLN (Global Location Number) enables companies the unique and unambiguous identification of any type of party or location, whether physical or digital, used in business processes. Identification in this manner is a prerequisite for efficient communication between trading partners. A GLN acts as a database key to reference party or locations specific information that which more fully describes the entity. Its function is to reduce input errors and increase efficiency. The GS1 GLN is recognized by ISO/IEC 6523.

1) GS1 is a registered trademark of GS1 Switzerland. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.

© ISO 2023 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

The GLN is widely used in sharing electronic data between companies, since it enables unambiguous identification of the parties, locations and systems. The GLN is a foundational key in related GS1 standards. See Reference [32] for more information.

5.3.2.2 ISO/IEC 6523-1 Information technology — Structure for the identification of organizations and organization parts — Identification of organizations identification schemes

ISO/IEC 6523-1 [33] specifies a structure for the globally an unambiguously identifying organizations, and parts thereof, for the purpose of computer data exchange. It also makes recommendations regarding where prior agreements can be concluded between interchange partners.

In the development of ISO/IEC 6523-1, it has been recognized that a single method of all organization on an international basis is neither feasible nor practicable. Instead, ISO/IEC 6523-1 recognizes existing methods of identification and provides a means for systemically incorporating these in a uniform structure for the purposes of information exchange. An organization can be identified by more than one identification method.

ISO/IEC 6523-2 [34] specifies the procedure for the registration of organization identifications schemes and the requirements for the administration of an ICD (International Code Designator) values, to designate these identification schemes. End June 2022 an ICD was issued to about 200 Organization Identification Schemes. See Reference [35] for more information.

5.3.2.3 DUNS Number

A DUNS®[2)] number is a unique nine digits identifier created by the credit bureau Dun & Bradstreet. DUNS numbers are a standard numbering system to identify business across the globe. See Reference [36] for more information.

5.3.2.4 PermID

The PermID (Permanent Identifier) is an open, permanent and universal identifier used by different stakeholders and partners within or outside an organization. PermIDs are open, permanent and universal identifiers where the underlying attributes capture the context of the identity they represent. See Reference [37] for more information.

5.3.2.5 ISO 9362 Banking — Banking telecommunication messages — Business Identifier Code (BIC)

ISO 9362 [38] specifies the elements and structure of a universal code for financial and non-financial institutions, for which such an international identifier is required to facilitate automated processing of information for financial services (amongst others for the payments and securities industries and for trade finance).

The BIC is used for addressing messages, routing business transactions and identifying business parties among more for the SWIFT network. See Reference [39] for more information on the register.

6 Identifiers of objects

6.1 Introduction

This document distinguishes between identifiers of objects used in multiple industries (horizontals) included in 6.2 and of objects used mainly in a specific industry (verticals). The industry overview in 6.2 and 6.3 has been created based on the received contributions of identifier experts.

2) DUNS is a registered trademark of The Dun and Bradstreet Corporation. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.

© ISO 2023 – All rights reserved

AVA Documents Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

6.2 Identifiers of objects used in multiple industries ("horizontals")

6.2.1 Supply chain

The (international) supply chain covers the delivery of good and services. It covers subject identifiers of market participants and government agencies (see above) and object identifiers such as for products, assets, locations and documents (see below), and for the payments (see below).

The public sector is actively involved in the (global) supply chain via their custom and statistical agencies and their food and drugs agency, to assess the quality of the food and drugs, and for the sustainability of the production and distribution of the global supply chains. Market participants have reporting requirement obligations to those government agencies and do so with the required identifier and/or available identifier standards.

GS1 is a SDO that provides open and global standards and has a suite of identification standards designed to support supply chain operations for a majority of product value chains. Stakeholders who use GS1 identifiers with GS1 standards for transactions and events achieve interoperability with trading partners as well as other operational benefits. GS1 standards are technology agnostic and can be used for the design of DLT and non-DLT systems. The GS1 identifiers are relevant for many end-to-end supply chains.

The majority of the GS1 identifiers are relevant for the supply chain of any industry whereas some are particularly relevant for specific industries. The Figure 3 diagram illustrates a linear supply chain with notable GS1 identification keys supporting the movement of goods.

The GS1 Identification keys are clarified in Global Standards One[40] along with GS1 standards to enable a more visible supply chain[41].

The UN published a guide on the traceability in the global supply chains[42].

© ISO 2023 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023

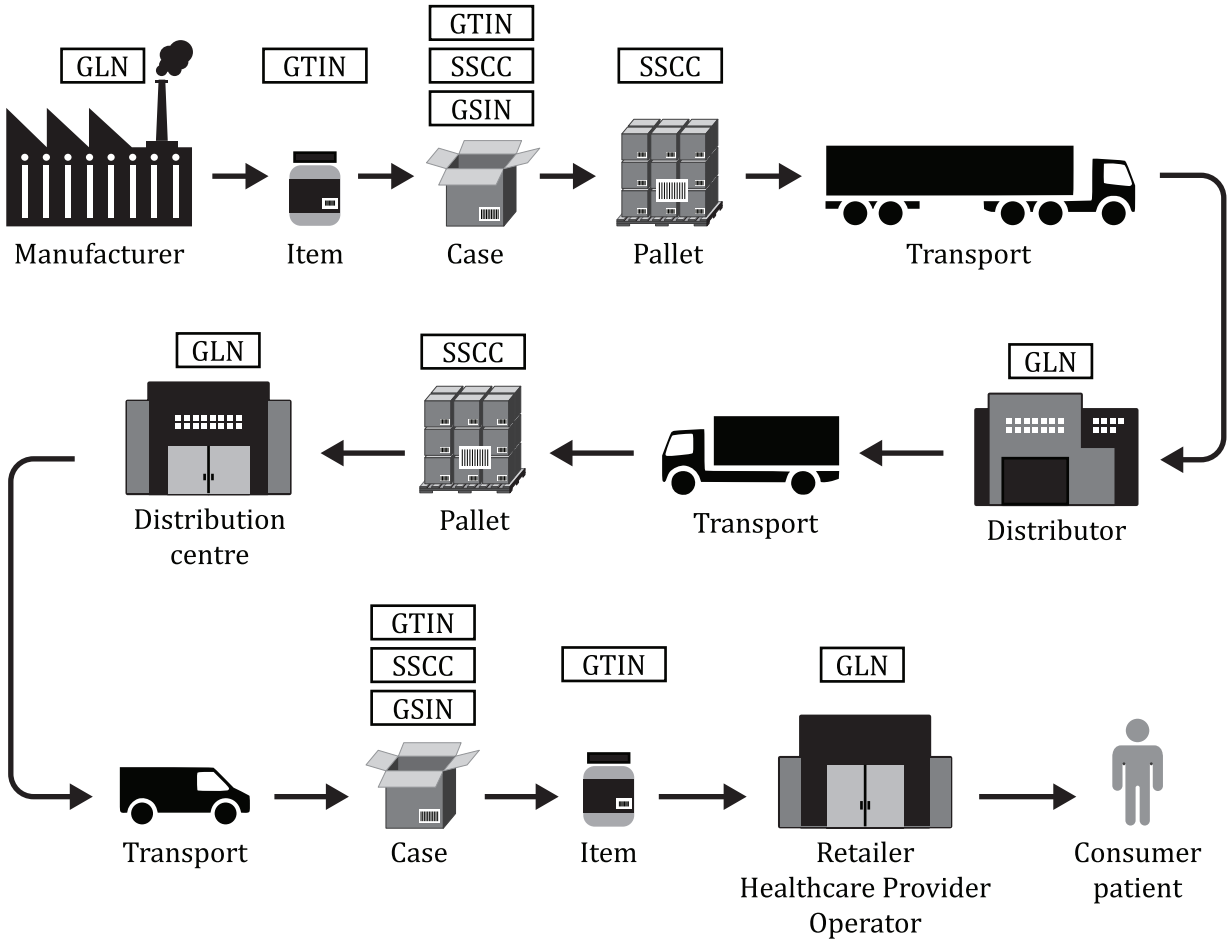


Figure 3 — Illustration of a GS1 linear supply chain with GS1 identification keys supporting the movements of goods

6.2.1.1 Global Trade Item Number (GTIN)

The GS1 Global Trade Item Number is used to identify any item (product or service) upon which there is a need to retrieve predefined information and that can be priced, or ordered, or invoiced at any point in any supply chain. This definition covers raw materials, consumer packaged goods, healthcare items and items for general distribution, all of which can be priced, ordered or invoiced between trading partners. See Reference [43] for more information.

6.2.1.2 Global Location Number (GLN)

The GS1 Global Location Number enables the unique and unambiguous identification of any type of party or location, whether physical or digital, used in business processes. Identification in this manner is a prerequisite for efficient communication between trading partners. A GLN acts as a database key to reference party or location specific information that which more fully describes the entity. Its function is to reduce input errors and increase efficiency. The GS1 GLN is recognized by ISO/IEC 6523.

The GLN is widely used in the sharing of electronic data between companies, since it enables unambiguous identification of the parties and locations, whether physical or digital. The GLN is a foundational key in the related GS1 standards. See Reference [32] for more information.

6.2.1.3 Serial Shipping Container Code (SSCC)

Items that have been assembled together for transport and/or storage can be considered as logistical units that are identified with a GS1 identification key named the SSCC (Serial Shipping Container Code).

© ISO 2023 – All rights reserved

AVA Documents
Document Sharing Hub
Full document details: PD ISO/TR 6039:2023