PD ISO/TR 6039:2023



BSI Standards Publication

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

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

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)

© ISO 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

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

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

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

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