PD ISO/TS 13582:2015

BSI Standards Publication

Health informatics — Sharing of OID registry information

bsi.

...making excellence a habit.™

Document Sharing Hub

National foreword

This Published Document is the UK implementation of ISO/TS 13582:2015. It supersedes PD ISO/TS 13582:2013 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee IST/35, Health informatics.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2015. Published by BSI Standards Limited 2015

ISBN 978 0 580 91607 6

ICS 35.240.80

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 December 2015.

Amendments issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: PD ISO/TS 13582:2015

TECHNICAL SPECIFICATION

ISO/TS 13582

Second edition
2015-12-15

Health informatics — Sharing of OID registry information

Informatique de santé — Partage des informations de registre des identifiants d'objets (OID)

Reference number
ISO/TS 13582:2015(E)

Documents
Document Sharing Hub

© ISO 2015

Full document details: PD ISO/TS 13582:2015

COPYRIGHT PROTECTED DOCUMENT

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, 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
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

© ISO 2015 – All rights reserved

Documents
Document Sharing Hub

Full document details: PD ISO/TS 13582:2015

Contents

Page

Foreword ... **v**
Introduction ... **vi**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms, definitions and abbreviated terms ... **1**
3.1 Terms and definitions ... 1
3.2 Abbreviated terms ... 2
4 Explanation of terms ... **2**
4.1 OID registry and OID repository ... 2
4.2 Registration Authority (RA) ... 2
4.3 Responsible (Managing) Authority (MA) ... 3
4.4 Submitting Authority (SA) ... 3
4.5 Current Registrant ... 3
4.6 First Registrant ... 3
4.7 First Registration Authority ... 3
4.8 Rec. ITU-T X.660 | ISO/IEC 9834-1 ... 3
5 Object identifiers in healthcare ... **4**
5.1 General ... 4
5.2 Additional descriptions ... 5
5.3 Related work ... 5
6 Approach ... **5**
6.1 Requirements analysis ... 5
6.2 Preparatory work ... 6
7 Information model ... **6**
7.1 General ... 6
7.2 Agenda of tables and symbols ... 7
7.2.1 Class attribute and associated tables ... 7
7.2.2 Conformance statements ... 8
7.3 XML exchange format ... 8
7.4 Registry ... 8
7.4.1 Attributes ... 8
7.4.2 Associations ... 9
7.4.3 Example ... 9
7.5 Oid ... 9
7.5.1 Attributes ... 10
7.5.2 Associations ... 12
7.6 RegistrationAuthority ... 12
7.6.1 Attributes ... 12
7.6.2 Associations ... 13
7.7 ResponsibleAuthority ... 13
7.7.1 Attributes ... 13
7.7.2 Associations ... 13
7.8 SubmittingAuthority ... 13
7.8.1 Attributes ... 14
7.8.2 Associations ... 14
7.9 HistoryAnnotation ... 14
7.9.1 Attributes ... 14
7.10 Reference ... 15
7.10.1 Attributes ... 15
7.11 AdditionalProperty ... 15
7.11.1 Attributes ... 16
7.12 Person ... 16

© ISO 2015 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TS 13582:2015

7.12.1 Attributes ... 16
7.13 Organization ... 16
7.13.1 Attributes ... 17

8 List of codes and enumerations ... 17
8.1 CountryCodes ... 17
8.2 LanguageCodes ... 18
8.3 OIDcategories ... 18
8.4 OIDstatusCodes ... 18
8.5 ReferenceType ... 18
8.6 RoleCodes ... 19
8.7 RoleStatus ... 19

9 Datatypes ... 19
9.1 Address AD ... 19
9.2 Coded simple value CS ... 19
9.3 Encapsulated data ED ... 19
9.4 Entity name for a person EN.PN ... 20
9.5 Entity name for an organization EN.ON ... 20
9.6 Instance identifier II ... 20
9.7 Interval of time stamp IVL_TS ... 20
9.8 String ST ... 20
9.9 String ST.NT ... 21
9.10 Object identifier (dot notation) ST.OID ... 21
9.11 Object identifier (asn1 notation) ST.ASN1 ... 21
9.12 Object identifier (iri notation) ST.IRI ... 21
9.13 Symbolic name ST.SYMB ... 21
9.14 Telecommunication TEL ... 21
9.15 Locatable resource TEL.URL ... 21
9.16 Time stamp TS ... 21

Annex A (informative) **OID types and sub trees ... 22**

Annex B (informative) **Use cases and object identifier resolution system (ORS) ... 23**

Annex C (informative) **W3C Schema for XML representation and information model ... 26**

Bibliography ... 27

© ISO 2015 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TS 13582:2015

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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 215, *Health informatics.*

This second edition cancels and replaces the first edition (ISO/TS 13582:2013), of which it constitutes a minor revision.

© ISO 2015 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TS 13582:2015

Introduction

OID (Object Identifiers) are unique identifiers for any kind of objects. A globally unique identifier for each of these concepts will help to ensure international exchangeability of objects within different applications (e.g. healthcare information systems).

In the exchange of healthcare information, additional information about the object being identified is generally very beneficial but typically not contained in a transaction of data between systems. Such information (responsible organizations, a human readable name, a description of the object, etc.) is referred to as the OID metadata and is housed in an OID Registry.

Today, due to lack of standardization of the set of metadata (both content and structure), existing OID registries are not compatible.

© ISO 2015 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TS 13582:2015

Health informatics — Sharing of OID registry information

1 Scope

This Technical Specification specifies the mandatory and optional information to be recorded in any registry of OIDs, using an information model.

It specifies which parts of that information are to be regarded as public and which parts are to be subject to security and privacy requirements.

All registries support the recording of mandatory information, but the recording of any specific object identifier in one or more repositories is always optional. In some cases, security and privacy requirements are more stringent for e-health applications.

In detail, this Technical Specification:

— specifies an information model and a corresponding XML format for the export of the contents of an OID registry, suitable e.g. for import to a different OID registry;

— references common Use Cases for OID registries/repositories;

— references an Object Identifier Resolution System (ORS) which provides a look-up mechanism for information related to an object identifier, with guidance on the use of that facility.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 639-1, *Codes for the representation of names of languages — Part 1: Alpha-2 code*

ISO 3166, *Codes for the representation of names of countries — The International Organization for Standardization, 3rd edition, part 1 ISO 3166-1*

ISO 21090, *Health informatics — Harmonized data types for information interchange*

ISO/HL7 21731, *Health informatics — HL7 version 3 — Reference information model — Release 4*

ITU-T X.660 | ISO/IEC 9834-1, *Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities: General procedures and top arcs of the ASN.1 Object Identifier tree*

IETF RFC 3066, *Tags for the Identification of Languages*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21090 and the following apply.

© ISO 2015 – All rights reserved

Documents
Document Sharing Hub

Full document details: PD ISO/TS 13582:2015

3.1.1
property
inherent state- or process-descriptive feature of a system including any pertinent to a component being determined or set of data elements (systems, component, kind-of-property) common to a set of particular properties

3.2 Abbreviated terms

The following abbreviated terms are used for the terms defined in this Technical Specification and its annexes.

HL7 Health Level Seven Inc

IETF Internet Engineering Task Force

OID Object Identifier

OMG Object Management Group

W3C World Wide Web Consortium

XML Extensible Markup Language

ITU International Telecommunication Union

IEC International Electrotechnical Commission

4 Explanation of terms

4.1 OID registry and OID repository

An OID registry maintains a list of OIDs. Typically additional information (metadata, such as responsible organizations, a human readable name, a description of the object, and other information that is needed for any meaningful use of the object identified) associated with the OID is stored also. With that, a registry is then an OID repository at the same time.

Maintaining the list (and associated metadata) happens regardless whether it is an official register for allocations of new OIDs under a given OID arc, or just a copy of information from other registries.

Official OID registries/repositories responsible for allocations of new OIDs under a given OID arc are Registration Authorities.

4.2 Registration Authority (RA)

An RA is responsible for allocating child arcs to the OID that it manages (issuing authority). It ensures that an integer is used once among the subsequent arcs (child OIDs). As much as possible, it avoids the same identifier (beginning with a lowercase letter) being used for multiple sub-arcs. Such information is typically stored in the OID registry/repository but it is important to understand that an OID first needs to be officially allocated by an RA before it can be described in an OID repository

For each child OID, the RA also keeps a record of additional information (like the name of a contact person, postal address, telephone and fax numbers, email address, etc.) about the Responsible Authority for that child OID. A responsible authority for a child OID must formally become an RA for the child OID in order to allocate sub-arcs under it.

© ISO 2015 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TS 13582:2015

4.3 Responsible (Managing) Authority (MA)

An MA is used to indicate the person (if known) and organization who is currently in charge of managing the OID. Once a responsible authority is allocating sub-arcs and registering information on these sub-arcs, it also becomes the Registration Authority for these sub-arcs.

Discussion: simply managing an OID (for example, for a code system) is the task of a Responsible Authority MA. Potentially, a responsible authority may become a Registration Authority (RA) for a sub-arc if it allocates sub-arcs.

4.4 Submitting Authority (SA)

This information is optional and reflects the person or organization that submitted the original OID allocation request.

4.5 Current Registrant

In some OID registries, Current Registrants are stored. The Current Registrant is used to indicate the person (if known) who is currently in charge of managing the OID, allocating sub-arcs and registering information on these sub-arcs.

4.6 First Registrant

In some OID registries, First Registrants are stored. The First Registrant is used to indicate the very first person (if known) who was responsible for managing the OID and who created it in the first instance.

This Technical Specification strongly suggests distinguishing between:

— a *Registration Authority (RA)* (person, if known, and organization) who issued (=allocated the instance of) an OID and

— a *Submitting Authority (SA)* who submitted the OID allocation request (which may be the same instance).

In this sense, the First Registrant is the Registration Authority (RA).

4.7 First Registration Authority

The first Registration Authority of an OID is the very first person or company to whom the OID was allocated by the RA of the superior OID. According to Rec. ITU-T X.660 | ISO/IEC 9834-1, the first RA cannot be changed (if the responsibility is transferred to someone else, the information is recorded in the "Current Registration Authority" section, without changing the "First Registration Authority" section).

Discussion: this is the Registration Authority (RA) that allocated the OID.

4.8 Rec. ITU-T X.660 | ISO/IEC 9834-1

In ITU-T Recommendation X.660, the following definitions are given.

— *3.6.8 registration authority: An entity such as an organization, a standard or an automated facility that performs registration of one or more types of objects (see also International Registration Authority).*

— *3.6.2 administrative role (of a registration authority): Assigning and making available unambiguous names according to the Recommendation | International Standard defining the procedures for the authority.*

— *3.6.14 technical role (of a registration authority): Recording definitions of the objects to which names are assigned and verifying that these definitions are in accordance with the Recommendation| International Standard defining the form of the definition.*

This Technical Specification does not use administrative or technical roles.

Documents
Document Sharing Hub

© ISO 2015 – All rights reserved

Full document details: PD ISO/TS 13582:2015

5 Object identifiers in healthcare

5.1 General

OID (Object Identifiers) are unique identifiers for any kind of objects. They are defined in Rec. ITU-T X.660 | ISO/IEC 9834-1. This identification system for objects and concepts makes reliable electronic information exchange possible. Administration and Registration is regulated by a set of rules.

The precise designation of objects and concepts is a pre-requisite for the standardized exchange of information. A globally unique identifier for each of these concepts will help to ensure international exchangeability of objects within different applications (e.g. healthcare information systems). For example, OIDs are often used within HL7 messages and documents and Rec. ITU-T X.509 certificates to provide this unique identification.

In the exchange of healthcare information, especially between loosely coupled systems, additional information about the object being identified is generally very beneficial; this is information that is typically not contained in a transaction of data between systems but is reference information about the objects contained in the transaction. There is a minimal set of such information, such as Responsible Organizations, a human readable name, a description of the object, and other such information that is needed for any meaningful use of the objects identified. Since such information may not be locally available to a system examining the communicated objects, it makes sense to have such information available in a standardized form and accessible by using the OID to identify this information. Such information, referred to as the OID metadata, is the bulk of the information housed in an OID Registry.

Today, due to lack of standardization of the set of metadata (both content and structure), existing OID registries are not compatible. Contents, attributes, and rules of the assignment of OIDs of existing registries are incompatible and often dissimilar. Many registries still distribute OIDs in a form only suitable for direct text processing (like spreadsheets) that is error prone and hard to automate. There is a need to store and transfer collections of OIDs and also to keep some registries completely in sync, maintaining the contents and the structure of metadata of each of the registered OIDs, e.g. descriptions, comments, versions, links, relations, responsible organizations, and persons.

Data exchange can be facilitated by a standardized representation of a required minimum set of metadata as an XML structure together with the associated checks of underlying constraints and business rules. This XML structure for importing and exporting OIDs among different registries should be achieved for supporting eHealth applications. In addition, the failure to have a standard for the operations needed to coordinate and synchronize the contents of disparate OID registries leads to confusion and ambiguity for the community that uses eHealth information containing references to objects identified by OIDs.

There are currently at least hundreds of OID registries in active use throughout the world. These are sponsored and operated by disparate entities, ranging from national governments to individual companies or standards organizations, to individuals in a specialized area or industry. In many cases, more than one of these registries address the same industry segment, and have overlapping content, i.e. specific OIDs exist in both, or worse, different OIDs identifying the same object exist in both. This distributed set of disparate registries servicing a particular industry (specifically Healthcare IT) has led to awkward and error prone searching processes. To get information about existing OIDs, a search within all existing registries is needed, for example, to avoid duplicate assignment of multiple OIDs to one and the same concept. In order to standardize the activities to synchronize all existing OID registries and to ensure further interoperability, it is essential to have a defined exchange format and business rules for maintenance of the OID registries that must cooperate in a particular industry.

Some OID registries are operated by essential volunteer organizations, such as standard bodies/facilities. The burden of administrative tasks is such that multiple individuals, often in different geographical locations, need to participate to share the workload. Thus, in addition to distributed registry instances, administrative functions need to also be distributed, both on single and potentially across multiple registries. There is a need for the standardization of a minimum set of administrative access and operational functions such that developers of registries can deploy standard mechanisms to streamline and increase accuracy and productivity of these maintenance operations.

© ISO 2015 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TS 13582:2015