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Information technology — Business operational view —

Part 10:
IT-enabled coded domains as semantic components in business transactions

Technologies de l'information — Vue opérationnelle d'affaires —

Partie 10: Domaines codés activés comme composantes sémantiques dans les transactions d'affaires

Contents

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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 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 or www.iec.ch/members_experts/refdocs).

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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. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

This second edition cancels and replaced the first edition (ISO/IEC 15944-10:2013), of which it constitutes a minor revision.

The changes are as follows:

— Clause 1 (Scope) has been amended to move the detailed description of "Exclusions" and "Aspects not currently addressed" to a separate informative annex;

— entries in Clause 2 and Clause 3 have been removed to be more conformant to ISO Directives;

— definitions in Clause 3 have been updated to be aligned with other referenced source definitions;

— clauses and annexes have been aligned to changes in ISO/IEC Directives, Part 2;

— minor edits of a temporal nature with respect to dated references, changes in URLs referenced, minor edits, change of font to Cambria, as well as application of the new "ISO House Style", etc.

A list of all parts in the ISO/IEC 15944 series can be found on the ISO and IEC websites.

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 and www.iec.ch/national-committees.

Introduction

0.1   Overview of purpose and nature of coded domains

Coded domains already exist in ISO/IEC 15944 series eBusiness standards, especially ISO/IEC 15944-1, ISO/IEC 15944-2, ISO/IEC 15944-5 and ISO/IEC 15944-8. There are also widely used standards, specifications, authority files, etc., of a "codes representing X" nature used in business transactions involving the making of (legally-binding) commitments, based on common business practices, and doing so in an IT-enabled manner. The primary purpose of this document is to provide an integrated approach, methodology and tool in a single consolidated document the key concepts and their definitions as well as rules pertaining to coded domains.

This document supports all three strategic directions for standards development of ISO/IEC JTC1: namely "portability", "interoperability", and "cultural adaptability".

Within an Open-edi context (based on the ISO/IEC 14662 "Open-edi reference model"[1]), business transactions are viewed from both a Business Operational View (BOV) and the Functional Services View (FSV). ISO/IEC 15944 focuses on the many requirements of the business operational view aspects of Open-edi in support of electronic business transactions. The primary aspect which distinguishes and differentiates "Open-edi" (and ISO/IEC 14662 Open-edi Reference Model compliant standards) is that they are developed to be able to support the making of commitments among autonomous parties. This requires that the set(s) of recorded (SRIs) information interchanged in the form of Information Bundles (IBs) as well as Semantic Components (SCs), which form part of an IB, are not only IT-enabled and IT-platform neutral. It is especially important that, where these semantics are captured, recorded, referenced and used via a specified coded domain, these are communicated in a very precise and in an "unambiguous" manner, i.e. at the "level of certainty and explicitness required" to support the goal of the commitment exchange forming the goal of the business transaction.

In addition, the following Open-edi requirements need to be supported:

a)   need for unambiguity in commitment exchange applies especially to semantics of the data interchanged among the parties concerned;

b)   ensure as high a degree of data integrity of the semantics of the data interchanged;

c)   maximize an IT-enabled approach;

d)   maximize granularity and flexibility.

Given the fact that in Open-edi there are many differing internal and external constraints as well as the wide variety of applications and sectors, it is important that the recorded information interchanged among the parties concerned be as "granular" and precise as possible. Here "coded domains" serve as flexible "lego blocks" from which data values can be retrieved and used as unambiguous semantic components.

The concept of "coded domain" is unique in the context of an Open-edi approach and has been defined in an ISO/IEC 15944 context. This concept and its definition represent an approach, methodology and tool which is needed to support appropriate level of unambiguity of (electronic) data interchange needed to support. The concept of "coded domain" covers several perspectives. For the definition, see entry "D033" in ISO/IEC 15944-7:2009 and ISO/IEC 15944-7:2009, 5.3.2.

1)   Business and information (modelling) perspective, i.e., those of users and the BOVs;

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[1]   ISO/IEC 14662(E/F) is an English/French, side-by-side, International Standard. Its 2010 3rd edition has become a stabilized standard and is now also an ISO/IEC declared "horizontal" standard, i.e., one serving as a base standard for those developing standards in the various fields of EDI, including eBusiness. The stabilized status of ISO/IEC 14662 was re-affirmed for another 10 years by ISO/IEC JTC1 in 2021. ISO/IEC 14662 has since its 1997 1st edition been an ISO/SO freely available standard. [See further https://standards.iso.org/ittf/PubliclyAvailableStandards/index.html]

2) IT modelling perspectives such as:

   a) Entity-relationship modelling where a coded domain is viewed as an entity type functioning as a "domain"; and,

   b) Object-oriented modelling where a coded domain is viewed as an "object class".

3) An information science (information management, library, records management, etc.) perspective where coded domains are viewed as "schedules", "authority files", "tables" (which one at times "attaches" to a concept/term thesauri (or indexing/classification schemes of "instance relationships";

4) An electronic data interchange perspective where coded domains are known as "code sets" i.e., a set of codes representing "xyz". (pop-ups choices in a data entry module); and,

5) Application and implementation perspective (and physical data model) where coded domains are commonly known as (edi) tables (or reference tables).

The term "coded domain" is introduced to differentiate Open-edi, BOV and e-Business requirements from various other concepts and associated terms such as generic (encodable) value domains, "enumerated domains", code sets, which appear to be similar in nature similar in nature in ISO standards. (See Annex C for more detailed information).

In addition, a key purpose of this document is to ensure that at the granular level as much information is made available about a semantic component, at whatever level of granularity as is required to ensure unambiguity in a commitment exchange.

Another key purpose of this document is to maximize the level of "intelligence" at the highest most precise level, i.e., that of the actual data values being interchanged. Here, use of coded domains presents a simple and pragmatic approach. No "expert system", intelligent interface, use of heuristics, etc., can metamorphose "dumb" fuzzy data into unambiguous data values which are precise enough to be able to serve as EDI IBs or SCs in support of the making of commitments as actualized in a instantiated business transaction. On the other hand, "smart data" within an intelligent structure, i.e., as part of a coded domain, can not only stand on its own but also be much simpler, precise, easier to reference and use.

This approach at the data element level focuses on the development of intelligently coded data elements as part of coded domains. This involves rule-based, structured and pre-defined values whose purpose and use has been stated clearly and unambiguously (hereby facilitating an IT-enabled approach).

0.2 Benefits of the use of coded domains

The benefits of using the construct, methodology and implementation of "coded domains", in compliance with this document, presented below include (in no order of importance):

1) maximizing if not ensuring unambiguity in semantics among parties to a commitment exchange instantiated as a business transaction;

2) ensuring ability to support Human Interface Equivalencies (HIEs) in support of multilingualism and individual accessibility requirements;

3) maximize a total quality management (TQM) approach for data integrity control and trustworthiness and quality assurance;

4) maximize exchange ability of data among Persons and their applications through computer-to-computer electronic data interchange (EDI) among the IT-systems of the parties involved;

5) serve as a methodology and tool which its IT-neutral, i.e., ISO/IEC 15944-10 conformant "coded domains" are completely independent of application software and IT-platforms used;

6) minimization of data entry costs and simplification data entry processes;

7) enables more efficient and effective search, retrieval and use of recorded information (in multiple languages);

8) significant minimization in costs and duplication of effort due to the inherent shareable nature of coded domains;

9) increased efficiencies and cost reductions in both the internal operations of organizations and public administrations as well as among them via EDI;

10) promotes modularity, re-usability of shared solutions supporting both paperless environments;

11) increased productivity, through reduction of common (non-competitive) costs at organizations and public administrations as well as at the jurisdictional domain level; and,

12) serve as a methodology in support of the development of consensus building with respect to the development of permitted values of a data element in support of the use of a semantic component in (electronic) data interchange (based on the Pareto principle[2]).

0.3 Identification, mapping and IT-enablement of existing standards for widely-used code sets

A coded domain consists of entries of "entities" which the responsible Source Authority (SA) has decided to include into its "Set of codes representing X" for the specified and particular purpose for which this SA has decided to establish and maintain the resulting "set of codes representing X" to be used by its members. However, it is recognized that many "Persons" of different nature, i.e., either as an "organization" and/or "public administration", and at times, "individuals" as well use a "Set of codes representing X" for a purpose and in a context which is quite different from that of the purpose and use of the Source Authority which created and maintains that "Set of Codes representing X".

Two primary examples here are ISO 3166-1 and ISO 3166-2 and ISO 4217 which from an "object class" methodology perspective contain several distinct object classes (see the ISO/IEC definition for "object class" from ISO/IEC 11179-1:2023, 3.31 (as referenced as entry "D147" in ISO/IEC 15944-7 and so used in all parts of the ISO/IEC 15944 series where applicable including in this document as found in 3.94). Annex H provides further information on these two examples via the use of a "semantic qualifier".

In this document, there is frequent use of the phrase "set of codes representing X". This is because there are many existing and widely used sets of codes which need to be converted into "coded domains" from an Open-edi, eBusiness, commitment exchange, etc., user perspective.

In an Open-edi and/or eBusiness context of the use of an actual values of SRIs, i.e. as instantiations, that are intended to be used as "coded domains", are already widely used in existing ISO, IEC, and ITU standards in the form of a "codes representing X" nature, as well as those found in specifications of differing industry sectors. These standards are managed and maintained by recognized authorities and implemented in business practices. From an Open-edi and generic commitment exchange perspective in general as well as that of eBusiness requirements in particular, Open-edi standards support their use and implementation in an IT-enabled form.

As illustrated in Figure 1, the standard for the IT-enablement of the widely used "codes representing X" standards is needed to provide guidance for the transformation and achieve consistency among applications of different standards. Requirements need to be specified for the coded domain, including identification, mapping to existing codes, as well as cultural adaptability features. In this document, these specifications are based on explicitly stated rules and scope of coded domains, rules and guidelines for the construct and characteristics of coded domain and its member codes, especially from the semantic perspectives, to support commitment exchanges of Open-edi.

It is a general rule and practice in ISO/IEC 15944 standards series development that one maximizes the use of Formal Description Techniques (FDTs). The rules and guidelines along with associated definitions

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2) This document, which focuses on the more primitive aspects of "coded domain", also applies the "Pareto Principle" Also known as the "80-20 rule", or the "law of the vital few", it states that in many cases 80 % of the effects come from 20 % of the causes. In this context, the concepts and definitions as well as the rules and guidelines presented in this document can be viewed to be the 20 % which covers 80 % of the common user requirements.

of concepts is an approach of using a lexical model as the formal approach to specify requirements from a business operational view (BOV) perspective. The FDTs can also be used to produce the formal models or to describe the rule-base for coded domain, which in turn become a integrate part of coded domains.

This document also specifies that Open-edi coded domains need to be registered as such in compliance with ISO/IEC 15944-2:2015 requirement. (See further Clause 11).
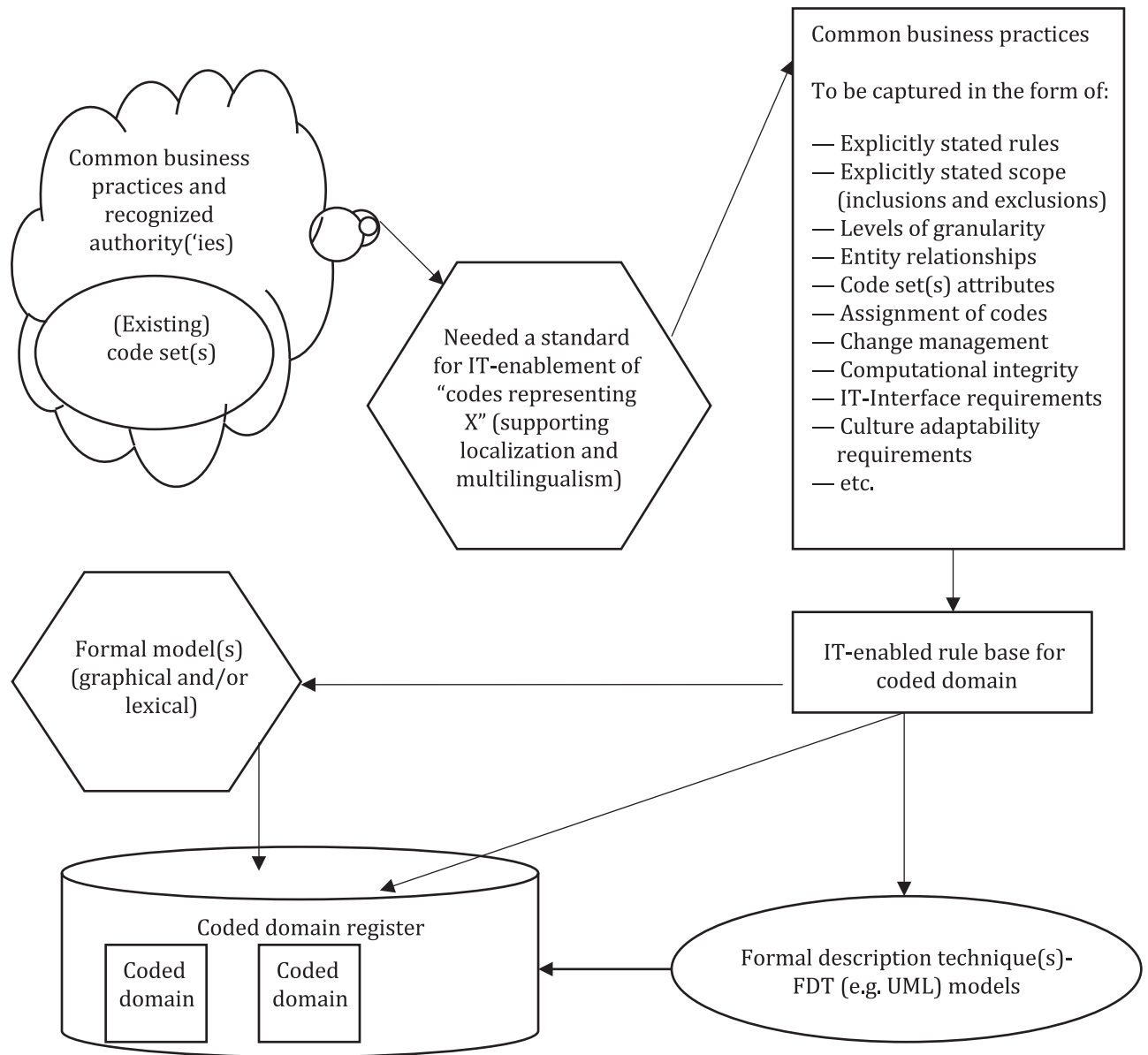
Figure 1 — Need for standard and methodologies for coded domains

Thus, this document facilitates and allows for the:

— development of Referenceable Semantic Components in Open-edi Scenarios (e.g. as "roles" and "information bundles")

— mapping into existing standards and tools for repositories, interchange, access, encoding, syntax, (e.g. ASN.1, IRDS, SQL, 11179-based registries, HTML, XML, ANSI X.12, UN/CEFACT, ISO 9735 "EDIFACT", etc.).

0.4 Link to fundamental components in Business Transaction Model (BTM)

As described in ISO/IEC 15944-1:2023, 6.1.5, a business transaction requires three basic components, namely "Person", "process" and "data".

These three fundamental elements of the Business Transaction Model (BTM) are represented graphically in Figure 2, which has been adapted from ISO/IEC 15944-1:2023, Figure 7.
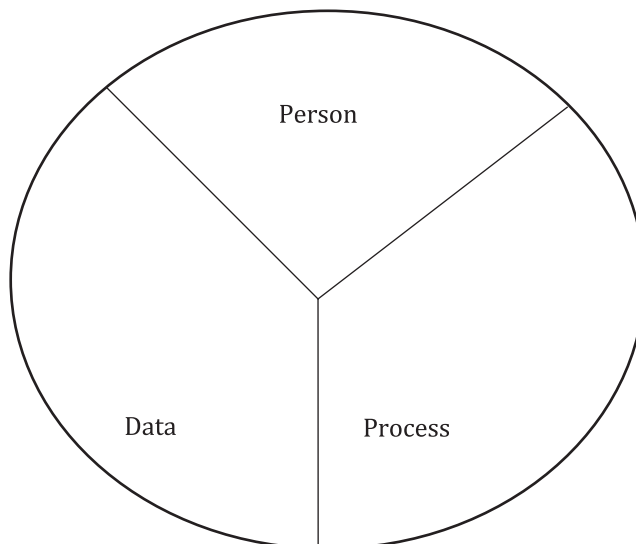
Figure 2 — Business Transaction Model — Fundamental components

The "coded domains" apply to all three of these fundamental components of the BTM. For example, with respect to "data" (and data element), numerous sets of codes representing XYZ" exist which are already or can be transformed into IT-enabled domains. With respect to "Person", ISO/IEC 15944-1 identified existing "coded domains" for the identification and registration of Persons in the form of ISO standards:

— ISO/IEC 6532 for organizations;

— ISO/IEC 7812 for individuals, organizations and public administrations; and

— ISO/IEC 7501 for individuals (See ISO/IEC 15944-1:2023, Annex D for further information on these identification schemas.)

With respect to the "process" component, ISO/IEC 15944-1 identified a set of five fundamental activities which may take place in any order. The five fundamental activities are: (a) planning; (b) identification; (c) negotiation; (d) actualization; and, (e) post-actualization.

— On the whole, a coded domain consists of predefined and structured data elements. ISO/IEC 15944-1:2023, 6.4.2 described the relations between concepts of "recorded information" and "data". Data is one type of recorded information that can be processed by computer systems. Data is data-element based or non-data element based, as described by Figure 3 and Figure 4, which are adapted from ISO/IEC 15944-1:2023, 6.4.2.
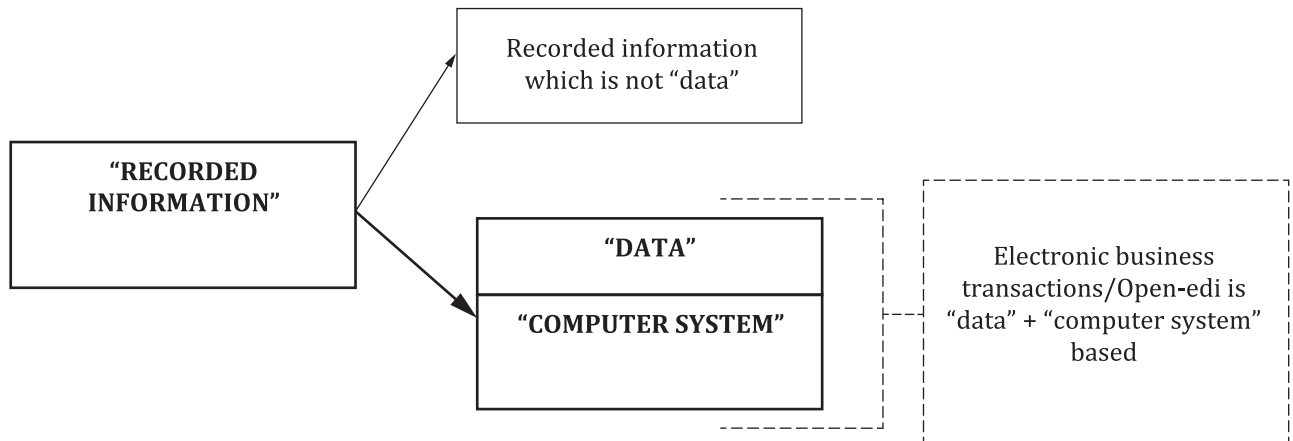
Figure 3 — Relation of "recorded information", "data" and "computer system" in electronic business transactions/Open-edi
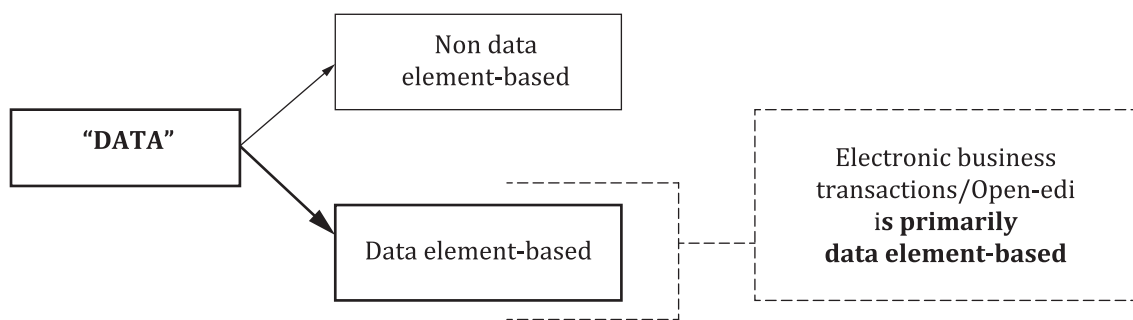
Figure 4 — Relations "data" and "data elements" in electronic business transactions / Open-edi

0.5 IT-enabled and content predefined semantic components

As specified by ISO/IEC 14662, Open-edi scenarios include components of roles, information bundles, and scenario attributes. The coded domain is related to information bundles, which consist of semantic components (SC). A semantic component is a unit of recorded information unambiguously defined in the context of business goal of the business transaction.

Since not specifically required by the ISO/IEC 14662, the semantic components for "Person", "process" and "data" can be either structured or unstructured, and they can also have predefined contents or undefined contents. It is an ISO/IEC JTC1 requirement that a standard shall support IT-enablement and computational integrity when possible. Therefore, it is the purpose of this document to maximize the IT-enablement, interoperability, computational integrity approach through the use of coded domains whose context provided predefined and structured data values for use as semantic component, as shown in Figure 5.
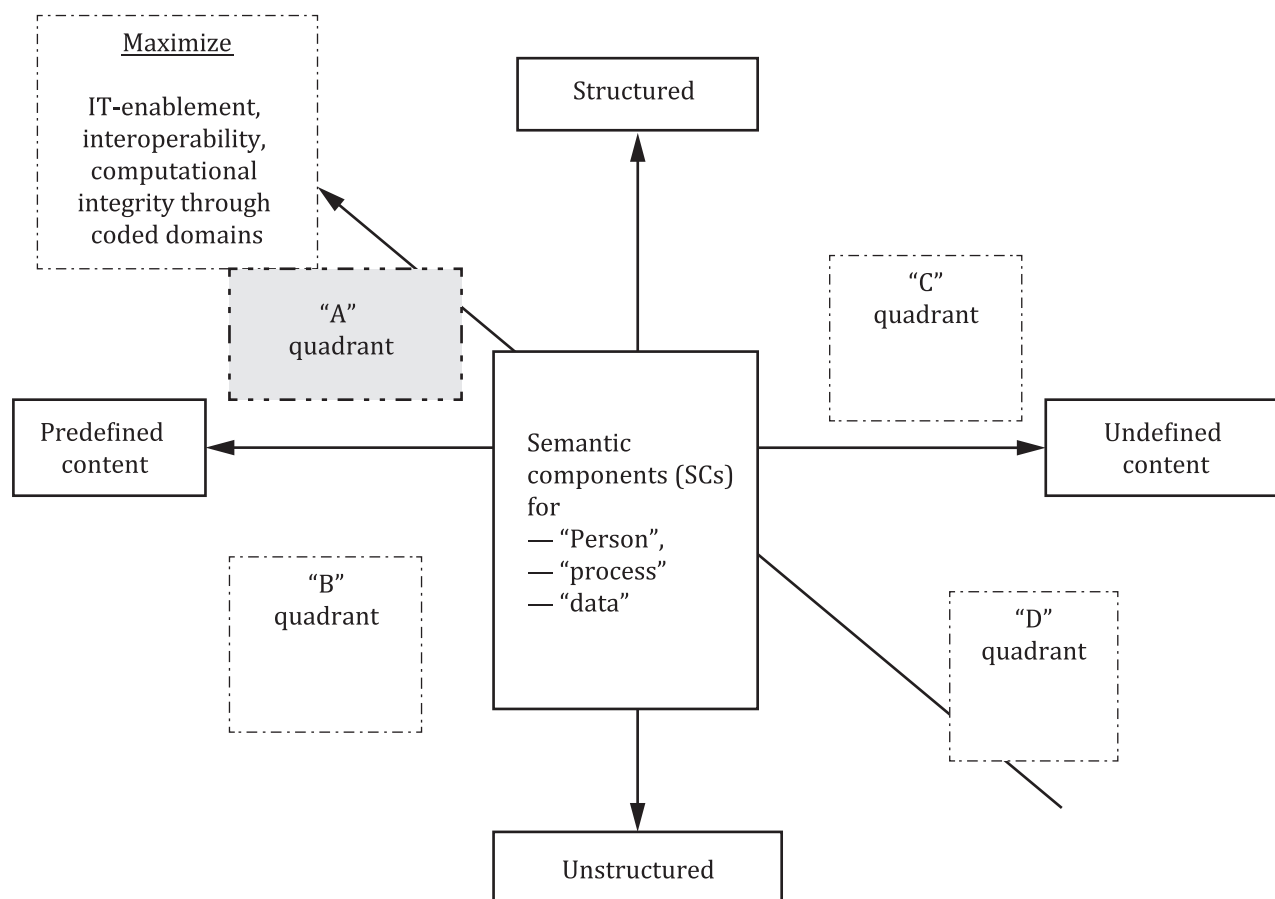
Figure 5 — Purpose of coded domain as IT-enabled and content predefined semantic components

The focus of this document is to support "Quadrant A" requirements in the development and use of "coded domains". This means that the rules governing the allowable contents, i.e., values, in a set of recorded information which (1) support and enable a structured approach; and (2) all the permitted values for the semantic component are predefined (and if not there is a very systematic and rule-base to deal with "Others" in an IT-enabled manner)."

0.6 Coded domains as reusable business objects

In existing business transactions, whether conducted on a for-profit or not-for-profit basis, business information documents as well as implementable (executable) computer programs consist of reusable components unambiguously understood among participating parties. Coded domains can be used in support of any type of scenario component, i.e., "roles", "Information Bundles (IBs)", and "semantic components" (SCs). Coded domains can also be used in support of a scenario attribute registered through procedures specified by ISO/IEC 15944-2.

Registration of coded domains offers several benefits to the e-Business community, including the following:

a) supports wider use of registered coded domains both by providing international recognition to the fact that such coded domains conform to an International Standard and by making them publicly available to potential users;

b) provides both immediate recognition to extensions of an International Standard and a source for updates to that International Standard during the regular maintenance cycle;

c) may provide a single mechanism to access information concerning coded domains that are specified in different standards;

d)   provides a mechanism for managing temporal change. Coded domains specified in a standard or in a register may change over time either due to changes in technology or for other reasons. Published standards do not clearly document what changes may have occurred, and do not include information about earlier versions of specified code sets. Such information can be maintained in a register;

e)   may be used to make sets of standardized tags available for encoding of registered coded domains in data sets;

f)   supports cultural and linguistic adaptability by providing both a means for recording equivalent HIEs of coded domains used in different languages, cultures, application areas, and professions and a means for making those equivalent names publicly available.

0.7   Use of "Person", "organization" and "party" in the context of business transaction and commitment exchange

In electronic business transactions, whether undertaken on a for profit or not-for-profit basis, the key element of any type of business transaction is commitment exchange among Persons made among their Decision Making Applications (DMAs) of the Information Technology Systems (IT Systems) acting on behalf of "Persons". (For the applicable normative elements here, see further ISO/IEC 14662:2010, 5.2.) "Persons" are the only entities able to make commitments (The text in this section is based on existing text in ISO/IEC 15944-1:2023, 0.3 and ISO/IEC 14662:2010). Quoting from ISO/IEC 15944-1:2023, 0.4:

> *"When the ISO/IEC 14662 Open-edi Reference Model standard was being developed, the "Internet" and "WWW" were an embryonic stage and their impact on private and public sector organizations was not fully understood. The Business Operational View (BOV) was therefore initially defined as:*

> *"a perspective of business transactions limited to those aspects regarding the making of business decisions and commitments among organizations which are needed for the description of a business transaction".*

The existing and widely-used ISO/IEC 6523 definition of "organization" was used in the 1st edition of ISO/IEC 14662. The fact that today Open-edi through the Internet and WWW also involves "individuals" has now been taken into account in the current editions of both ISO/IEC 14662 and all parts of ISO/IEC 15944. [The 1st edition of ISO/IEC 14662 (1997) did not define "commitment", nor the discrete properties and behaviours an entity must have to be capable of making a "commitment" as well as bridging legal and IT perspectives in the dematerialized world of the Internet].

During the development of ISO/IEC 15944-1:2023, the term "commitment" was defined. At the same time, it was recognized that in order to be able to make a commitment, the term "Open-edi Party" was not specific enough to satisfy scenario specifications when the legal aspects of commitment were considered. In many instances, commitments were noted as being actually among IT systems acting under the direction of those legally capable of making commitment, rather than the individuals in their own capacities. It was also recognized that in some jurisdictions a commitment can be made by "artificial" persons such as corporate bodies. Finally, it was recognized that there are occasions where agents act, either under the instruction of a principal, or as a result of requirement(s) laid down by a jurisdiction, or where an individual is prevented by a relevant jurisdiction from being able to make a commitment.

To address these extended requirements, the additional concept and term of "Person" was defined. The construct of Person has been defined in such a way that it is capable of having the potential legal and regulatory constraints applied to it".

There are three categories, i.e. sub-types, of Persons as players in Open-edi, namely (1) the Person as "individual", (2) the Person as "organization", and (3) the Person as "public administration". There are also three basic (or primitive) roles of Persons in business transactions, namely "buyer", "seller", and "regulator".

In modelling business transactions, jurisdictional domains prescribe their external constraints in the role of "regulator" and execute them as "public administration". (See ISO/IEC 15944-1:2023, 5.4)

Very often, the requirements of jurisdictional domains are specified through the use of sets of "Codes representing X…". These sets of codes are created and maintained by Source Authorities via a rulebase with a resulting coded domain(s) in the form of a data element(s) whose permitted values represent predefined semantics and in a structured form, i.e. as a type of semantic component. As such, jurisdictional domains serve as Source Authorities for coded domains.

These three sub-types of Persons are also the possible Source Authorities for coded domains. On the whole, Source Authorities for coded domains are either "organizations" or "public administrations".

In this document:

— the use of Person with a capital "P" represents Person as a defined term, i.e. as the entity within an Open-edi Party that carries the legal responsibility for making commitment(s);

— "individual", "organization", and "public administration" are defined terms representing the three common sub-types of "Person"; and,

— the words "person(s)" and/or "party(ies)" are used in their generic contexts independent of roles of "Person" as defined in ISO/IEC 14662 and ISO/IEC 15944-1. A "party" to a business transaction has the properties and behaviours of a "Person".

0.8 Importance and role of terms and definitions

An essential element of any standard is that of having clearly and explicitly stated definitions for the concepts which it uses or introduces. Definitions capture the key concepts of a standard and form the essential foundation for any standard. As such, it is important that definitions be explicit, unambiguous and precise with respect to the semantics conveyed. At times, in order to ensure that the concept being defined is not confused with other related concepts (or words that have common or possible different meanings), International Standards introduce, i.e. "invent", new terms as labels for these concepts. This is also because the use of "synonyms" is not allowed in definitions in International Standards. The same approach has been taken in ISO/IEC 15944. (See further 5.3.2, 5.4, as well as Clause 6 and Clause 7)

The ISO/IEC Directives, Part 2 provide for "Terms and definitions" as a "Technical normative element", necessary for the understanding of certain terms used in the document. A primary reason for having "Terms and definitions" in a standard is because one cannot assume that there exists a common understanding, worldwide, for a specific concept. And even if one assumes that such an understanding exists, then having such a common definition in Clause 3 serves to formally and explicitly affirm (re-affirm) such a common understanding, i.e. ensure that all parties concerned share this common understanding as stated through the text of the definitions of these concepts in Clause 3.

A primary objective of ISO/IEC 15944 is to ensure that there is a common understanding of the Business Operational View (BOV) from commercial, legal, ITC, public policy and cross-sectoral perspectives. It is therefore very important to ascertain and confirm that which may be considered a "common understanding" in one of these domains is also unambiguously understood and accepted in the others.

One concludes this introductory clause by:

1) noting that the "definition" of the concept "definition" is *"representation of a concept by a descriptive statement which serves to differentiate it from related **concept**s"* [ISO 2087-1:2000, 3.3.1]

2) noting that an essential characteristic of eBusiness standards is that they involve and support the making of (legally recognized) "commitments" among two or more autonomous Persons. This requires not only a "common understanding" among all the parties involved but also is one which is as unambiguous as possible, especially where such business transactions are executed via Open-edi based IT systems; and

3) stating that a very effective and practical approach to supporting the requirements noted in 1) and 2) above, is to develop and provide bilingual/multilingual equivalencies of the definition of a concept (and its associated label or "term") in two or more languages. A primary reason here is that establishing an equivalency of the definition of a concept in another language from the "source language" uncovers "hidden ambiguities" in the source language. Often, it is in the preparation

of an HIE for the definition (and its associated term) that ambiguities, i.e. in the semantics, from one language into one or more other languages are discovered. At times, this results in the need to improve the text of the definition of the concept in the source language. Alternatively, such development of one or more HIEs of the definition of a concept can result in the addition of a clarifying "Note(s)" or "Example(s)" in both the source language and its HIEs. (For the normative elements, see further ISO/IEC 15944-7:2009, 5.3 and in particular, ISO/IEC 15944-7:2009, 5.3.1)

0.9 Use of "identifier" as "identifier (in business transaction)" to prevent ambiguity

ISO/IEC 15944-1:2023, 6.1.4 focuses on the requirement for the unambiguous identification of entities in business transactions. "Unambiguous" is a key issue in business transaction because states of ambiguity and uncertainty are not desired from commercial, legal, consumer and information technology perspectives. Issues of unambiguousness apply to all aspects of a business transaction and even more so to those which are EDI-based.

A key objective of ISO/IEC 15944 is to serve as a methodology and tool for the specification and unambiguous identification of Open-edi scenarios, scenario attributes and scenario components as re-useable elements, i.e. as re-useable business objects, in support of common business transactions. These and related objectives of interoperability and re-usability of Open-edi scenarios and scenario components for business transaction require their unambiguous identification.

See 3.1.36 for the definition of unambiguous.

"Identifier (in business transaction)" is defined as: *an **unambiguous**, unique and a linguistically neutral value, resulting from the application of a **rule-based identification process**. **identifiers** must be unique within the identification scheme of the issuing authority.* [ISO/IEC 15944-1:2023, 3.27]

Thus, users of this document should understand that the "identifier" in this document is used as a defined term as "identifier (in a business transaction)".

As specified in 5.5 and Clause 8 of this document, each entry within a coded domain contains a identifier and HIE(s), the HIE provides human readable semantics, while the identifier unambiguously identifies the semantics.

0.10 Standard based on rules and guidelines

This document is based on rules and guidelines, which are explained in ISO/IEC 15944-1:2023, 6.1.2. The common rules are sequentially enumerated and presented in bold font. Where guidelines are provided for a rule they are numbered sequentially after that rule and are shown in an italic font. Choice of words in the rules, the guidelines and the terms and definitions are governed by maximizing the ability to map, on the one hand, to commercial and legal frameworks of the day-to-day world of business, and on the other, to information and technology frameworks, service providers, and standardizers, etc.

0.11 Organization and description of document

This document identifies requirements for the IT-enablement, semantics unambiguity, as well as other requirements of coded domains, which originates from the existing standards about codes representing X nature, through the specification of their principle, identification and description, composition, management and registration, and templates as a tool for implementation.

The Introduction (Clause 0) provides the detailed description of the need for a standard about coded domains, from various view points, i.e. the need for coded domain on general perspectives and its relationship with reusability, unique identification, and other important aspects of Open-edi.

Clause 1 provides the scope of the current version of this document. Some of the aspects that are not currently addressed may be specified in future versions.

Following Clause 2, 3 and 4, Clause 5 describes the overall principles of coded domains that govern all other clauses of this document.

Clause 6 specifies the identification and business operational description of coded domains. By the specification of the construct of coded domain, a number of components of coded domains are specified and will be specified in detail in Clauses 7, 8 and 9.

Clause 10, Clause 11 and Clause 12 specify more formal presentations of coded domains. Clause 10 specifies rules for the registration of coded domains, Clause 11 describes the description of coded domains using OeDT, and Clause 12 provides templates for IT-enabled coded domains.

This document contains several annexes with Annexes A and B being normative and the following Annexes C, D, E, F, G, H and I presented for information purposes.

Information technology — Business operational view —

Part 10:
IT-enabled coded domains as semantic components in business transactions

1   Scope

This document specifies the fundamental principles governing coded domains, identification and description of the coded domains from the BOV view, the rules governing the rule-base of coded domains, the rules for management of ID codes, rules for specifying Human Interface Equivalents (HIEs) to an ID Code, the relations between the coded domain and controlled vocabularies, the rules governing the registration of coded domains as re-usable business objects, and the IT-enablement of coded domains.

The document is applicable to the use of standards, specifications, authority files, etc., of a "codes representing X" nature being used in electronic business transactions among parties engaged in Open-edi, which pertains to flows of information using information bundles which cause pre-defined (or pre-definable) changes in the states of the IT systems of the parties to such electronic data interchanges.

Detailed exclusions to the scope of this document are provided in Annex I.

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 639-2:1998, *Codes for the representation of names of languages — Part 2: Alpha-3 code*

ISO/IEC 14662:2010, *Information technology — Open-edi reference model*

ISO/IEC 15944-1:2023, *Information technology — Business operational view — Part 1: Operational aspects of Open-edi for implementation*

ISO/IEC 15944-2:2015, *Information technology — Business operational view — Part 2: Registration of scenarios and their components as business objects*

ISO/IEC 15944-5:2008, *Information technology — Business operational view — Part 5: Identification and referencing of requirements of jurisdictional domains as sources of external constraints*

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
abbreviation
designation ([3.39](3.39)) that is formed by omitting words or letters from a longer form and designating the same *concept* ([3.24](3.24))

Note 1 to entry: Abbreviations can be created by removing individual words, or can be acronyms, initialisms, or clipped terms.

[SOURCE: ISO 1987:2019, 3.4.14]

3.2
acronym
abbreviation ([3.1](3.1)) that is made up of the initial letters of the components of the full form of a *term* ([3.129](3.129)) or proper name or from syllables of the full form and that is pronounced syllabically

EXAMPLE   "laser", "ISO", "GATT", "UNESCO", "UNICEF".

[SOURCE: ISO 1087:2019, 3.4.15]

3.3
address
set ([3.123](3.123)) of da*ta elements* ([3.31](3.31)) that specifies a *location* ([3.67](3.67)) to which a *recorded information* ([3.105](3.105)) item(s), a *business object(s)* ([3.6](3.6)), a material *object(s)* ([3.73](3.73)) and/or a person(s) can be sent or from which it can be received

Note 1 to entry: An address can be specified as either a physical address and/or electronic address.

Note 2 to entry: In the identification, referencing and retrieving of registered business objects, it is necessary to state whether the pertinent recorded information is available in both physical and virtual forms.

Note 3 to entry: In the context of Open-edi, a "recorded information item" is modelled and registered as an Open-edi scenario (OeS), Information Bundle (IB) or Semantic Component (SC).

[SOURCE: ISO/IEC 15944-2:2015, 3.1]

3.4
attribute
characteristic ([3.12](3.12)) of an *object* ([3.73](3.73)) or en*tity* ([3.43](3.43))

[SOURCE: ISO/IEC 11179-3:2013, 3.1.4, modified — "set of object" has been replaced by "entity"]

3.5
business
series of *processes* ([3.101](3.101)), each having a clearly understood purpose, involving more than one *Person* ([3.93](3.93)), realized through the exchange of *recorded information* ([3.105](3.105)) and directed towards some mutually agreed upon goal, extending over a period of time

[SOURCE: ISO/IEC 14662:2010, 3.2]

3.6
business object
unambiguously identified, specified, referenceable, registered and re-useable *Open-edi scenario* ([3.86](3.86)) or s*cenario component* ([3.118](3.118)) of a *business transaction* ([3.8](3.8))

Note 1 to entry: As an "object", a "business object" exists only in the context of a business transaction.

[SOURCE: ISO/IEC 15944-2:2015, 3.6]

3.7
Business Operational View
BOV
perspective of *business transactions* ([3.8](#)) limited to those aspects regarding the making of *business* ([3.5](#)) decisions and *commitments* ([3.21](#)) among *Persons* ([3.93](#)), which are needed for the description of a *business transaction*

[SOURCE: ISO/IEC 14662:2010, 3.3]

3.8
business transaction
predefined *set* ([3.123](#)) of activities and/or *processes* ([3.101](#)) of *Persons* ([3.93](#)) which is initiated by a *Person* to accomplish an explicitly shared *business* ([3.5](#)) goal and terminated upon recognition of one of the agreed conclusions by all the involved *Persons* although some of the recognition may be implicit

[SOURCE: ISO/IEC 14662:2010, 3.4]

3.9
business transaction identifier
BTI
identifier assigned by a *seller* ([3.120](#)) or a *regulator* ([3.111](#)) to an instantiated *business transaction* ([3.8](#)) among the *Persons* ([3.93](#)) involved

Note 1 to entry: The identifier assigned by the seller or regulator shall have the properties and behaviours of an "identifier (in a business transaction)".

Note 2 to entry: As an identifier (in a business transaction), a BTI serves as the unique common identifier for all Persons involved for the identification, referencing, retrieval of recorded information, etc., pertaining to the commitments made and the resulting actualization (and post-actualization) of the business transaction agreed to.

Note 3 to entry: A business transaction identifier can be assigned at any time during the planning, identification or negotiation phases but shall be assigned at least prior to the start or during the actualization phase.

Note 4 to entry: As and where required by the applicable jurisdictional domain(s), the recorded information associated with the business transaction identifier (BTI) may well require the seller to include other identifiers, (e.g., from a value-added good or service tax, etc., perspective) as assigned by the applicable jurisdictional domain(s).

[SOURCE: ISO/IEC 15944-5:2008, 3.12]

3.10
buyer
Person ([3.93](#)) who aims to get possession of a good, service and/or right through providing an acceptable equivalent value, usually in money, to the *Person* providing such a good, service and/or right

[SOURCE: ISO/IEC 15944-1:2023, 3.8]

3.11
character
member of a *set* ([3.123](#)) of elements that is used for the representation, organization or control of *data* ([3.29](#))

Note 1 to entry: Characters may be categorized as follows:

— types and examples;

— graphic character: (e.g., digit, letter, ideogram, special character);

— control character: (e.g., transmission control, character, format effector, code extension character, device control character).

[SOURCE: ISO/IEC 2382:2015, 2121335]

3.12
characteristic
abstraction of a property of an *object* ([3.73](#)) or of a *set* ([3.123](#)) of ob*jects*

Note 1 to entry: Characteristics are used for describing concepts.

[SOURCE: ISO 1087:2019, 3.2.1]

3.13
character set
finite *set* ([3.123](#)) of different *characters* ([3.11](#)) that is complete for a given purpose

EXAMPLE   The international reference version of the character set of ISO 10642.

[SOURCE: ISO/IEC 2382:2015, 2121547]

3.14
classification system
systematic *identification* ([3.53](#)) and arrangement of *business* ([3.5](#)) activities and/or *scenario components* ([3.118](#)) into categories according to logically structured conventions, methods and procedural *rules* ([3.115](#)) as specified in a classification schema

Note 1 to entry: The classification code or number often serves as a semantic identifier (SI) for which one or more human interface equivalents exist.

Note 2 to entry: The rules of a classification schema governing the operation of a classification system at times lead to the use of ID codes which have an intelligence built into them, (e.g., in the structure of the ID, the manner in which it can be parsed, etc. Here the use of block-numeric numbering schemas is an often used convention.

[SOURCE: ISO/IEC 15944-5:2008, 3.17]

3.15
code
data (in a business transaction) ([3.30](#)) representation in different forms according to a pre-established *set* ([3.123](#)) of *rules* ([3.115](#))

Note 1 to entry: In this document the "pre-established set of rules" are determined and enacted by a Source Authority and shall be explicitly stated.

[SOURCE: ISO 639-2:1998, 3.1]

3.16
coded domain
value domain for which (1) the boundaries are defined and explicitly stated as a *rulebase* ([3.116](#)) of a *coded domain Source Authority* ([3.18](#)); and, (2) each *entity* ([3.43](#)) which qualifies as a member of that domain is identified through the assignment of a unique *ID Code* ([3.52](#)) in accordance with the applicable *Registration Schema* ([3.109](#)) of that *Source Authority* ([3.125](#))

Note 1 to entry: The rules governing the assignment of an ID code to members of a coded domain reside with its Source Authority and form part of the Coded Domain Registration Schema of the Source Authority.

Note 2 to entry: Source Authorities which are jurisdictional domains are the primary source of coded domains.

Note 3 to entry: A coded domain is a data set for which the contents of the data element values are predetermined and defined according to the rulebase of its Source Authority and as such have predefined semantics.

Note 4 to entry: Associated with a code in a coded domain can be: (a) one and/or more equivalent codes; and/or, (b) one and/or more equivalent representations especially those in the form of Human Interface Equivalent (HIE) (linguistic) expressions.

Note 5 to entry: In a coded domain the rules for assignment and structuring of the ID codes shall be specified.

Note 6 to entry: Where an entity as member of a coded domain is allowed to have, i.e., assigned, more than one ID code, i.e., as equivalent ID codes (possibly including names), one of these shall be specified as the pivot ID code.

Note 7 to entry: A coded domain in turn can consist of two or more coded domains, i.e., through the application of the inheritance principle of object classes.

Note 8 to entry: A coded domain may contain an ID code which pertains to predefined conditions other than qualification of membership of entities in the coded domain. Further, the rules governing a coded domain may or may not provide for user extensions.

EXAMPLE 1   (1) the use of ID Code "0" (or "00", etc.) for "Others, (2) the use of ID Code "9" (or "99", etc.) for "Not Applicable"; (3) the use of "8" (or "98") for "Not Known"; and/or, if required, (4) the pre-reservation of a series of ID codes for use of "user extensions".

Note 9 to entry: In object methodology, entities which are members of a coded domain are referred to as instances of a class.

EXAMPLE 2   In UML modelling notation, an ID code is viewed as an instance of an object class.

Note 10 to entry: In the context of metadata registries, a "value domain" is defined as a "set of permissible values" See further ISO/IEC 11179-3:2012[3]).

[SOURCE: ISO/IEC 15944-2:2015, 3.13]

3.17
coded Domain Registration Schema
cdRS
formal *definition* (3.38) of both (1) the *data (in a business transaction)* (3.30) fields contained in the *identification* (3.53) and specification of an *entity* (3.43) forming part of the members a *coded domain* (3.16) including the allowable contents of those fields; and, (2) the *rules* (3.115) for the assignment of identifiers

[SOURCE: ISO/IEC 15944-5:2008, 3.21]

3.18
coded domain Source Authority
cdSA
Person (3.93), usually an *organization* (3.89), as a *Source Authority* (3.125) which sets the *rules* (3.115) governing a *coded domain* (3.16)

Note 1 to entry: Source Authority is a role of a Person and for widely used coded domains the coded domain Source Authority is often a jurisdictional domain.

Note 2 to entry: Specific sectors, (e.g., banking, transport, geomatics, agriculture, etc.), may have particular coded domain Source Authority(ies) whose coded domains are used in many other sectors.

Note 3 to entry: A coded domain Source Authority usually also functions as a Registration Authority but can use an agent, i.e., another Person, to execute the registration function on its behalf.

[SOURCE: ISO/IEC 15944-2:2015, 3.14]

3.19
code (in coded domain)
identifier, i.e., an ID *Code* (3.52), assigned to an *entity* (3.43) as member of a *coded domain* (3.16) according to the pre-established *set* (3.123) of *rules* (3.115) governing that coded domain

[SOURCE: ISO/IEC 15944-5:2008, 3:19]

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3)   3rd edition. Withdrawn.

3.20
collaboration space
business (3.5) activity space where an economic exchange of valued resources is viewed independently and not from the perspective of any business partner

Note 1 to entry: In collaboration space, an individual partner's view of economic phenomena is de-emphasized. Thus, the common use business and accounting terms like purchase, sale, cash receipt, cash disbursement, raw materials, and finished goods are not allowed because they view resource flows from a participant's perspective.

[SOURCE: ISO/IEC 15944-4:2015, 3.12]

3.21
commitment
making or accepting of a right, obligation, liability or responsibility by a *Person* (3.93) that is capable of enforcement in the *jurisdictional domain* (3.61) in which the commitment is made

[SOURCE: ISO/IEC 14662:2010, 3.5]

3.22
composite identifier
identifier (in a *business transaction* (3.8)) functioning as a single unique identifier consisting of one or more other identifiers, and/or one or more other *data elements* (3.31), whose interworkings are rule-based

Note 1 to entry: Identifiers (in business transactions) are for the most part composite identifiers.

Note 2 to entry: The rules governing the structure and working of a composite identifier should be specified.

Note 3 to entry: Most widely used composite identifiers consist of the combinations of: (1) the ID of the overall identification/numbering schema, (e.g., ISO/IEC 6523, ISO/IEC 7812, ISO/IEC 7501, UPC/EAN, ITU-T E.164, etc.), which is often assumed; (2) the ID of the issuing organization (often based on a block numeric numbering schema); and, (3) the ID of the entities forming part of members of the coded domain of each issuing organization.

[SOURCE: ISO/IEC 15944-2:2015, 3.16]

3.23
computational integrity
expression of a *standard* (3.127) in a form that ensures precise description of behaviour and semantics in a manner that allows for automated processing to occur, and the managed evolution of such *standards* in a way that enables dynamic introduction by the next generation of information systems

Note 1 to entry: Open-edi standards have been designed to be able to support computational integrity requirements especially from a registration and re-use of business objects perspectives.

[SOURCE: ISO/IEC 15944-2:2015, 3.17]

3.24
concept
unit of knowledge created by a unique combination of *characteristics* (3.12)

Note 1 to entry: Concepts are not necessarily bound to particular natural languages. They are, however, influenced by the social or cultural background which often leads to different categorizations.

[SOURCE: ISO1987:2019, 3.2.7, modified — Removal of Note 2 to entry.]

3.25
constraint
rule (3.115), explicitly stated, that prescribes, limits, governs or specifies any aspect of a *business transaction* (3.8)

Note 1 to entry: Constraints are specified as rules forming part of components of Open-edi scenarios, i.e., as scenario attributes, roles, and/or information bundles.

Note 2 to entry: For constraints to be registered for implementation in Open-edi, they shall have unique and unambiguous identifiers.

Note 3 to entry: A constraint may be agreed to among parties (condition of contract) and is therefore considered an "internal constraint". Or a constraint may be imposed on parties, (e.g., laws, regulations, etc.), and is therefore considered an "external constraint".

[SOURCE: ISO/IEC 15944-1:2023, 3.11]

3.26
Contact
instance of a *role* (3.112) of a *Person* (3.93) to whom a *recorded information* (3.105) item(s), a material *object(s)* (3.73), a bu*siness object(s)* (3.6), can be sent to or received from in a specified context

Note 1 to entry: A Person here as a Contact can be an individual, an organization (or organization part or organization Person).

Note 2 to entry: Contact is capitalized to distinguish it from the many ordinary uses of the term.

Note 3 to entry: Harmonized with ISO/IEC 11179 but from an eBusiness perspective.

[SOURCE: ISO/IEC 11179-3:2013, 3.2.23, modified — replaced "individual" with "Person" and added Notes to entry 1, 2 and 3.]

3.27
contact information
information to enable a *Contact* (3.26) to be located or communicated with

[SOURCE: ISO/IEC 11179-3:2013, 3.2.24]

3.28
controlled vocabulary
CV
vocabulary (3.138) for which the entries, i.e., *definition* (3.38)/*term* (3.129) pairs, are controlled by a *Source Authority* (3.125) based on a *rulebase* (3.116) and p*rocess* (3.101) for addition/deletion of entries

Note 1 to entry: In a controlled vocabulary, there is a one-to-one relationship of definition and term.

EXAMPLE   The contents of "Clause 3 Definitions" in ISO/IEC standards are examples of controlled vocabularies with the entities being identified and referenced through their ID code, i.e., via their clause numbers.

Note 2 to entry: In a multilingual controlled vocabulary, the definition/term pairs in the languages used are deemed to be equivalent with respect to their semantics.

Note 3 to entry: The rulebase governing a controlled vocabulary may include a predefined concept system.

[SOURCE: ISO/IEC 15944-5:2008, 3.34]

3.29
data
reinterpretable representation of information in a formalized manner suitable for communication, interpretation, or processing

Note 1 to entry: Data can be processed by humans or by automatic means.

[SOURCE: ISO/IEC 2382:2015, 2121272]

3.30
data (in a business transaction)
representations of *recorded information* (3.105) that are being prepared or have been prepared in a form suitable for use in a computer system

[SOURCE: ISO/IEC 15944-1:2023, 3.14]

3.31
data element
unit of *data (in a business transaction)* (3.30) for which the *definition* (3.38), iden*tification* (3.53), representation and permissible values are specified by means of a *set* (3.123) of at*tributes* (3.4)

[SOURCE: ISO/IEC 15944-1, 2023, 3.15]

3.32
data element (in organization of data)
unit of *data (in a business transaction)* (3.30) that is considered in context to be indivisible

EXAMPLE   The data element "age of a person" with values consisting of all combinations of 3 decimal digits.

Note 1 to entry: Differs from the entry 17.06.02 in ISO/IEC 2382-17.

[SOURCE: ISO/IEC 2382:2015, 2121599]

3.33
dataset
identifiable collection of *data (in a business transaction)* (3.30)

Note 1 to entry: A dataset may be a smaller grouping of data which, though limited by some constraint such as spatial extent or feature type, is located physically within a larger dataset. Theoretically, a dataset may be as small as a single feature or feature attribute contained within a larger dataset. A hardcopy map or chart may be considered a dataset.

[SOURCE: ISO 19115-1:2014, 4.3]

3.34
date
ISO 8601 compliant representation of a date in a YYYY-MM-DD format using the Gregorian calendar

[SOURCE: ISO/IEC 15944-2:2015, 3.26]

3.35
Decision Making Application
DMA
model (3.69) of that part of an *Open-edi system* (3.87) that makes decisions corresponding to the *role(s)* (3.112) that the *Open-edi Party* (3.78) plays as well as the originating, receiving and managing *data (in a business transaction)* (3.30) values contained in the instantiated *Information Bundles* (3.56) which is not required to be visible to the other *Open-edi Party(ies) (OeP)*

[SOURCE: ISO/IEC 14662:2010, 3.6]

3.36
de facto language
natural language (3.72) used in a *jurisdictional domain* (3.61) which has the properties and behaviours of an *official language* (3.75) in that *jurisdictional domain* without having formally been declared as such by that *jurisdictional domain*

Note 1 to entry: A de facto language of a jurisdictional domain is often established through long term use and custom.

Note 2 to entry: Unless explicitly stated otherwise and for the purposes of modelling a business transaction through scenario(s), scenario attributes and/or scenario components, a de facto language of a jurisdictional domain is assumed to have the same properties and behaviours of an official language.

[SOURCE: ISO/IEC 15944-5:2008, 3.42]

3.37
defined market model
trade *model* ([3.69](#)) where the *buyer* ([3.10](#)) and *seller* ([3.120](#)) accept the entry terms of a specified market in advance and where that market has an accepted and recognized source for *business* ([3.5](#)) *rules* ([3.115](#)) and conventions

Note 1 to entry: In a defined market, the phases of a business transaction –planning, identification, negotiation, actualization, and post-actualization – are governed by the rules and conventions of the particular defined market.

[SOURCE: ISO/IEC 15944-4:2015, 3.17]

3.38
definition
representation of a *concept* ([3.24](#)) by an expression that describes it and differentiates it from related *concepts*

[SOURCE: ISO 1087:2019, 3.3.1]

3.39
designation
representation of a *concept* ([3.24](#)) by a sign which denotes it

Note 1 to entry: In terminology work three types of designations are distinguished: symbols, appellations, (a.k.a. names), and terms.

[SOURCE: ISO/IEC 15944-2:2015 3.29]

3.40
eBusiness
business transaction ([3.8](#)), involving the making of *commitments* ([3.21](#)), in a defined *collaboration space* ([3.20](#)), among *Persons* ([3.93](#)) using their *IT systems* ([3.57](#)), according to *Open-edi standards* ([3.127](#))

Note 1 to entry: eBusiness can be conducted on both a for-profit and not-for-profit basis.

Note 2 to entry: A key distinguishing aspect of eBusiness is that it involves the making of commitment(s) of any kind among the Persons in support of a mutually agreed upon goal, involving their IT systems, and doing so through the use of EDI (using a variety of communication networks including the Internet).

Note 3 to entry: eBusiness includes various application areas such as "e-commerce", "e-administration", "e-logistics", "e-government", "e-medicine", "e-learning", etc.

Note 4 to entry: The equivalent French language term for "eBusiness" is always presented in its plural form.

[SOURCE: ISO/IEC 15944-7:2009, 3.06]

3.41
electronic address
address ([3.3](#)) used in a recognized electronic addressing scheme, (e.g., telephone, telex, IP, etc.), to which *recorded information* ([3.105](#)) item(s) and/or *business object(s)* ([3.6](#)) can be sent to or received from a *Contact* ([3.26](#))

[SOURCE: ISO/IEC 15944-2:2015, 3.32]

3.42
Electronic Data Interchange
EDI
automated exchange of any predefined and structured *data (in a business transaction)* ([3.30](#)) for b*usiness* ([3.5](#)) purposes among information systems of two or more *Persons* ([3.93](#))

Note 1 to entry: This definition includes all categories of electronic business transactions.

[SOURCE: ISO/IEC 14662:2010, 3.8]

3.43
entity
any concrete or abstract thing that exists, did exist, or might exist, including associations among these things

EXAMPLE   A person, object, event, idea, process, etc.

Note 1 to entry: An entity exists whether data about it are available or not.

[SOURCE: ISO/IEC 2382:2015, 2121433]

3.44
exchange code set
set ([3.123](#)) of ID *Codes* ([3.52](#)) identified in a *coded domain* ([3.16](#)) as being suitable for information exchange as shareable *data (in a business transaction)* ([3.30](#))

EXAMPLE   The 3 numeric, 2-alpha and 3-alpha code sets in ISO 3166-1.

[SOURCE: ISO/IEC 15944-5:2008, 3.49]

3.45
external constraint
constraint ([3.25](#)) which takes precedence over *internal constraints* ([3.58](#)) in a *business transaction* ([3.8](#)), i.e., is external to those agreed upon by the parties to a *business transaction*

Note 1 to entry: Normally external constraints are created by law, regulation, orders, treaties, conventions or similar instruments.

Note 2 to entry: Other sources of external constraints are those of a sectorial nature, those which pertain to a particular jurisdictional domain or a mutually agreed to common business conventions, (e.g., INCOTERMS, exchanges, etc.).

Note 3 to entry: External constraints can apply to the nature of the good, service and/or right provided in a business transaction.

Note 4 to entry: External constraints can demand that a party to a business transaction meet specific requirements of a particular role.

EXAMPLE 1   Only a qualified medical doctor may issue a prescription for a controlled drug.

EXAMPLE 2   Only an accredited share dealer may place transactions on the New York Stock Exchange.

EXAMPLE 3   Hazardous wastes may only be conveyed by a licensed enterprise.

Note 5 to entry: Where the information bundles (IBs), including their Semantic Components (SCs) of a business transaction are also to form the whole of a business transaction, (e.g., for legal or audit purposes), all constraints shall be recorded.

EXAMPLE 4   There may be a legal or audit requirement to maintain the complete set of recorded information pertaining to a business transaction, i.e., as the information bundles exchanged, as a "record".

Note 6 to entry: A minimum external constraint applicable to a business transaction often requires one to differentiate whether the Person, i.e., that is a party to a business transaction, is an "individual", "organization", or "public administration". For example, privacy rights apply only to a Person as an "individual".

[SOURCE: ISO/IEC 15944-1:2023, 3.23]

3.46
Formal Description Technique
FDT
specification method based on a description *language* ([3.62](#)) using rigorous and *unambiguous* ([3.136](#)) *rules* ([3.115](#)) both with respect to developing expressions in the *language* (formal syntax) and interpreting the meaning of these expressions (formal semantics)

[SOURCE: ISO/IEC 14662:2010, 3.9]

3.47
Functional Service View
FSV
perspective of *business transactions* ([3.8](#)) limited to those information technology interoperability aspects of *IT Systems* ([3.57](#)) needed to support the execution of *Open-edi transactions* ([3.88](#))

[SOURCE: ISO/IEC 14662:2010, 3.10]

3.48
glyph
recognizable abstract graphic *symbol* ([3.128](#)) which is independent of any specific design

[SOURCE: ISO 5127:2017, 3.1.6.04]

3.49
grammatical gender
grammatical category that indicates grammatical relationships between words in sentences

Note 1 to entry: The concept of grammatical gender varies from language to language and is not a universal feature of all languages.

Note 2 to entry: This is taken from ISO 12620:1999, A.2.2.2.

EXAMPLE   In French, la vie (life) is feminine and is used with feminine articles such as la, the feminine pronoun elle, and feminine adjective endings, (e.g., une vie longue).

PERMISSIBLE INSTANCES Types of grammatical gender commonly documented in terminology databases include: (a) masculine, (b) feminine; (c) neuter; (d) other.

[SOURCE: ISO/IEC 15944-10, 2021, 3.65]

3.50
Human Interface Equivalent
HIE
representation of the *unambiguous* ([3.136](#)) and IT-enabled semantics of an *IT interface equivalent* ([3.60](#)) (in a *business transaction* ([3.8](#))), often the *ID Code* ([3.52](#)) of a *coded domain* ([3.16](#)) (or a *composite identifier* ([3.22](#))), in a formalized manner suitable for communication to and understanding by humans

Note 1 to entry: Human interface equivalents can be linguistic or non-linguistic in nature but their semantics remains the same although their representations may vary.

Note 2 to entry: In most cases there will be multiple Human Interface Equivalent representations as required to meet localization requirements, i.e. those of a linguistic nature, jurisdictional nature, and/or sectoral nature.

Note 3 to entry: Human Interface Equivalents include representations in various forms or formats, (e.g., in addition to written text those of an audio, symbol (and icon) nature, glyphs, image, etc.).

[SOURCE: ISO/IEC 15944-2:2015, 3.35]

3.51
IB Identifier
unique, linguistically neutral, *unambiguous* ([3.136](#)) referenceable identifier for an *Information Bundle* ([3.56](#))

[SOURCE: ISO/IEC 15944-2:2015, 3.36]

3.52
ID Code
identifier assigned by the *coded domain Source Authority* ([3.18](#)) (cdSA*)* to a member of a *coded domain* ([3.16](#)) ID

Note 1 to entry: ID codes shall be unique within the Registration Schema of that coded domain.

Note 2 to entry: Associated with an ID code in a coded domain can be (a) one or more equivalent codes; or, (b) one or more equivalent representations, especially those in the form of human equivalent (linguistic) expressions.

Note 3 to entry: Where an entity as a member of a coded domain is allowed to have more than one ID code, i.e., as equivalent codes (possibly including names), one of these shall be specified as the pivot ID code.

Note 4 to entry: A coded domain may contain ID codes pertaining to entities which are not members as peer entities, i.e., have the same properties and behaviours, such as ID codes which pertain to predefined conditions other than member entities. If this is the case, the rules governing such exceptions shall be predefined and explicitly stated.

EXAMPLE   Common examples include: (1) the use of an ID code "0" (or "00", etc.), for "Other"; (2) the use of an ID code "9" (or "99") for "Not Applicable"; (3) the use of "8" (or "98") for "Not Known"; if required, (4) the pre-reservation of a series or set of ID codes for use for "user extensions".

Note 5 to entry: In UML modeling notation, an ID code is viewed as an instance of an object class.

[SOURCE: ISO/IEC 15944-2:2015, 3.37]

3.53
identification
rule-based *process* ([3.101](#)), explicitly stated, involving the use of one or more *attributes* ([3.4](#)), i.e., *data elements* ([3.31](#)), whose value (or combination of values) are used to identify uniquely the occurrence or existence of a specified *entity* ([3.43](#))

[SOURCE: ISO/IEC 15944-1:2023, 3.26]

3.54
individual
Person ([3.93](#)) who is a human being, i.e., a natural person, who acts as a distinct indivisible *entity* ([3.43](#)) or is considered as such

[SOURCE: ISO/IEC 15944-1:2023, 3.28]

3.55
individual accessibility
set ([3.123](#)) of ex*ternal constraints* ([3.45](#)) of a *jurisdictional domain* ([3.61](#)) as rights of an *individual* ([3.54](#)) with disabilities to be able to use *IT systems* ([3.57](#)) at the human, i.e., user, interface and the concomitant obligation of a *seller* ([3.120](#)) to provide such adaptive technologies

Note 1 to entry: Although "accessibility" typically addresses users who have a disability, the concept is not limited to disability issues.

EXAMPLE   Examples of disabilities in the form of functional and cognitive limitations include: (a)people who are blind; (b)people with low vision; (c) people with colour blindness; (d)people who are hard of hearing or deaf, i.e., are hearing impaired; (e) people with physical disabilities; and, (f)people with language or cognitive disabilities.

[SOURCE: ISO/IEC 15944-5:2008, 3.60]

3.56
Information Bundle
IB
formal description of the semantics of the *recorded information* ([3.105](#)) to be exchanged by *Open-edi Parties* ([3.78](#)) playing *roles* ([3.112](#)) in an *Open-edi scenario* ([3.86](#))

[SOURCE: ISO/IEC 14662:2010, 3.11]

3.57
Information Technology System
IT System
set ([3.123](#)) of one or more computers, associated software, peripherals, terminals, human operations, physical processes, information transfer means, that form an autonomous whole, capable of performing information processing and/or information transfer

[SOURCE: ISO/IEC 14662:2010, 3.13]

3.58
internal constraint
constraint ([3.25](#)) which forms part of the *commitment(s)* ([3.21](#)) mutually agreed to among the parties to a *business transaction* ([3.8](#))

Note 1 to entry: Internal constraints are self-imposed. They provide a simplified view for modelling and re-use of scenario components of a business transaction for which there are no external constraints or restrictions to the nature of the conduct of a business transaction other than those mutually agreed to by the buyer and seller.

[SOURCE: ISO/IEC 15944-1:2023, 3.33]

3.59
IT-enablement
transformation of a current *standard* ([3.127](#)) used in *business transactions* ([3.8](#)), (e.g., *coded domains* ([3.16](#))), from a manual to computational perspective so as to be able to support *commitment* ([3.21](#)) exchange and *computational integrity* ([3.23](#))

[SOURCE: ISO/IEC 15944-5:2008, 3.65]

3.60
IT interface equivalent
computer processable *identification* ([3.53](#)) of the *unambiguous* ([3.136](#)) semantics of a scenario, *scenario attribute* ([3.117](#)) and/or *scenario component(s)* ([3.118](#)) pertaining to a *commitment* ([3.21](#)) exchange in a *business transaction* ([3.8](#)) which supports *computational integrity* ([3.23](#))

Note 1 to entry: IT interface equivalents have the properties of identifiers (in business transactions) and are used to support semantic interoperability in commitment exchange.

Note 2 to entry: The value of an IT interface equivalent at times is a composite identifier.

Note 3 to entry: An IT interface equivalent as a composite identifier can consist of the identifier of a coded domain plus an ID code of that coded domain.

Note 4 to entry: An IT interface equivalent is at times used as a semantic identifier.

Note 5 to entry: An IT interface equivalent may have associated with it one or more Human Interface Equivalents (HIEs).

Note 6 to entry: The value of an IT Interface is independent of its encoding in programming languages or APIs.

[SOURCE: ISO/IEC 15944-2:2015, 3.45]

3.61
jurisdictional domain
jurisdiction, recognized in law as a distinct legal and/or regulatory framework, which is a source of *external constraints* (3.45) on *Persons* (3.93), their behaviour and the making of *commitments* (3.21) among *Persons* including any aspect of a *business transaction* (3.8)

Note 1 to entry: The pivot jurisdictional domain is a United Nations (UN) recognized member state. From a legal and sovereignty perspective they are considered "peer" entities. Each UN member state, (a.k.a. country) may have sub-administrative divisions as recognized jurisdictional domains, (e.g., provinces, territories, cantons, länder, etc.), as decided by that UN member state.

Note 2 to entry: Jurisdictional domains can combine to form new jurisdictional domains, (e.g., through bilateral, multilateral and/or international treaties).

EXAMPLE   The European Union (EU), NAFTA, WTO, WCO, ICAO, WHO, Red Cross, the ISO, the IEC, the ITU, etc.

Note 3 to entry: Several levels and categories of jurisdictional domains may exist within a jurisdictional domain.

Note 4 to entry: A jurisdictional domain may impact aspects of the commitment(s) made as part of a business transaction including those pertaining to the making, selling, transfer of goods, services and/or rights (and resulting liabilities) and associated information. This is independent of whether such interchange of commitments is conducted on a for-profit or not-for-profit basis and/or include monetary values.

Note 5 to entry: Laws, regulations, directives, etc., issued by a jurisdictional domain are considered as parts of that jurisdictional domain and are the primary sources of external constraints on business transactions.

[SOURCE: ISO/IEC 15944-5:2008, 3.67]

3.62
language
systematic use of sounds, *characters* (3.11), *symbols* (3.128) or signs to express meaning or communicate meaning or a message

[SOURCE: ISO 5127:2017, 3.1.5.01]

3.63
language code
combination of *characters* (3.11) used to represent a *language* (3.62) or la*nguages*

Note 1 to entry: In the ISO/IEC 15944 series, the ISO 639-2/T (terminology) three alpha-code set, shall be used.

[SOURCE: ISO 639-2:1998, 3.2]

3.64
legally recognized name
LRN
persona (3.94) associated with a *role* (3.112) of a *Person* (3.93) recognized as having legal status and so recognized in a *jurisdictional domain* (3.61) as accepted or assigned in compliance with the *rules* (3.115) applicable of that *jurisdictional domain,* i.e. as governing the *coded domain* (3.16) of which the LRN is a member

Note 1 to entry: An LRN may be of a general nature and thus be available for general use in commitment exchange or may arise from the application of a particular law, regulation, program or service of a jurisdictional domain and thus will have a specified use in commitment exchange.

Note 2 to entry: The process of establishment of an LRN is usually accompanied by the assignment of a unique identifier.

Note 3 to entry: An LRN is usually a registry entry in a register established by the jurisdictional domain (usually by a specified public administration within that jurisdictional domain) for the purpose of applying the applicable rules and registering and recording LRNs (and possible accompanying unique identifiers accordingly).

Note 4 to entry: A Person may have more than one LRN (and associated LRN identifier).

[SOURCE: ISO/IEC 15944-5:2008, 3.72]

3.65
list
ordered *set* ([3.123](#)) of da*ta elements* ([3.31](#))

[SOURCE: ISO/IEC 2382:2015, 2121612]

3.66
localization
pertaining to or concerned with anything that is not global and is bound through specified sets of *constraints* ([3.25](#)) of: (a) a linguistic nature including *natural* and *special languages* ([3.126](#)) and associated multilingual requirements; (b) jurisdictional nature, i.e., legal, regulatory, geopolitical, etc.; (c) a sectorial nature, i.e., industry sector, scientific, professional, etc.; (d) a human rights nature, i.e., privacy, disabled/handicapped persons, etc.; (e) consumer behaviour requirements; and/or (f) safety or health requirements

Note 1 to entry: Within and among "locales", interoperability and harmonization objectives also apply.

[SOURCE: ISO/IEC 15944-5:2008, 3.75]

3.67
location
place, either physical or electronic, that can be defined as an *address* ([3.3](#))

[SOURCE: ISO/IEC 15944-2:2015, 3.50]

3.68
metadata
data ([3.29](#)) about *data elements* ([3.31](#)), including their *data* descriptions, and *data* about *data* ownership, access paths, access rights and *data* volatility

[SOURCE: ISO/IEC 2382:2015, 2121595]

3.69
model
abstraction of some aspect of reality

[SOURCE: ISO 19115-1:2014, 4.14]

3.70
multilingualism
ability to support not only *character sets* ([3.13](#)) specific to a *(natural) language* ([3.62](#)) (or family of *languages*) and associated *rules* ([3.115](#)) but also *localization* ([3.66](#)) requirements, i.e., use of a *language* ([3.62](#)) from *jurisdictional domain* ([3.61](#)), sectoral and/or consumer marketplace perspectives

[SOURCE: ISO/IEC 15944-5:2008, 3.82]

3.71
name
designation ([3.39](#)) of an *object* ([3.73](#)) by a linguistic expression

Note 1 to entry: Adapted from ISO 5217:2000 and ISO 1087-1:2000.

[SOURCE: ISO/IEC 15944-1:2023, 3.35]

3.72
natural language
language ([3.62](#)) which is or was in active use in a community of people, and the *rules* ([3.115](#)) of which are mainly deduced from the usage

[SOURCE: ISO/IEC 15944-8:2012, 3.82]

3.73
object
anything perceivable or conceivable

Note 1 to entry: Objects can be material (e.g. 'engine', 'sheet of paper', 'diamond'), immaterial (e.g. 'conversion ratio', 'project plan') or imagined (e.g. 'unicorn', 'scientific hypothesis').

[SOURCE: ISO 1087:2019, 3.1.1]

3.74
object class
set ([3.123](#)) of ideas, abstractions, or things in the real world that can be identified with explicit boundaries and meaning and whose properties and behaviour follow the same *rules* ([3.115](#))

[SOURCE: ISO/IEC 11179-1:2015, 3.3.18]

3.75
official language
external constraint ([3.45](#)) in the form of a *natural language* ([3.72](#)) specified by a *jurisdictional domain* ([3.61](#)) for official use by *Persons* ([3.93](#)) forming part of and/or subject to that *jurisdictional domain* for use in communication(s) either: (1) within that *jurisdictional domain*; and/or, (2) among such *Persons*, where such communications are *recorded information* ([3.105](#)) involving *commitment(s)* ([3.21](#))

Note 1 to entry: Unless official language requirements state otherwise, Persons are free to choose their mutually acceptable natural language and/or special language for communications as well as exchange of commitments.

Note 2 to entry: A jurisdictional domain decides whether or not it has an official language. If not, it will have a de facto language.

Note 3 to entry: An official language(s) can be mandated for formal communications as well as provision of goods and services to Persons subject to that jurisdictional domain and for use in the legal and other conflict resolution system(s) of that jurisdictional domain, etc.

Note 4 to entry: Where applicable, use of an official language may be required in the exercise of rights and obligations of individuals in that jurisdictional domain.

Note 5 to entry: Where an official language of a jurisdictional domain has a controlled vocabulary of the nature of a terminology, it may well have the characteristics of a special language. In such cases, the terminology to be used shall be specified.

Note 6 to entry: For an official language, the writing system(s) to be used shall be specified, where the spoken use of a natural language has more than one writing system.

EXAMPLE 1   The spoken language of use of an official language may at times have more than one writing system. For example, three writing systems exist for the Inuktitut language. Canada uses two of these writing systems, namely, a Latin-1 based (Roman), the other is syllabic-based. The third is used in Russia and is Cyrillic based.

EXAMPLE 2   Another example is that of Norway which has two official writing systems, both Latin-1 based, namely, Bokmål (Dano-Norwegian) and Nynorsk (New Norwegian).

Note 7 to entry: A jurisdictional domain may have more than one official language but these may or may not have equal status.

EXAMPLE 3   Canada has two official languages, Switzerland has three, while the Union of South Africa has eleven official languages.

Note 8 to entry: The BOV requirement of the use of a specified language will place that requirement on any FSV supporting service.

EXAMPLE 4   A BOV requirement of Arabic, Chinese, Russian, Japanese, Korean, etc., as an official language requires the FSV support service to be able to handle the associated character sets.

[SOURCE: ISO/IEC 15944-5:2008, 3.87]

3.76
Open-edi
Electronic Data Interchange (3.42) among multiple autonomous *Persons* (3.93) to accomplish an explicitly shared *business* (3.5) goal according to *Open-edi standards* (3.127)

[SOURCE: ISO/IEC 14662:2010, 3.14]

3.77
Open-edi Description Technique
OeDT
specification method such as a *Formal Description Technique* (3.46), another methodology having the *characteristics* (3.12) of a *Formal Description Technique*, or a combination of such techniques as needed to formally specify *BOV* (3.7) concepts, in a computer processable form

[SOURCE: ISO/IEC 14662:2010, 3.16]

3.78
Open-edi Party
OeP
Person (3.93) that participates in *Open-edi* (3.76)

Note 1 to entry: Often referred to generically in this, and other eBusiness standards, (e.g., parts of the ISO/IEC 15944 series "eBusiness" standard) as "party" or "parties" for any entity modelled as a Person as playing a role in Open-edi scenarios.

[SOURCE: ISO/IEC 14662:2010, 3.17]

3.79
Open-edi register
information store or database maintained by an *Open-edi Registry* (3.84)

[SOURCE: ISO/IEC 15944-2:2015, 3.62]

3.80
Open-edi registration administration attribute
member of a *set* (3.123) of at*tributes* (3.4) to uniquely identify an *Open-edi scenario* (3.86), Info*rmation Bundle* (3.56), or *Semantic Component* (3.121) and the relevant *Person* (3.93) responsible for its maintenance

[SOURCE: ISO/IEC 15944-2:2015, 3.63]

3.81
Open-edi Registration Authority
OeRA
Person (3.93) responsible for maintaining the *register* (3.106) of Oe*ROs* (3.82) and for the issuance of *OeRO* identifiers

[SOURCE: ISO/IEC 15944-2:2015, 3.64]

3.82
Open-edi Registration Organization
OeRO
Person (3.93) qualified by the *OeRA* (3.81) to assume the responsibility for the *registration* (3.107) of scenario and *scenario components* (3.118)

[SOURCE: ISO/IEC 15944-2:2015, 3.65]

3.83
Open-edi Registration Organization address
physical and/or *electronic address* ([3.41](#)) of the *Open-edi Registration Organization (OeRO)* ([3.82](#))

Note 1 to entry: A physical address includes a "pick-up" address such as a mailbox or such other location one can deliver to.

[SOURCE: ISO/IEC 15944-2:2015, 3.66]

3.84
Open-edi Registry
OeR
information technology system ([3.57](#)) for the *registration* ([3.107](#)) of scenarios and *scenario components* ([3.118](#))

[SOURCE: ISO/IEC 15944-2:2015, 3.69]

3.85
Open-edi Registry Item
OeRI
recorded information ([3.105](#)) within a *registry* ([3.110](#)) relating to a specific *Open-edi scenario* ([3.86](#)) or s*cenario components* ([3.118](#)) of s*cenario* including linkage information to a scenario content

[SOURCE: ISO/IEC 15944-2:2015, 3.70]

3.86
Open-edi scenario
OeS
formal specification of a class of *business transactions* ([3.8](#)) having the same *business* ([3.5](#)) goal

[SOURCE: ISO/IEC 14662:2010, 3.18]

3.87
Open-edi system
Information Technology System (IT system) ([3.57](#)) which enables an *Open-edi Party* ([3.78](#)) to participate in *Open-edi transactions* ([3.88](#))

[SOURCE: ISO/IEC 14662:2010, 3.22]

3.88
Open-edi transaction
business transaction ([3.8](#)) that is in compliance with an *Open-edi scenario* ([3.86](#))

[SOURCE: ISO/IEC 14662:2010, 3.23]

3.89
organization
unique framework of authority within which a person or persons act, or are designated to act, towards some purpose

Note 1 to entry: The kinds of organizations covered by this International Standard include the following examples:

EXAMPLE 1   An organization incorporated under law.

EXAMPLE 2   An unincorporated organization or activity providing goods and/or services including: 1) partnerships; 2) social or other non-profit organizations or similar bodies in which ownership or control is vested in a group of individuals; 3) sole proprietorships; 4) governmental bodies.

EXAMPLE 3   Groupings of the above types of organizations where there is a need to identify these in information interchange.

[SOURCE: ISO/IEC 15944-1:2023, 3.44]

3.90
organization part
any department, service or other *entity* (3.43) within an *organization* (3.89), which needs to be identified for information interchange

[SOURCE: ISO/IEC 15944-1:2023, 3.45]

3.91
organization Person
organization part (3.90) which has the properties of a *Person* (3.93) and thus is able to make *commitments* (3.21) on behalf of that *organization* (3.89)

Note 1 to entry: An organization can have one or more organization Persons.

Note 2 to entry: An organization Person is deemed to represent and act on behalf of the organization and to do so in a specified capacity.

Note 3 to entry: An organization Person can be a "natural person" such as an employee or officer of the organization.

Note 4 to entry: An organization Person can be a legal person, i.e., another organization.

[SOURCE: ISO/IEC 15944-1:2023, 3.46]

3.92
origin
source (document, project, discipline or *model* (3.69)) for the *OeRI* (3.85)

[SOURCE: ISO/IEC 15944-2:2015, 3.77]

3.93
Person
entity (3.43), i.e., a natural or legal person, recognized by law as having legal rights and duties, able to make *commitment(s)* (3.21), assume and fulfil resulting obligation(s), and able of being held accountable for its action(s)

Note 1 to entry: Synonyms for "legal person" include "artificial person", "body corporate", etc., depending on the terminology used in competent jurisdictions.

Note 2 to entry: "Person" is capitalized to indicate that it is being used as formally defined in the standards and to differentiate it from its day-to-day use.

Note 3 to entry: Minimum and common external constraints applicable to a business transaction often require one to differentiate among three common subtypes of Person, namely "individual", "organization", and "public administration".

[SOURCE: ISO/IEC 14662:2010, 3.24]

3.94
persona
set (3.123) of da*ta elements* (3.31) and their values by which a *Person* (3.93) wishes to be known and thus identified in a *business transaction* (3.8)

[SOURCE: ISO/IEC 15944-1:2023, 3.51]

3.95
personal information
any information about an identifiable *individual* (3.54) that is recorded in any form, including electronically or on paper

EXAMPLE   Recorded information about an individual's religion, age, financial transactions, medical history, address, or blood type.

[SOURCE: ISO/IEC 15944-5:2008, 3.103]

3.96
Person identity
Pi
combination of *persona* (3.94) information and identifier used by a *Person* (3.93) in a *business transaction* (3.8)

[SOURCE: ISO/IEC 15944-1:2023, 3.49]

3.97
physical address
address (3.3) that is used/recognized by a postal authority and/or courier service to deliver information item(s), material *object(s)* (3.73), or b*usiness object(s)* (3.6) to a *Contact* (3.26) at either an actual *address* or a pick-up point *address*, (e.g., P.O. Box, rural route, etc.)

[SOURCE: ISO/IEC 15944-2:2015, 3.80]

3.98
pivot ID code
most stable *ID Code* (3.52) assigned to identify a member of a *coded domain* (3.16) where more than one *ID Code* may be assigned and/or associated with a member of that *coded domain*

EXAMPLE   ISO 3166-1:1920 contains three code sets: (a) a three digit numeric code; (b) a two alpha code; and (3) a three alpha code. The three-digit numeric code serves as the pivot code. It is the most stable, remains the same even though the two alpha and/or three alpha codes may and do change.

[SOURCE: ISO/IEC 15944-5:2008, 3.105]

3.99
principle
fundamental, primary assumption and quality which constitutes a source of action determining particular objectives or results

Note 1 to entry: A principle is usually enforced by rules that affect its boundaries.

Note 2 to entry: A principle is usually supported through one or more rules.

Note 3 to entry: A principle is usually part of a set of principles which together form a unified whole.

EXAMPLE   Within a jurisdictional domain, examples of a set of principles include a charter, a constitution, etc.

[SOURCE: ISO/IEC 15944-2:2015, 3.81]

3.100
privacy protection
set (3.123) of e*xternal constraints* (3.45) of a *jurisdictional domain* (3.61) pertaining to *recorded information* (3.105) on or about an identifiable *individual* (3.54), i.e., *personal information* (3.95), with respect to the creation, collection, management, retention, access and use and/or distribution of such *recorded information* about that *individual* including its accuracy, timeliness, and relevancy

Note 1 to entry: Recorded information collected or created for a specific purpose on an identifiable individual, i.e., the explicitly shared goal of the business transaction involving an individual shall not be used for another purpose without the explicit and informed consent of the individual to whom the recorded information pertains.

Note 2 to entry: Privacy requirements include the right of an individual to be able to view the recorded information about him/her and to request corrections to the same in order to ensure that such recorded information is accurate and up-to-date.

Note 3 to entry: Where jurisdictional domains have legal requirements which override privacy protection requirements these shall be specified, (e.g., national security, investigations by law enforcement agencies, etc.).

[SOURCE: ISO/IEC 15944-5:2008, 3.109]

3.101
process
series of actions or events taking place in a defined manner leading to the accomplishment of an expected result

[SOURCE: ISO/IEC 15944-1:2023, 3.53]

3.102
property
peculiarity common to all members of an *object class* ([3.74](#))

[SOURCE: ISO/IEC 11179-1:2015, 3.3.21]

3.103
public administration
entity ([3.43](#)), i.e., a *Person* ([3.93](#)), which is an *organization* ([3.89](#)) and has the added *attribute* ([3.4](#)) of being authorized to act on behalf of a *regulator* ([3.111](#))

[SOURCE: ISO/IEC 15944-1:2023, 3.54]

3.104
public policy
category of *external constraints* ([3.45](#)) of a *jurisdictional domain* ([3.61](#)) specified in the form of a right of an *individual* ([3.54](#)) or a requirement of an *organization* ([3.89](#)) and/or *public administration* ([3.103](#)) with respect to an *individual* pertaining to any exchange of *commitments* ([3.21](#)) among the parties concerned involving a good, service and/or right including information management and interchange requirements

Note 1 to entry: Public policy requirements may apply to any one, all or combinations of the fundamental activities comprising a business transaction, i.e., planning, identification, negotiation, actualization and post-actualization. (See further ISO/IEC 15944-1:2023, 6.3)

Note 2 to entry: It is up to each jurisdictional domain to determine whether or not the age of an individual qualifies a public policy requirement, (e.g., those which specifically apply to an individual under the age of thirteen (13) as a "child", those which require an individual to have attained the age of adulthood, (e.g., 18 years or 21 years of age) of an individual to be able to make commitments of a certain nature.

Note 3 to entry: Jurisdictional domains may have consumer protection or privacy requirements which apply specifically to individuals who are considered to be "children", "minors", etc., i.e. those who have not reached their 18th or 21st birthday according to the rules of the applicable jurisdictional domain.

[SOURCE: ISO/IEC 15944-5:2008, 3.113]

3.105
recorded information
any information that is recorded on or in a medium irrespective of form, recording medium or technology used, and in a manner allowing for storage and retrieval

Note 1 to entry: This is a generic definition and is independent of any ontology, (e.g., those of "facts" versus "data" versus "information" versus "intelligence" versus "knowledge", etc.).

Note 2 to entry: Through the use of the term "information," all attributes of this term are inherited in this definition.

Note 3 to entry: This definition covers: (a) any form of recorded information, means of recording, and any medium on which information can be recorded; and, (b) all types of recorded information including all data types, instructions or software, databases, etc.

[SOURCE: ISO/IEC 15944-1:2023, 3.56]

3.106
register
set ([3.123](#)) of files containing identifiers assigned to items with descriptions of the associated items

[SOURCE: ISO 19135-1:2015, 4.1.9]

3.107
registration
rule-based *process* ([3.101](#)), explicitly stated, involving the use of one or more *data elements* ([3.31](#)), whose value (or combination of values) are used to identify uniquely the results of assigning an *OeRI* ([3.85](#))

[SOURCE: ISO/IEC 15944-2:2015, 3.95]

3.108
Registration Authority
RA
Person ([3.93](#)) responsible for the maintenance of one or more *Registration Schemas (RS)* ([3.109](#)) including the assignment of a unique identifier for each recognized *entity* ([3.43](#)) in a *Registration Schema (RS)* ([3.109](#))

[SOURCE: ISO/IEC 15944-1:2023, 3.57]

3.109
Registration Schema
RS
formal definition of a *set* ([3.123](#)) of ru*les* ([3.115](#)) governing the *data (in a business transaction)* ([3.30](#)) fields for the description of an *entity* ([3.43](#)) and the allowable contents of those fields, including the *rules* ([3.115](#)) for the assignment of identifiers

[SOURCE: ISO/IEC 15944-1:2023, 3.58]

3.110
registry
information system on which a *register* ([3.106](#)) is maintained

[SOURCE: ISO/IEC 15944-2:2015, 3.99]

3.111
regulator
Person ([3.93](#)) who has authority to prescribe *external constraints* ([3.45](#)) which serve as *principles* ([3.99](#)), policies or *rules* ([3.115](#)) governing or prescribing the behaviour of *Persons* involved in a *business transaction* ([3.8](#)) as well as the provisioning of goods, services, and/or rights interchanged

[SOURCE: ISO/IEC 15944-1:2023, 3.59]

3.112
role
specification which models an external intended behaviour (as allowed within a scenario) of an *Open-edi Party* ([3.78](#))

[SOURCE: ISO/IEC 14662:2010, 3.25]

3.113
romanization
script conversion from non-Roman to Roman script by means of transliteration, transcription or both

[SOURCE: ISO/IEC 15944-10:2022, 3.168, modified — Note 1 to entry removed.]

3.114
romanized form
form of a *term* (3.129) resulting from an operation whereby non-Latin writing systems are converted to the Latin alphabet

Note 1 to entry: Romanization is a specific form of transcription.

[SOURCE: ISO 12620:1999, A.2.1.12]

3.115
rule
statement governing conduct, procedure, conditions and relations

Note 1 to entry: Rules specify conditions that must be complied with. These may include relations among objects and their attributes.

Note 2 to entry: Rules are of a mandatory or conditional nature.

Note 3 to entry: In Open-edi, rules formally specify the commitment(s) and role(s) of the parties involved, and the expected behaviour(s) of the parties involved as seen by other parties involved in (electronic) business transactions. Such rules are applied to: (a) content of the information flows in the form of precise and computer-processable meaning, i.e. the semantics of data; and, (b) the order and behaviour of the information flows themselves.

Note 4 to entry: Rules shall be clear and explicit enough to be understood by all parties to a business transaction. Rules also shall be capable of being able to be specified using a using a Formal Description Technique(s) (FDTs).

EXAMPLE   A current and widely used FDT is "Unified Modelling Language (UML)".

[SOURCE: ISO/IEC 15944-2:2015, 3.101]

3.116
rulebase
pre-established *set* (3.123) of ru*les* (3.115) which interwork and which together form an autonomous whole

Note 1 to entry: One considers a rulebase to be to rules as database is to data.

[SOURCE: ISO/IEC 15944-2:2015, 3.102]

3.117
scenario attribute
formal specification of information, relevant to an *Open-edi scenario* (3.86) as a whole, which is neither specific to *roles* (3.112) nor to *Information Bundles* (3.56)

[SOURCE: ISO/IEC 14662:2010, 3.26]

3.118
scenario component
one of the three fundamental elements of a scenario, namely *role* (3.112), Info*rmation Bundle* (3.56), and *semantic component* (3.121)

[SOURCE: ISO/IEC 15944-2:2015, 3.104]

3.119
SC identifier
unique, linguistically neutral, *unambiguous* (3.136), referenceable identifier of a *Semantic Component* (3.121)

[SOURCE: ISO/IEC 15944-2:2015, 3.107]

3.120
seller
Person ([3.93](#)) who aims to hand over voluntarily or in response to a demand, a good, service and/or right to another *Person* and in return receives an acceptable equivalent value, usually in money, for the good, service and/or right provided

[SOURCE: ISO/IEC 15944-1:2023, 3.62]

3.121
Semantic Component
SC
unit of *recorded information* ([3.105](#)) unambiguously defined in the context of the *business* ([3.5](#)) goal of the *business transaction* ([3.8](#))

Note 1 to entry: A SC may be atomic or composed of other SCs.

[SOURCE: ISO/IEC 14662:2010, 3.27]

3.122
semantic identifier
SI
IT-interface identifier for a *semantic component* ([3.121](#)) or other semantic for which (1) the associated context, applicable *rules* ([3.115](#)) and/or possible uses as a semantic are predefined and structured and the *Source Authority* ([3.125](#)) for the applicable *rulebase* ([3.116](#)) is identified (as per Part 5); and (2) for which more than one or more *Human Interface Equivalents (HIEs)* ([3.50](#)) exist

Note 1 to entry: The identifier for a Semantic Component (SC), an Information Bundle (IB) and/or an ID Code for which one or more Human Interface Equivalents (HIEs) exist are considered to have the properties or behaviours of semantic identifiers.

[SOURCE: ISO/IEC 15944-5:2008, 3.136]

3.123
set
assembly of *objects* ([3.73](#)) or c*oncepts* ([3.24](#)) considered as a whole

[SOURCE: ISO/IEC 15944-7:2009, 3.13]

3.124
set of recorded information
SRI
recorded information ([3.105](#)) of an *organization* ([3.89](#)) or pu*blic administration* ([3.103](#)), which is under the control of the same and which is treated as a unit in its information life cycle

Note 1 to entry: An SRI can be a physical or digital document, a record, a file, etc., that can be read, perceived or heard by a person or computer system or similar device.

Note 2 to entry: An SRI is a unit of recorded information that is unambiguously defined in the context of the business goals of the organization, i.e., a semantic component.

Note 3 to entry: An SRI can be self-standing (atomic), or a SRI can consist of a bundling of two or more SRIs into another "new" SRI. Both types can exist simultaneously within the information management systems of an organization.

[SOURCE: ISO/IEC 15944-5:2008, 3.137]

3.125
Source Authority
SA
Person ([3.93](3.93)) recognized by other *Persons* as the authoritative source for a *set* ([3.123](3.123)) of c*onstraints* ([3.25](3.25))

Note 1 to entry: A Person as a Source Authority for internal constraints may be an individual, organization, or public administration.

Note 2 to entry: A Person as Source Authority for external constraints may be an organization or public administration.

EXAMPLE   In the field of air travel and transportation, IATA as a Source Authority, is an "organization," while ICAO as a Source Authority, is a "public administration".

Note 3 to entry: A Person as an individual shall not be a Source Authority for external constraints.

Note 4 to entry: Source Authorities are often the issuing authority for identifiers (or composite identifiers) for use in business transactions.

Note 5 to entry: A Source Authority can undertake the role of Registration Authority or have this role undertaken on its behalf by another Person.

Note 6 to entry: Where the sets of constraints of a Source Authority control a coded domain, the SA has the role of a coded domain Source Authority.

[SOURCE: ISO/IEC 15944-2:2015, 3.109]

3.126
special language
language for special purposes
language for specific purposes
LSP
natural language ([3.72](3.72)) used in communication between experts in a domain and characterized by the use of specific linguistic means of expression

Note 1 to entry: The specific linguistic means of expression always include domain-specific terminology and phraseology and also can cover stylistic or syntactic features.

[SOURCE: ISO 1087:2019, 3.1.9]

3.127
standard
documented agreement containing technical specifications or other precise criteria to be used consistently as *rules* ([3.115](3.115)), guidelines, or *definitions* ([3.38](3.38)) of c*haracteristics* ([3.12](3.12)), to ensure that materials, products, *processes* ([3.101](3.101)) and services are fit for their purpose

Note 1 to entry: This is the generic definition of "standard" of the ISO and IEC (and found in the ISO/IEC JTC1 Directives, Part 1, Section 2.5:1998). (See also ISO/IEC Guide 2: 1996 (1.7))

[SOURCE: ISO/IEC 15944-1:2023, 3.64]

3.128
symbol
designation ([3.39](3.39)) by means of letters, numerals, pictograms or any combination thereof

[SOURCE: ISO 5217:2017, 3.1.4.17, modified — Note 1 to entry removed.]

3.129
term
designation ([3.39](#)) that represents a general *concept* ([3.24](#)) by linguistic means

EXAMPLE "laser printer", "planet", "pacemaker", "chemical compound", "¾ time", "Influenza A virus", "oil painting".

Note 1 to entry: Terms may be partly or wholly verbal.

[SOURCE: ISO 1087:2019, 3.4.2]

3.130
text
data ([3.29](#)) in the form of *characters* ([3.11](#)), symb*ols* ([3.128](#)), words, phrases, paragraphs, sentences, tables, or other *character* arrangements, intended to convey a meaning and whose interpretation is essentially based upon the reader's knowledge of some *natural language* ([3.72](#)) or artificial language

EXAMPLE A business letter printed on paper or displayed on a screen.

[SOURCE: ISO/IEC 2382:2015, 2121273]

3.131
third party
Person ([3.93](#)) besides the two primarily concerned in a *business transaction* ([3.8](#)) who is agent of neither and who fulfils a specified *role* ([3.112](#)) or function as mutually agreed to by the two primary *Persons* or as a result of *external constraints* ([3.45](#))

Note 1 to entry: It is understood that more than two Persons can at times be primary parties in a business transaction.

[SOURCE: ISO/IEC 15944-1:2023, 3.65]

3.132
treaty
international agreement concluded between *jurisdictional domains* ([3.61](#)) in written form and governed by international law

Note 1 to entry: On the whole a treaty is concluded among UN member states.

Note 2 to entry: Treaties among UN member states when coming into force are required to be transmitted to the Secretariat of the United Nations for registration or filing or recording as the case may be and for publication. (See further Article 80 or the Charter of the UN)

Note 3 to entry: Treaties can also be entered into by jurisdictional domains other than UN member states, i.e., non-members such as international organizations and the rare sub-national units of federations which are constitutionally empowered to do so.

Note 4 to entry: A treaty can be embodied in a single instrument or in two or more related instruments and whatever it particular designations. However, each treaty is a single entity.

Note 5 to entry: Jurisdictional domains can make agreements which they do not mean to be legally binding for reasons of administrative convenience or expressions of political intent only, (e.g., as a Memorandum of Understanding (MOU)).

Note 6 to entry: Adapted from the Vienna Convention on the Law of Treaties, 1(a).

[SOURCE: ISO/IEC 15944-5:2008, 3.144]

3.133
truncated name
short form of a *name* ([3.71](#)) or p*ersona* ([3.94](#)) of a *Person* ([3.93](#)) resulting from the application of a rule-based *truncation* ([3.135](#)) proce*ss* ([3.101](#))

[SOURCE: ISO/IEC 15944-5:2008, 3.145]

3.134
truncated recognized name
TRN
truncated name (3.133), i.e., *persona* (3.94), of a *Person* (3.93) which has the properties of a *legally recognized name (LRN)* (3.64)

Note 1 to entry: Truncated recognized name(s) may be required for use in machine-readable travel documents, (e.g., passports or visas), identity tokens, drivers' licenses, medicare cards, etc.).

Note 2 to entry: The source of a truncated recognized name may be a legally recognized name.

[SOURCE: ISO/IEC 15944-5:2008, 3.146]

3.135
truncation
rule-based *process* (3.101), explicitly stated, for shortening an existing *name* (3.71) of an *entity* (3.43) to fit within a predefined maximum length (of *characters* (3.11))

Note 1 to entry: Truncation may be required for the use of names in IT systems, electronic data interchange (EDI), the use of labels in packaging, in the formation of a Person identity (Pi), etc.

[SOURCE: ISO/IEC 15944-5:2008, 3.147]

3.136
unambiguous
level of certainty and explicitness required in the completeness of the semantics of the *recorded information* (3.105) interchanged appropriate to the goal of a *business transaction* (3.8)

[SOURCE: ISO/IEC 15944-1:2023, 3.66]

3.137
version identifier
unique number assigned to identify a version of an *OeRI* (3.85)

Note 1 to entry: The default value = 1.0.

[SOURCE: ISO/IEC 15944-2:2015, 3.117]

3.138
vocabulary
terminological dictionary which contains *designations* (3.39) and d*efinitions* (3.38) for one or more specific subject fields

Note 1 to entry: The vocabulary may be monolingual, bilingual or multilingual.

[SOURCE: ISO 1087:2019, 3.7.5]

4 Abbreviated terms

BOV   Business Operational View

BTI   Business transaction identifier

cdRS   coded domain Registration Schema

cdSA   coded domain Source Authority

CV   controlled vocabulary

DMA   Decision Making Application

EDI	Electronic Data Interchange
FSV	Functional Service View
HIE	Human Interface Equivalent
IB	Information Bundle
ID	version identifier
LRL	legally recognized language
LRN	legally recognized name
FDT	Formal Description Technique
OeDT	Open-edi Description Technique
OeP	Open-edi Party
OeRA	Open-edi Registration Authority
OeRO	Open-edi Registration Organization
OeR	Open-edi Registry
OeRI	Open-edi Registry Item
OeS	Open-edi scenario
Pi	Person identity
RA	Registration Authority
RS	Registration Schema
SC	Semantic Component
SI	semantic identifier
SA	Source Authority
TRN	truncated recognized name

5 Fundamental principles governing coded domains

5.1 General

As a high-level generalization of business transactions among parties, Open-edi by its definition in this document incorporates the constraints imposed by international or national laws and regulations from various jurisdictional domains. Business transactions in practice shall fully comply with those laws and regulations. In order to achieve this goal, applications should implement all rules and guidelines specified in the ISO/IEC 15944 series. Among these, human interface equivalents (HIEs) shall be used to ensure semantic unambiguity internationally of the concepts when applying this document.

For a detailed description of the concept of "coded domain" conformant to Clause 3 definition, please see Annex C.

Rule 01:

For a coded domain to be considered as having the properties and behaviours of IT-enabled, it shall be able to support the Open-edi reference model and the characteristics of Open-edi.

As specified in ISO/IEC 14662:2010, Clause 5, the Open-edi Reference Model provides a reference framework for the identification, development, and coordination of Open-edi standards. This framework addresses two perspectives of a business transaction. One, the BOV, captures the business user aspects; and, the other, the FSV, captures the information technology aspects. A class of standards is associated with each view. They are respectively called BOV related standards and the FSV related standards.

There are a number of characteristics by which Open-edi is recognized and defined (see further ISO/IEC 15944-1:2023, Clause 5). These are:

a) actions based on following predefined and agreed upon rules;

b) exchanges of information among parties involve the making of commitments;

c) communications among the parties are automated;

d) parties control and maintain their states;

e) parties act autonomously;

f) multiple simultaneous transactions can be supported.

In order to support the above characteristics of Open-edi, the following four principles are fundamental to this document. They are:

a) a rule-based approach;

b) support commitment interchange;

c) IT-platform neutral; and,

d) separation of IT and human interface equivalencies for entries (members) of a coded domain.

The clauses which follow support these four key principles.

As stated in ISO/IEC 14662 Open-edi reference model and re-affirmed in ISO/IEC 15944-1:2023, Clause 5 "Characteristic of Open-edi", Open-edi business transactions shall be rule-based, with actions based on predefined rules. Both "rule" and "rulebase" are defined concepts. The definition and use of these two concepts is directly related to use of coded domains in an IT-enabled manner in the IT-systems of the parties to a business transaction.

Sets of predefined rulebases are of different types and exist at different levels in this document. Further, a whole set of rules as a rulebase can be used and referenced as a single (business) object. Examples of rulebases and associated guidelines include:

a) those for the specification of a coded domain;

b) those supporting IT-enablement of a coded domain;

c) those for the assignment of ID codes;

d) those for each entry in a coded domain for the IT-interface and HIEs;

e) those for the assignment of unique and unambiguous identifiers for both (1) a coded domain; and, (2) each entry or member of a coded domain; and,

f) those for mandatory and conditional data elements, (e.g., "columns") for each member, i.e., "row", as an entry in a coded domain.

5.2   Need to be able to use coded domains in support of commitment exchange

Open-edi is a class of electronic information flows which involves the interworking of predefined types and states of commitments of the parties concerned. These involve tasks or functions to be carried out, obligations to be entered into, etc. In Open-edi, all commitments shall be stated clearly and unambiguously and be understood by all parties concerned. Commitments are of several types and exist at several levels. The obligations arising from commitments can be fulfilled either directly by the Persons making the commitments or through agents acting on their behalf.

Use one or more coded domains with respect to identification of ID codes and their human interface equivalents can be any combination of:

a)   qualified Persons as parties to that business transaction;

b)   role(s) of each of the parties;

c)   referenced scenario component or attribute (especially semantic components); and/or

d)   any scenario component or scenario attribute.

In this context, a coded domain in the form of a catalogue, a credit card holder[4], country code, an IATA code, etc., contains a finite number of timely, accurate and up-to-date entries, each of which is identified by a unique ID code within that coded domain (which in turn has its own coded domain identifier).

These unambiguous ID codes also serve as unambiguous "short hand" from a human interface perspective for the commitments made among the participating parties and are also used among their IT systems. It is therefore vital that for any standard of a "codes representing X" nature used in support of commitment exchange that the semantics of the values stated in an exchange code set be unambiguous from both IT-interoperability and semantic interoperability perspectives.

Rule 02:

To support commitment exchange, coded domains shall be recognized (within a business transaction) and their use agreed upon by Person(s) making the commitment(s) and Person(s) receiving the commitment.

Rule 03:

A coded domain used in commitment exchange shall be explicitly identified, by its unique and unambiguous international identifier or an identifier recognized by Persons involved in commitment exchange.

Guideline 03G1:

The identifier that contains the version ID of the coded domain, usually in the form of a standard, means only that version of the coded domain is accepted by participating parties, while the identifier that has no version ID means that all the future versions of the coded domain will also accepted by participating parties, except where other business agreements do not allow so.

Rule 04:

The unambiguous international identifier for a coded domain (or one that is mutually recognized by the parties involved in commitment exchange) shall be publicly available along with information on its Source Authority (SA) and the coded domain Registration Schema (cdRS).

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4)   For example, the issuance of credit card, debit cards, etc., is based on the ISO 7812 standard. In the context of this document, it is a coded domain which is being maintained in a very dynamic matter with the ID codes for each member being issued in accordance with the registration schema of ISO 7812. Further, due to the limited "physical" space on an identification card, the names of the members (e.g., individuals, organizations, etc), truncation is often applied with the name on the issued card being a "truncated name", often with the added attribute of a qualified "truncated recognized name (TRN).

Guideline 04G1:

ISO/IEC 15944-10 conformant coded domains should be registered in accordance with ISO/IEC 15944-2.

Rule 05:

Each member of a coded domain shall have a unique ID code with each ID code having at the minimum one (or more) Human Interface Equivalents (HIEs).

Rule 06:

Persons shall use the level of semantic unambiguity contained in coded domain Table B.1 to make decision on whether or not to use the coded domain in support of commitment exchange in their business transactions.

Semantic unambiguity is achieved in two ways; namely,

a) through the specification of the rules and attributes of the coded domain at the coded domain level; and,

b) through additional specification, if required, at the entry level, i.e., for a member (or a set of members) of a coded domain as a "sub-object class", as so identified via a "semantic qualifier" (See Annex H).

Rule 07:

Individual accessibility shall be supported by a coded domain whenever possible.

The examples of this rule can be seen further in ISO/IEC 20016-1.

Guideline 07G1:

It is considered good business practices of having the features of individual accessibility being capable of being supported in a coded domain.

5.3 Coded domains based on clear, predefined rules, i.e. "rule-based"

5.3.1 Requirements of rule-based coded domains as a whole

Key characteristic of Open-edi include that it involves the making of commitments among the parties involved, is based on clear, and predefined rules, i.e., is rule-based, and that parties control and maintain their states.

Rule 08:

The rules governing the establishments, operation, management and use of a coded domain shall be stated explicitly and include:

1) **those pertaining to the nature, context, purpose and scope of the Source Authority of the "set of codes representing X";**

This includes stating explicitly whether or not the members of a coded domain are:

a) of the nature of a simple list of members, i.e., all members of the "club" are equal;

b) there are different sub-types of membership (e.g. some members having more rights or privileges than others);

c) the members of the code set being categorized or classified based on a taxonomy or classification schema established by the Source Authority (or reference by the Source Authority).

2) **those pertaining to the qualifications and process by which the Source Authority add a specified entity as a member of a coded domain;**

3) **those pertaining to the assignment of a unique (permanent) ID code for each member of a coded domain, including the specification of semantics which may be incorporated in the assignment of the ID codes for members of a coded domain. These include those of the specification of a direct link between any classification schema of the Source Authority and the assignment of the ID codes for each member of the coded domain;**

    NOTE   These can be in the form of the use of a block-numeric system for assignment of numeric codes (often linked to use of a classification system), the use of alpha codes, the use of a semantic qualifier, etc.

4) **those pertaining to the specification of the status of a member of a coded domain where this is important from a semantic and commitment exchange nature;**

    Where a coded domain is of this nature and intended to be used by individuals as possible parties to a business transaction public policy requirements likely apply, i.e. those of a consumer protection, privacy protection, or individual accessibility in nature.

5) **those pertaining to state change management of any data element in the SRI for a member of a coded domain, including changes in status of a member of a coded domain, such as cessation of a specified entity as a member of the coded domain, dynamic and/or version release control for availability, and access to the "current" coded domain; and,**

6) **where applicable, those pertaining to the need to add a semantic qualifier(s) (e.g. in order to convert an existing "sets of codes representing X", into a coded domain.**

Many of the most commonly used "sets of codes representing X" for reference and use in business transactions are publicly available either in their entirety or the short from only (e.g. INCOTERMs). The reasons here include the fact that:

1) the source for many of these code sets is the United Nations (including its administrative units and agencies). The policy of the UN is to make its information, including code sets, publicly and freely available as well as in the official language of the UN;

2) of the three international standards organizations, the ITU makes all its "Recommendations" publicly available, ISO has made many of its standards freely available, including those of the nature of "sets of codes representing X", and the IEC has also made some of of its standard freely available and/or provide free access to individual entries;

3) many international "treaty" organizations (e.g. WCO, WIPO, ICAO, IPU, WTO, etc.) make publicly available their "sets of codes representing X";

4) many private (for profit or not-for profit) internationally recognized organizations make publicly available in whole or in part their "sets of codes representing X" (e.g. IATA, ICC, IMO, etc.);

5) many regional and national organizations, as well as sector-specific organizations, manage and maintain "sets of codes representing X" for their members but also make them publicly available;

6) most jurisdictional domains, at whatever level or nature, have external constraints which include the issuance and maintenance of "sets of codes representing X" to be applied and used depending on the nature of the good, service and/or, right of the goal of the business transaction

Rule 09:

Rules pertaining to access and use of a "set of codes representing X" of the Source Authority shall be specified, including those for non-members where applicable.

Guideline 09G1:

Where the original "set of codes representing X" is freely available, the conversion of such a code set into an ISO/IEC 15944-10 "coded domain" should also be made freely available.

5.3.2 Rule-base for IT enablement of a coded domain

Another key characteristic of Open-edi includes that communications of SRIs among parties, in the form of information bundles and their semantic components is automated. In addition, multiple simultaneous transactions need to be able to be supported.

Rule 10:

Rules relevant to be able to support IT-enablement of a coded domain shall be specified.

Guideline 10G1:

The use of a matrix, approach is recommended to the specification of a coded domain.

Here it is noted that the coded domains presented or referenced in this document are of the nature which supports both:

a) an IT enabled approach; and,

b) one which is IT-platform neutral.

5.3.3 Rule-base for structuring a coded domain

Based on the overall purpose and scope of this document, as well as the Rules stated in 5.1 to 5.3.2, as well as the best practices to convert existing "code sets representing X" from "non-structural" documents into IT-platform neutral accessible and referenceable "structures", this document uses a very systematic approach for structuring coded domains.

In essence, and at its most primitive level, a data base is a two-dimensional matrix consisting of rows and columns, the intersection of which is commonly known as "cells". In addition, one recognizes that one can view the structure and rules governing a database either as one which is viewed as:

a) a "column-based", i.e., an entry is based a combination of "columns" forming a "row" which is based on a financial accounting approach; or,

b) a "row-based", i.e., an entry is based on each entry have a unique ID for the row with the row being based on a minimum number of mandatory fields (each which can consist of one or more data elements) and a field being capable of being designated as repeatable or not based on applicable rules.

A primary example here of a non-repeatable field would be the set of data elements comprising the IT-interface (including the use of semantic qualifiers where required).

Similarly, a primary example of a repeatable field would be the mandatory (and conditional) data elements comprising a "Human Interface Equivalent' (HIE). This means that the inclusion and representation of HIEs of whatever nature for each unique ID code for a member in a coded domain is of the nature of a "repeatable field" consisting of one or more data elements.

The default convention and approach to the structuring of a coded domain, including the specification of applicable rules, is that it is "row-based". This is because each row represents an entity as a qualified member of the coded domain which is identified via its unique ID code as a member of that coded domain as assigned by its Source Authority.

Rule 11:

The basic structure for a coded domain is that of a database (at its most primitive level[5]) which is "row-based', consisting of specified fields which:

1) **may contain one or more data elements;**

2) **may have a data element which may be of the nature of a "field" (or data element group) consisting of two or more data elements;**

3) **for which the data element field itself may be repeatable, and/or, one or more of the data elements in the field may be repeatable.**

Rule 12:

Each "row" in a coded domain shall represent a member of that coded domain and shall be assigned its own unique ID code within that coded domain.

This can also include reserving the use of particular ID codes for specific uses (or meanings). Examples include the use of "000 – Other", "099 – Not applicable", a range 900-999 for private use, etc.

Rule 13:

The properties and behaviours of each member of a coded domain shall be specified and explicitly stated, i.e. from an object class methodology perspective (including the use of a semantic qualifier needed to be introduced to convert a "set of codes representing X" into an ISO/IEC 15944-10 compliant coded domain).

5.4   Separation of the IT interface from human interface requirements

It is recognized that a key aspects to the specification of rules and associated data element pertaining to a member of a coded domain is the separation of their IT interface from human interface requirements. From (a) an object class methodology perspective, and; b) an Open-edi and commitment exchange requirements perspective in support of business transactions, it is recognized that:

a) each member of a coded domain shall have a unique ID code, i.e., most often in the form of a composite identifier, in the from of an IT-interface equivalent. This may require including the use of a semantic qualifier, as required; and,

b) that for each unique IT-interface equivalent, i.e., as a unique unambiguous composite identifier, there will be one of more HIEs.

Rule 14:

A coded domain shall have both: (1) an single IT-interface component, which supports unambiguous identification, referencing, re-useability and computational integrity; and, (2) one or more Human Interface Equivalences (HIEs) component(s) which support semantic unambiguity as well as culture adaptability characteristics.

Rule 15:

In structuring a coded domain, the IT interface in a coded domain needs to be separated from Human Interface Equivalences.

Guideline 15G1:

More than one Human Interface Equivalence (HIE) may possibly exist in a coded domain for each entry, and these HIEs are presented using semantics which are understandable by humans.

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5)   Use of "database" here and elsewhere is that in its generic and primitive use. It is independent of various programming languages which can be used to build and maintain a "coded domain". Examples include SQL, XML, MS Excel, etc.

By their nature, HIEs do not support computational integrity as required by electronic business transactions. They support semantic interoperability.

An example is ISO 3166-1 which for each entry has three different IT-interface codes. The United Nations 3-digit numeric code is deemed to be the pivot code ID as it does not change, the 2-alpha and the 3-alpha codes do change when a jurisdictional domain decided to change its names and thus the associated alpha codes change also. (See further ISO/IEC 15944-5:2008, Annex E)

Guideline 15G2:

More than one IT interface code can exist in a coded domain for a single entry, and where this is so the pivot ID code among them serves as the most stable IT interface.

Multiple ID codes for a single entity as member of coded domain can form one single IT interface component for that member. In such cases, the pivot ID code shall be identified.

As specified by ISO/IEC 14662, Open-edi business transactions are viewed from both business aspects (BOV) and Information technology aspects (FSV). A coded domain that supports Open-edi business transactions needs to support both BOV and FSV aspects of Open-edi.

From an Open-edi FSV requirements perspective, including IT-enabled versions of sets of "codes representing X" nature, it is important that a standard be able to support computational integrity if it is to be used in electronic business transactions where the use of such standards form an essential component of commitment exchange. The IT-interface of a coded domain provides computational integrity capabilities of business transactions.

From an Open-edi BOV requirements perspective, Human Interface Equivalences are needed to support cultural adaptability, which is the special characteristics of natural languages and the commonly accepted rules for their use (especially in written form) which are particular to a society or geographic area. Often these are requirements of the nature of external constraints of jurisdictional domains. Examples are: national characters and associated elements (such as hyphens, dashes, and punctuation marks), correct transformation of characters, dates and measures, sorting and searching rules, coding of national entities (such as country and currency codes), presentation of telephone numbers, and keyboard layouts.

5.5 Specification and representation of coded domains in an IT-platform neutral[6) manner

The primary reason that this document (as well as the ISO/IEC 15944 series) take an IT-neutral approach is that business operational view (BOV) requirements are rather stable when compared to (rapid) changes in IT functional support view (FSV) based services. It is therefore important that this BOV based standard for the identification of coded domains is also done in an IT-neutral manner.

On the whole, coded domains are specified, represented and maintained as tables in matrix form. Here the purpose and use of each column in the table is specified and rows are created for each permitted member of the coded domain. The basic set of columns is of two types; namely:

a)   those columns pertaining to the "IT-interface" which basically include the ID of the coded domain and the ID code for each entry. As such, this IT-interface, being composed of ID codes, is language neutral and IT-enabled;

b)   those columns which contain the human interface equivalents of a linguistic nature of the semantics. For a multilingual example of a coded domain and one which supports both cultural adaptability and individual accessibility, see ISO/IEC 5218:2022, Annex A. An extract of this document is given in Annex F as a case study.

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6)   By "IT-neutral", here and elsewhere, means that the "tables" or matrices are not dependent on a particular IT platform for their implementation.

In conclusion, it is noted that any coded domain, which is captured as tables in matrix form can easily be rendered into specific syntax formats, be this a database (SQL), a document mark-up language (e.g., XML), etc. See F.3 for an example of a multilingual coded domain in matrix form having an XML equivalent representation.

Rule 16:

Each entry of an instance of an entity as a member in a coded domain, i.e., as a row in a coded domain, shall (a) be assigned a unique ID code, i.e., in the form of a composite identifier in an IT-neutral manner; and, (b) separate the IT-interface and human interface equivalent(s) HIE(s) in that row.

See Annex D for an example of IT-platform neutral coded domain.

6   Business operational view identification and description of coded domains

6.1   Construct of coded domain

An ISO/IEC 15944-10:2023-compliant coded domain is composed of rules governing the coded domain as a whole (see 5.3) which in summary state that a coded domain should be viewed as an "object class" with all of its members identified with explicit boundaries and meaning whose properties and behaviours follow the same set of rules.

This means that each coded domain shall have:

a)   a unique identifier for that coded domain, a unique and composite identifier, for each member of a coded domain, description, a rule-base, and a table of unique ID-codes; and,

b)   each entry in an ISO/IEC 15944-10 compliant coded domain should be able to support one or more HIEs.

This is illustrated in Table 1.

Table 1 — Construct of a coded domain

Identification of coded domain							
Registration Scheme of coded domain							
Type of semantic unambiguity							
Rule base of code domain							
Rule 1							
Rule 2							
......							
Rule n							
Table of ID codes and HIEs							
ID	ID	......	ID n	HIE 1	HIE 2	......	HIE n

6.1.1   Identification of coded domains

Rule 17:

Computational integrity combined with Open-edi based electronic business transactions, from a global/world-wide requirements perspective, requires the use of unique, linguistically neutral and (globally) unique identifiers for both the identifier of a coded domain as well as for each of the codes representing permitted values/instance of members within a coded domain, i.e., each ID code.

Use of unique, linguistically neutral and unambiguous identifiers for both the coded domain and the codes representing entities as members of a coded domain facilitates electronic data interchange and reference-ability among information systems as well as re-useability of the data. It also: (1) facilitates data integrity and data quality at the human interface; and, (2) ensures that the human interface equivalent can be tailored to the linguistic needs of human users and/or that of applicable jurisdictional domains.

Rule 18:

The identification of coded domain shall include the identification of the code domain Source Authority, as well as the coded domain itself.

The coded domain Source Authority is a Person from an Open-edi perspective. The identification of Person is specified in ISO/IEC 15944-1:2023,6.2 and Annex E).

Rule 19:

The Identification of the entries in a coded domain itself, i.e. the ID code assigned to each row, is subject to the identification scheme specified by the coded domain Source Authority (cdSA).

The identifier for a coded domain and that for the associated cdSA is most often of the nature of composite identifier, including at the minimum (1) the identifier for the cdSA itself; and, (2) a separate unique identifier for each coded domain of that csSA.

Coded domains vary by different jurisdictions and business environments. It is not possible to specify one unique identification scheme for all coded domains. Most of the coded domains are standards of "codes representing X" nature. The Person responsible for the standards of a jurisdiction will specify the official identification scheme of the standards in that jurisdiction, i.e. standard numbering system.

Rule 20:

The coded domain Source Authority Identification Scheme shall include the identification of sub-coded domains.

Quite often a "set of codes representing x" has a coded domain which in turn consists of several distinct sub-coded domains as object classes. That is not all the members listed in the "set of codes representing x" share the same properties and/or behaviours. This means that in order to ensure IT-interoperability and computational integrity one needs to identify and add qualifying codes.

For some practical examples, see further Annex H.

Rule 21:

The coded domain Source Authority Identification Scheme shall include the identification of versions of coded domain or sub-coded domains.

The use of a coded domain is changing by business requirements and external constraints of the jurisdictional domain(s). It is the general practice of the Source Authority that the coded domain is under continuous maintenance and a versioning scheme specified.

Guideline 21G1:

Each code shall have its own unique ID. It may already have this or be assigned when it is registered as a business object using ISO/IEC 15944-2.

6.1.2   Levels of semantic unambiguity

Semantic unambiguity is very important in the context of making commitments. The levels of semantic unambiguity required to be supported in an ISO/IEC 15944-10-compliant code domain are directly related to:

a) those which are prescribed by the external constraints of the jurisdictional domain applicable to the goal of the business transaction, i.e. the nature of the good, service, and/or, right which is the goal of the business transaction; and/or

b) those which are prescribed by public policy requirements which are prescribed by the jurisdictional domain where an individual is the buyer in a business transaction.

Based on the *UN Convention of the Rights of Persons with Disabilities* there are currently four primitive levels of semantic unambiguity. (See further Annex B)

The current version of the standard mainly focuses on "What" but not "How". Thus, Table 2 provides levels of semantics unambiguity that are required to support commitment exchange directly. However, further requirements do exist, that how to achieve level 1, to 3, in creation of coded domains or transform existing "codes representing X" nature standard.

One possible way to obtain the ability of deciding on the levels of semantic unambiguity for coded domain when creating, or transforming, is to have one semantic qualifier to coded domain or to entries in it, or both(through inheriting). The semantic qualifier shall contain any semantic information necessary to support commitment exchange. One important part of this semantic qualifier are the levels of international regulatory regimes as specified in ISO/IEC 15944-5:2008, Annex H.

NOTE   Concepts like "levels of domestic regulatory regimes" need further research by hopefully no standardized result since the administrative systems vary worldwide.

Table 2 captures the above requirements in matrix form. (This table is based on in ISO/IEC 20016-1:2014, Clause 7.)

Table 2 — Level of semantic unambiguity based on the UN Convention of rights of persons with disabilities (in support of a collaboration space pertaining to commitment exchange)

Semantic Collaboration Space (SCS)		
Levels of semantic unambiguity	Internal constraints	External constraints
Level 0 – Not applicable	X	---
Level 1 – Informational	---	X
Level 2 – Decision-taking	---	X
Level 3 – Commitment-making	---	X

6.1.3   Rule-base of a coded domain

The rulebase of a coded domain is the set of rules governing the coded domain, those both existing and potential members of the coded domain are conformant to. The rules, while entities that are out of the scope of the coded domain are excluded.

Rule 22:

The rulebase of a coded domain shall include rules for code structure, character set and values of ID codes.

Guideline 22G1:

The rule-base of a coded domain shall be IT-enabled, i.e. described by an Open-edi descriptive technique. Upon approval of a new coded domain member, the ID codes of it may be able to be automatically generated by the rule-base.

6.1.4 Table of ID codes and HIEs

In the coded domain, the table that contains the ID codes and associated entities that are described by the multiple HIEs are the semantically rich part. The table contains all the entities of an object class that are within the scope of the coded domain. Each entity with the coded domain shall have one or more ID codes (one pivot ID code) and multiple HIEs (at least one HIE).

Rule 23:

The HIEs within a coded domain shall have an attribute of language code.

6.2 Characteristics of coded domains

6.2.1 "for free" or "for a fee" coded domains

Many sets of codes representing X are made available "for free", either in their complete form or in their short forms by the Source Authority. For example, ISO makes some of its standards freely available[7]. The ITU makes all is standards, i.e. "specification", freely available. The UN and its agencies make their documents, including "sets of codes representing X" freely available. Other internationally recognized regulatory regimes such as the WCO, GATT, ICC, etc. also make their sets of "codes representing X.." freely available.

At the same time there are many ISO and IEC standards which are available only "for a fee". It is a recognized practice of international (or national) organizations, whether organized on a for-profit or not-for-profit bases, to make their "sets of codes representing X.." available only for-a fee, either as part of membership services or for direct sale to the outside market.

In addition, public administrations (at whatever level of jurisdictional domain), who are the Source Authority for set(s) of Codes representing X make such information available for free or charge a fee.

The approach taken in this document is that the application of it to a set of "codes representing X," i.e., to convert it into an ISO/IEC 15944-10 conformant coded domain. It is independent of the "for free" or "for a fee".

Rule 24:

Where the set of "Codes representing X…" is available "for-free", then the resulting ISO/IEC 15944-10 conformant coded domain(s) shall also be made available for free.

Rule 25:

Where the set of "Codes representing X.." is a available "for-a-fee", then the Source Authority is free to decide whether or not ISO/IEC 15944-10 conformant coded domains based on that "Code set representing X…" is to be made available for free or for a fee.

For example, the short form of the INCOTERM of the ICC is available for free on their website and thus the related coded domain could be made freely available also. The (very) detailed terms and conditions of the INCOTERMS are available on a for fee basis. Also, ISO makes many standards freely available. All the ITU international standards are also freely available.

6.2.2 Exhaustiveness of coded domains

Basically, a coded domain is either "exhaustive" or it is not. A coded domain which is exhaustive is one where the set of ID codes of members of that coded domain at any and all times is "complete", irrespective of the dynamics of updating of the coded domain. (e.g., that of valid ID codes for entities as members). Three existing standards are examples of an exhaustive coded domain. They are:

a)   ISO/IEC 6523 series;

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7)   See further https://standards.iso.org/ittf/PubliclyAvailableStandards/ for ISO publicly available standards.

b) ISO/IEC 7812 series, (e.g. for credits, debit, affinity, etc, cards); and

c) ISO/IEC 7501 series (e.g. for passports).

Although these standards are maintained in the form of "dynamic databases", i.e., they are being updated and maintained on a real-time 24/7 basis which multiple changes, they are considered to be "exhaustive".

At the same time, it is recognised that there are also code sets and thus potential coded domains for which the entries and their respective ID codes are non-exhaustive, i.e., where the Coded domain includes an ID code "00" (or "000") for "Others". This usually indicates that the Source Authority for the code set (or its ISO/IEC 15944-10 compliant equivalent) recognizes that users of the coded domain may have entities to be registered which do not (yet) match any of the choices provided for. For determining whether the membership in a coded domain is exhaustive or non-exhaustive see further Annex G..

Rule 26:

A Source Authority shall state whether or not the set of entities listed and registered as members of its code set and thus members of its equivalent coded domain is exhaustive or not.

It is up to a Source Authority to decide whether a coded domain is exhaustive or not. For example, ISO/IEC 5218 is deemed to be exhaustive while a coded domain that specifies the ID codes of allowing for others is non-exhaustive.

Basically, all the entries in a coded domain are either 1) exhaustive; or, 2) non-exhaustive.

Rule 27:

One shall specify whether or not the set of ID codes for the members of a coded domain is (1) exhaustive; or (2) non-exhaustive.

Guideline 27G1:

When (1) a "set of codes representing X" (code set X) or a coded domain allows for user extensions and (2) sets aside a range(s) of reserved ID codes in support of the same, the Source Authority (SA) for the code set should provide for the registration, or at the minimum support the posting, of the use of such ID codes as user extensions.

Rule 28:

When a code set X or coded domain is non-exhaustive in nature and it is recognized that additional entries and additional ID codes assigned may be added (based on established common and frequent usage), provision shall be made for the same through the use of the default code "00 Other"

NOTE   See further Annex G.

6.2.3   Semantic granularity

The concept of semantic granularity pertains to the level of certainty, i.e., unambiguousness, of an entry in a coded domain to be able to support the commitments being made in the business transaction for which the coded domain is being referenced in support of a semantic component. The need for preciseness and clarity of the use of a semantic component, i.e. its semantic granularity via a referenced coded domain, in turn is dependent of the nature of:

a) the goal of the business transaction; and,

b) the external constraints of the applicable jurisdictional domain(s).

A key aspect of semantic interoperability among parties to a business transaction is agreement on the level of certainty and explicitness required, i.e. how "unambiguous" does one need to be. As such, a key success in the use of standards is the degree to which ambiguities in semantics of data and metadata

can be removed. A major characteristic of cost-effective and efficient interchange of data among autonomous Persons with their heterogeneous information systems is paying attention to details. This need for preciseness in semantics known as "granularity" is not absolute but relates to the goals of the business transaction. The higher the degree of user requirements for granularity, the greater the need for precision in the semantics of the information bundles interchanged and thus of coded domains referenced.

Practical experience has demonstrated that users have metadata and semantic component management and interchange requirements at differing levels of granularity. Often standards development suffers when users and suppliers fail to recognize that difficulties in reaching consensus are not of the nature of common requirements but rather that of accommodations which shall be made for such standards to be able to interchange data at various levels of certainty or unambiguousness, i.e., levels of granularity.

The level of semantic granularity relies in the "object class", and "objects" specified by the coded domain. In many cases of business requirements, the "object" shall be further defined as an "object class" and a set of objects shall be specified and with their associated ID codes assigned. Thus a more granulized semantics of coded domains achieved.

The level of semantic granularity shall be defined by the coded domain Source Authority. The rules for the structure of the ID-codes are contained in the rule-base of the coded domain.

6.2.4 Openness of coded domains

Rule 29:

Open or not is required by the internal business needs or external constraints of the Source Authority and the Source Authority shall state explicitly the openness of the coded domain.

ID code provides IT interface of a coded domain. It is based on the Source Authority's decision that this IT interface shall be exposed to a certain scope of Persons, based on the internal requirements or external constraints that apply to the coded domain. For example, in some manufacture corporation, classification and coding specification for machine parts is regarded as a commercial confidential issue and is protected by the IPR law. There are two types of "openness" of ID codes in a coded domain:

a) Freely available, the ID code is freely available to public.

b) Limited openness, the ID code is free under conditions of agreements between users and Source Authority of the coded domain, either by payment, or by the restricted participation of the business activities intended by the coded domain.

Guideline 29G1:

Exhaustiveness and openness of coded domain are closely related. Very often, a non-exhaustive coded domain provides a search service of the ID codes and entities identified, possibly in an IT enabled manner. If the search service is freely available, then the coded domain can be regarded as open.

7 Rules governing rule-base of coded domains

7.1 General

A key aspect of coded domains is that they are based on rules which are pre-defined and mutually agreed to. Users of such coded domains, by referencing a mutually agreed coded domain in a business transaction, adopt/inherit the rules set of the coded domain referenced. Rules are intended to capture as unambiguously and clearly as possible the precise criteria and agreed to common business operational requirements. These rules also serve as a common set of understanding bridging the varied perspectives of the commercial framework, the legal framework, the information technology framework, standardizers, users, etc.

Coded domains are developed by Source Authorities for use by their members and/or for a particular domain of application. It is very common that a particular coded domains used by diverse sets of users having different perspectives but similar needs. Difficulties arise when a coded domain developed for a particular use by a Source Authority in a specified domain is used by other users in other domains including for purposes for which they were not intended.

A key element of IT-enabled standards of a "codes representing X" nature is that (when transformed into ISO/IEC 15944 conformant coded domains) that such coded domains are based on rules which are both clearly defined and explicitly stated. It is recognized that certain types of rules may not be able to be described or specified using Formal Descriptive Techniques (FDTs).

Rule 30:

Rule-base for a coded domain as provided by the Coded Domain Source Authority (cdSA) shall be explicitly stated or exposed to participating parties to an Open-edi business transaction, at the stage of adoption of the coded domain.

Guideline 30G1:

Coded domains are usually "code representing X" standards. These are often international standards, national standards or standards developed by industry standard organizations. Most of these standards have a rule-base incorporated in the standards accompanying the code set.

Guideline 30G2:

It is the common practice that in business transactions, coded domain of nature of international or national standards has the rules that can be easily agreed to by participating parties to Open-edi transaction, since they are based on consensus process.

Electronic business transactions based on Open-edi standards require the use of clear and pre-defined rules, principles and guidelines. These rules formally specify the role(s) of the parties involved and the expected behaviour(s) of the parties as seen by the other parties when engaging in Open-edi based business transactions. Open-edi rules are applied to:

a)   content of information flows; and,

b)   the order and behaviour of information flows themselves.

The combination of both of these provides a complete specification of the relationships among the parties since it requires them to achieve a common understanding of the semantic understanding of the information interchanged.

A coded domain is a domain for which the boundaries are defined and explicitly stated as a rule-base of a coded domain Source Authority (cdSA). As a semantic component in Open-edi transaction, the code domain is used for the semantic understanding of the information interchange, and the rules in the rule-base for a coded domain are referenced by or incorporated in the predefined rules, principles and guidelines of electronic business transactions.

Guideline 30G3:

Acceptance of the rule-base of a coded domain means the agreement of participating parties agrees the changing of members of the coded domain that are conformant to the rules, either changes provided by the Coded Domain Source Authority or user extensions provided by the participating parties.

This document focuses on facilitating and ensuring required unambiguity and semantic completeness of the content of information flows where such contents is based on the use of permitted values forming part of well-formed and rule-based coded domains derived from existing standards of a "codes representing X" nature. Many of these standards maintained by a MA and their entries are in the registration process of a RA. (See further ISO/IEC Directives, Part 1, Clause 2.11, and Clause 2.12.) New business requirements can arise in the business transactions, the members in a coded domain may not meet the requirements of the changed or new scenario. The parties can apply to the Coded Domain Source Authority about the new requirements, or make user extensions.

7.2 Specification of a boundary of a coded domain and inclusion of its members

Whether or not a real world entity is identified as an accepted/recognized member of a coded domain is determined by the rule-base of the Source Authority.

The Person(s) comprising a Source Authority are required to explicitly and formally state as precise criteria the business operational rules, including legal requirements, if any, governing the membership of its coded value domain(s). Such a rule-base of a Source Authority is deemed to be pre-defined and mutually agreed to by the Person(s) comprising the Source Authority. Included should be the agreed upon common business operational practices and related functional requirements.

Rule 31:

Rules governing the condition for inclusion of member to a coded domain are of mandatory nature and shall be specified.

Rule 32:

Rule governing the procedure(s) and role(s) of Person(s) for the maintenance of a coded domain are of mandatory nature and shall be specified.

Guideline 32G1:

Rules governing membership of a coded domain can be mandatory, conditional or optional. The "mandatory" rules are required to be fully complied with; "conditional" rules are required to be complied at a limited number of specific conditions; the "optional" rules are required to be complied according to the arbitrary decision of Persons irrespective of any conditions.

Coded domains are mostly in the form of a matrix of "codes representing X" and is consists of columns that are attributes to real world entities. Rules comprising rule-base of a coded domain are operational requirements of conducts and procedures for maintenance of the coded domain by responsible Persons, and technical specification of attributes to the members of the coded domain. These rules can be mandatory, conditional, or optional.

Rule 33:

Rules governing the membership of the coded domain shall be able to be specified by a Formal Description Technique (FDT).

As the boundary of a coded domain, the rule-base which contains rules for its membership forms an inseparable component of the coded domain. To support Open-edi transactions, the coded domain needs to be IT-enabled, including the rules.

The IT-enablement of a coded domain provides a form that can be processed by computer, e.g. the matrix form contains entries and columns are in a SQL database format, that using XML, MsWord Excel,

and similar programming or mark-up languages. At the same time, parties to Open-edi transactions maintain their state and act autonomous, according to their business needs and external constraints, which are ever-changing in the real business world. The coded-domain which are a coding representing real world entities is dynamically maintained by Persons to incorporate these business needs and constraints, in compliance with the rules that governs the membership of the coded domain. The rules are a mandatory part of IT-enablement of the coded domain to support real world Open-edi transactions.

7.3   Specification of exclusionary rules for a coded domain

Rule 34:

Exclusionary rules for the membership of a coded domain, if any, shall be stated explicitly to the parties participating in an Open-edi transaction.

Guideline 34G1:

It is more efficient and unambiguous to specify what is excluded than to state what the entities which may be included.

It is a usual practice for some "codes representing X" standard to state explicitly that some of the entities shall be excluded. For example, in ISO 3166-1 not all the entities listed as members are "countries" or in ISO 4217 not all the entities listed as members are "currencies" (some are "funds". (See further Annex H)

7.4   Source(s) of rule-base governing a coded domain

Rule 35:

Rules comprising the rule-base governing a coded domain shall be specified by the Source Authority.

Guideline 35G1:

These rules could be based on the internal business requirements or external constraints of the Source Authority.

The following requirements generally occur as specified by ISO/IEC TR 9789:

a)   identification

b)   classification

c)   key to further information

In other words, the purpose(s) for a coded domain needs to be unambiguous Identification of information or business entities for the purpose of referencing or indexing, for information service efficiency, very often in combination with a classification scheme of information, and for management or statistical purpose.

These purposes guiding the rules for a coded domain exists independent of the requirements of IT implementation of the Person (For example, library classification and coding before the e-Library). However, application of these coded domains in an IT implementation has added efficiency and quality to the FSV aspects of Open-edi.

8   Rules for management of ID codes in coded domains

8.1   Overview

A coded domain may be adapted from an existing "set of codes representing X" nature standard and may also be created directly according to rules specified in this document. In various applications, the business objects, and knowledge, which are linked to the HIEs of the coded domain, are changing due to

business and technological requirements. For this reason, the IDs and HIEs need timely maintenance to capture business semantics.

In the creation and management of coded domains, the following issues shall be considered:

a) the classification or enumeration of HIEs,

b) the assignment of IDs,

c) the addition of new entries, i.e. new IDs and HIEs,

d) the state change of existing IDs and HIEs into "invalid",

e) a change in the HIEs with no change of IDs,

f) a change in the ID code of a member with no change of HIEs.

8.2   Generic rules for the management of a coded domain

Rule 36:

The requirements of ISO/IEC 15944-2 apply to the management of coded domains with respect to their registration.

Rule 37:

The description of a coded domain shall include the attributes as specified in Annex A.

It is important that the assignment of ID codes to members of a coded domain by the coded domain Source Authority (cdSA) be based on a systematic and rule-based approach. While it is recognized that it is the prerogative of a cdSA to establish the rules and procedures for the addition, deletion, overall maintenance, updates/versions, etc., for its coded domain, it is necessary for a cdSA to take into account the attributes provided in this document.

8.3   Rules governing assignment of ID codes

Rule 38:

For each coded domain, the rules for the assignment of ID codes of its members shall be specified.

Existing ISO/IEC and ISO standards of a "codes representing X" nature have the most common practices of schemata for assignment of ID codes. The most common of these already identified includes:

a) simple sequential assignment, i.e., as each member is accepted the next available ID code is assigned;

b) block numeric, i.e., a pre-determined block numeric schema is used for the assignment of members of coded domains (often these are of a hierarchical nature and allowing for different levels of granularity);

c) a classification system (whether or not block numeric based).

Rule 39:

The characters or symbols constituting the ID codes for entities in a coded domain can either contain the meaning or not.

Guideline 39G1:

A meaningless ID code, from a semantic perspective (as well as that in numeric), is recommended for use in the Open-edi transactions because they provide a more stable identification for entities which are members of a coded domain.

It is not an uncommon practice that the structure of an ID code in a coded domain denotes a meaning (significant code), to provide semantics for users through the ID code itself. However, this mixes the HIE and IT interface together in the ID code column, and the ID code will be regarded unstable when internal and external requirements of the Person who specifies the coded domain changes.

Guideline 39G2:

In specifying the coding scheme of the ID code in a coded domain, the Source Authority generally considers the volume and diversity of the identified entities in the coded domain.

Entities required by internal or external constraints that need to be identified in a coded domain may have a large volume and great variety, for example the individuals that are identified by an ID code in some jurisdictional domains. Some coded domains are comparatively simple. Coding scheme for the ID codes varies according to the volume and variety of the coded domain.

8.4   Rules governing the change management of entries in the coded domain

8.4.1   Change management of ID codes

Change management of ID codes in a coded domain covers several aspects; including:

a) the addition of anew ID code representing the addition of a new member to that coded domain;

b) the deletion of an ID code representing the deletion of that member;

c) a change in ID code for an existing member (often because its properties and/or behaviours have been changed; (For example, In ISO 3166-1 Sudan as a UN member state had the ID code "736". This was changed by the UN to "729" with "728" being assigned to the new UN member state of South Sudan, i.e., a single jurisdictional domain being split into two.)

d) the ID code for an existing member of a coded domain remaining the same but its properties and/or behaviours having been changed; (Examples form ISO 3166-1 include, the UN ID code for "643" for the Soviet Union" being continued for use by the "Russian Federation" even though this represented quite a different geopolitical entity and jurisdictional domain than the former Soviet Union. Also, the former Yugoslavia, UN member ID "688" was continued (taken over) by Serbia even though Serbia is also quite a different geopolitical entity and jurisdictional domain than the former Yugoslavia.)

e) the deletion of one or more ID codes and their replacement with a single new ID code;(A example is that of ISO 4217 when members of the European Union decided to abolish their currencies (= currency cod) and adopt the euro as their common currency of all members of the EU.)

f) a change in the assignment of the code for a member of the coded domain, where the properties and behaviours of the member do not change but its assigned ID code does. Examples of this nature do occur where the assignment of ID codes is based on a classification system, [e.g. such as the International Patent Classification (IPC) of the World Intellectual Property Organization (WIPO)]. It often happens in a classification system that a class (or its sub-level) becomes "overloaded". One common solution is to create a new class (or sub-class) and re-assign the existing ID codes of current members accordingly[8].

Rule 40:

Any ID code for an entry in a coded domain once assigned shall not be reassigned.

Best practices with respect to international standards and elsewhere have demonstrated that an ID code once assigned, once it has lapsed, i.e. is no longer to be used, shall not be re-assigned to another entity, i.e. (new) member, of a coded domain.

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8)   See further on the IPC, www.wipo.int/classifications/ipc.

8.4.2   Change management of HIEs

Change management of HIEs pertains to those situations where the ID code for the member of a coded domain (as well as its properties (or behaviours) remain the same, but the HIE(s) changes. A not uncommon example is that of the UN member states whose 3-digit numeric ID code remains the same is that of "Burma" which changed its name to "Myanmar" (with the resulting 2-alpha and 3-alpha codes being changed also).

Rule 41:

One shall specify whther or not a change in an HIE for a member of a coded domain may result in a change in its ID code.

Guideline 41G1:

It is a best practice not to change the ID code for a member of a coded domain whin its HIE(s) change. A more common practice is to assign a new ID code.

8.5   Registration of user extensions

A Source Authority for a coded domain can, if it so wishes, make provision for users of that coded domain to be able to add (and enumerate) other real world entities as members of that domain. Such additions by users are commonly known as "user extensions".

In the rules governing the assignment of ID codes for entities as members of a coded domain, a common practice is to set aside/reserve pre-determined set or block of ID codes for user extensions.

Rule 42:

In order to avoid "collisions" among user extensions, they should be registered.

User extensions which are widely used in turn become candidates for "full" membership of a coded domain.

9   Rules for specifying Human Interface Equivalents (HIEs) to an ID Code in a coded domain

9.1   Multiple Human Interface Equivalents (HIEs) for an ID code in a coded domain

Rule 43:

One or more human interface equivalents can be associated with a single ID code in a coded domain. There shall be at least one.

Human interface equivalents provide a representation of the semantics of ID code within the context on its coded domain.

Human interface equivalents can be in the form of terms, symbols (including ostensive equivalents, icon symbols, functions, glyphs, etc.). They can also be of an audio, image, nature as well as any form or format suitable for understanding by humans.

For example, in the coded domain schema ISO/IEC 13251 whose title is "Collection of graphical symbols for office equipment", ID code 106 has associated with it from a human interface perspective first the symbol for "loud speaker"/«haut-parleur» and then the associated terms.

However, for the majority of widely used coded domains the human interface equivalents are represented through linguistic expressions in written forms and based on a natural language.

9.2   Standard structure for semantics of a Human Interface Equivalent (HIE)

Rule 44:

Support of semantic interoperability of natural language forms of human interface equivalents shall be facilitated through the use of a standard data structure as part of a coded domain.

For such a data structure, the following data elements have already been identified.

a)   ID code of a Source Authority which governs a natural language in a specified context (often a jurisdictional domain).

b)   The code of the natural language based on ISO 639-2. This is a mandatory data element.

c)   The linguistic equivalent itself, i.e., "main word" assigned as the label for the instance of an entity as member of that coded domain.

d)   Provision for a «mot lien» as a separate (associated) data element as may be applicable to a natural language, (e.g., in French, le, la, un, une, les, etc., or in Spanish, el, la, los, las, etc.). This is a conditional, subject to the grammatical gender code; (Often the grammatical gender code is used to establish the appropriate «mots liens»).

e)   A natural language grammatical gender code. On the whole grammatical gender codes apply to nouns in a language (e.g., such as "terms" in a standard). The codes representing grammatical gender of terms are found in ISO/IEC 15944-5, 6.2.6 and especially its Table 1.

Note that there are different types of «mots liens», (e.g., the base type as singular articles, then of a definitive and indefinite nature, followed by articles of a plural nature within the masculine, feminine and neuter genders).

The data structure is presented in illustrative form in Figure 6.

The element "ID Code of Source Authority" is presented here in a very simplistic, primitive manner of a composite data element. Its further expansion benefits from development work on ISO/IEC 15944-5:2008.

	Element	Presence Type	Example
(a)	ID code of source authority	Conditional	124 (for Canada)
(b)	code of the natural language based on ISO 639-2/T	Mandatory	fra (for French)
(c)	the linguistic equivalent itself, i.e., "Main word"	Mandatory	poutine
(d)	the gender code for the language	Mandatory	2 (for feminine)
(e)	the associated «mot lien»	Optional	une (la)

Figure 6 — Illustration of Elements of a Data Structure for Human Linguistic Equivalents of an ID Code — Written form

9.3 Rules governing linguistic (written) representations as Human Interface Equivalents (HIEs) of ID codes as required values in coded domains

It is noted and recognized that external constraints of a jurisdictional domain do and will impact the linguistic (written) representations of human interface equivalents (HIEs) of ID codes in the use of that coded domain. At the most primitive level and from a HIE perspective they pertain to the use of official (or de facto) language(s) in that jurisdictional domain. (See further ISO/IEC 15944-5:2008, Annex E for the official languages(s) or de facto language(s) of UN member states (= "countries")).

Rule 45:

A coded domain shall be structured to be able to support the official language(s) [or de facto language(s)] of a jurisdictional domain.

Rule 46:

A spoken official language (or de facto language) may be supported by more than one writing system to convey the semantics of the information interchanged among IT systems as well as commitment exchange among Persons.

An official language in a jurisdictional domain as spoken may be supported by more than one writing system. Examples already identified include:

a)   Serbian and Croatian which are the same spoken language but where the former in its written uses the Cyrillic alphabet in written presentations and the latter uses the Roman alphabet, a.k.a. as Latin-1 (For an example see further Annex E).

b)   Inuktitut the official language of Nunavut, a territory in Canada, is also as spoken language which has two written forms. One is Roman Latin-1 based, the other is syllabic-based.

9.4 Individual accessibility of HIEs of coded domains

The adoption by the *UN of the "UN Convention on Rights of Persons with Disabilities* (2006) has introduced a new external constraint which has become mandatory in nature where the buyer in an eBusiness transaction is an "individual" (and not an "organization" or "public administration"). Consequently, the development of this document has ensured that an ISO/IEC 15944 conformant "coded domain" is structured and specified to ensure that it can support these UN Convention requirement where a buyer in a business transaction is an "individual".

At the same time, where a buyer is an "individual" in a business transaction, other generic public policy requirements apply. As identified in ISO/IEC 15944-5:2008, Clause 6 these include consumer protection, privacy protection, and individual accessibility.

Rule 47:

The identification and specification of a coded domain shall include a clear statement as to whether or not:

a)   **the coded domain is qualified to be used in business transactions which involved a Person in the role of an individual as a "buyer" in a business transaction, i.e., any form of commitment exchange;**

b)   **where the coded domain is used in business transactions involving a Person in the role of an "individual", then the rules governing that coded domain shall include support public policy requirements of jurisdictional domains. These include those of the nature of consumer**

protection, privacy protection, and individual accessibility (as well as those of "human rights" nature).[9]

9.5 Rules governing composite semantics

This document deals only with the most primitive aspect of the use of a "composite semantic". In this document, a HIE can consist of one or more "words" as character strings[10].

Rule 48:

With respect to the use of one or more HIE(s) in any coded domain, one shall specify whether or not such a HIE consists of a single semantic, i.e., single word, or a HIE consisting of two or more words, i.e., character strings.

10 Coded domains and controlled vocabularies

10.1 Purpose

ISO/IEC 15944 series already contain key constructs pertaining to coded domains, including controlled vocabularies. ISO/IEC 15944-7:2009, Clause 5 titled "Fundamental principles and rules" (and its subsequent more detailed subclauses 5.6 and 5.7) provide the necessary detailed rules, associated guidelines, text, examples, annexes and footnotes which are most relevant to the application of the concept and construct of a "controlled vocabularies" in support of the rules governing the specification of a coded domain.

A key, if not the key, important data element attribute of any data element (or semantic component), is its "content value", i.e. the actual recorded information that an instance of that data element contains. In this multipart eBusiness standard, any data element intended to be used in a business transaction shall have content (even if this is of the nature of "99" = Not Applicable)

Fundamentally, the semantics, i.e., meaning, for the content value of each data element comprising a business transaction is either (1) constrained; or (2) non-constrained.

The most common examples of non-constrained content values of a data element include data elements for name of Persons, a free-text field (to provide added information for use by humans and not computers), etc.). However, most of the content values of data elements are constrained ranging from examples such as date, to those data elements for whom the information to be recorded as their content value, mandates the use of a controlled vocabulary, or in an even more structured and predefined manner, as that of a "coded domain".

Based on existing ISO standard concept and their definitions, as identified in [Clause 3](#) of this document, it appears that basically a "controlled vocabulary" is a special type of coded domain. For example, ISO/IEC 15944-7:2009 is a standard of a controlled vocabulary and it includes English, French, Russian, and Chinese human interface equivalents. (Of particular relevance, please see ISO/IEC 15944-7:2009, 5.2, Clause 6, and Clause 7.)

Generally, in a coded domain, all permitted instances are members of the same object class. Members of the coded domain derive their essential meaning and use, i.e., semantics and pragmatics, from the set of rules governing the properties and behaviours of the object class, i.e. those that apply to the coded domain as a whole.

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9) With respect to public policy requirements captured as those of:
   a) a consumer protection nature.
   b) a privacy protection nature, see further ISO/IEC 15944-8:2012
   c) an "individual accessibility nature, see further ISO/IEC 20016-1:2014.

10) The approach to and development of cost-effective and efficient approaches to dealing with "composite semantics" will be addressed in a future edition of ISO/IEC 15944-10. Standards development of this nature should take into account the concepts and definitions of "simple term", "compound term", and "complex term" of ISO TC37.

From a development, management, interoperability, multilingualism, cultural adaptability, individual accessibility, etc., perspectives and objectives, there is little difference between coded domains and controlled vocabularies. The primary difference is that a controlled vocabulary represents an object class which is of the nature of a "concept domain". This means that for each entry in a controlled vocabulary we find most, if not all, of its semantics to be derived, not from the coded domain of which it is part, but from its definition at the individual entry (row) level along with its associated assigned label, i.e., its "term". The addition of an ID code to each entry in a controlled vocabulary basically makes it a coded domain (otherwise it would simple be of the nature of a list , a glossary, etc.) Here it is noted that any controlled vocabulary which is constructed to be able to be bilingual or multilingual in nature will require the use of an ID code for each entry.

10.2 Rules common to controlled vocabularies and coded domains

This subclause 10.2 specifies the rules common to both controlled vocabularies and coded domains. Those which are specific to each are stated in 10.3 and 10.4, respectively.

Simply, viewed from an IT-system perspective, a coded domain or controlled vocabulary is colloquially referred to as (common) lists, pick lists, pull-down menus, (tables), etc., to be implemented and used in implementations. What sets coded domains and controlled vocabularies apart from any kind of "lists" is that:

a)   the set of permitted values is controlled; and,

b)   these controls are established and managed by a Source Authority.

Rule 49:

For each data element to be used as part of the execution of a business transaction, one shall state whether or not the permitted content value for that data element is constrained or is not constrained as stated in the constraint indicator, an attribute for that data element.

Rule 50:

Where the content value for a data element is subject to constraints, i.e., in addition those already covered by the other data element attributes for that data element one shall: (1) specify the set of permitted content values in the form of a controlled vocabulary or coded domain; and, (2) identify the Source Authority.

Rule 51:

The Source Authority for a controlled vocabulary or coded domain referenced in an Open-edi scenario shall be either (1) a Part of the standard itself; (2) that stated in an ISO, IEC, ISO/IEC or ITU standard; or, (3) that stated in a document forming part of a "Referenced Specification" in Clause 2 Normative references of a Part of the ISO/IEC 15944 series or (4) or by a Source Authority as explicitly identified and specified by a jurisdictional domain.

10.3 Rules governing a controlled vocabulary

In the context of eBusiness, the key characteristics of a controlled vocabulary (CV) are:

a)   it is a vocabulary, i.e., it is not a dictionary, glossary, etc.;

b)   its entries consist of definition/term pairs for each concept forming part of the controlled vocabulary. (At times, the entries in a controlled vocabulary can exist of a list of the terms only without their definitions being provided);

c)   the aspects controlled as to the inclusion of the entries rest with a Source Authority and is managed through a rule-based process for the addition/deletion of entries;

d) on the whole, the ordering of the entries in a controlled vocabulary is deemed not to be significant, (e.g., alphabetic order, date of entry in the CV, etc.). This is because a controlled vocabulary basically states the set of permitted values as a set of textual/language based values.

e) in essence, a controlled vocabulary (CV) is basically of the nature of a dictionary of a list of entries, i.e., definition/term pairs for which there is only one definition per entry. In addition, the order of the entries in a controlled vocabulary is usually that of the alphabetical order of the terms in the language of the controlled vocabulary.

Rule 52:

Where the Source Authority for a controlled vocabulary (and its contents) is not a publicly recognized international organization, the controlled vocabulary shall include, in its normative part, the following information:

a) the name and address of the Source Authority (including its URL (or URI) where available;

b) the year (and/or version number) of the controlled vocabulary;

c) statement (agreed to by the Source Authority) whether or not the controlled vocabulary is freely available for use (and if not already "freely available", the conditions under which the information is being made available);

d) summary information on the (1) focus, scope and/or domain of the controlled vocabulary; and (2) rules governing the addition/deletion of entries (as well as changes to existing entries; and;

e) information on the languages in which the controlled vocabulary is being made available by the Source Authority.

10.4 Rules governing a coded domain

On the whole a coded domain is a much more rigorous, structured, systematic, IT-enabled, linguistic and culturally adaptable, etc., approach than that of controlled vocabulary. The nature of coded domains required requires that they be developed and maintained in the form of multi-column tables, matrices or databases. On the whole, the rules for a coded domain shall include those pertaining to the addition, deletion, change, etc., with respect to each of its "members" captured in as "rows" consisting of one or more data elements.

Internationally recognized thesauri, classification schemas, taxonomies, etc., are also examples of coded domains.

A coded domain is a domain for which the boundaries, i.e., what's in and what's out, are defined and (very) explicitly stated by its Source Authority. Based on the rules governing a coded domain existing entities are qualified as being a member of that coded domain. This occurs by each of them being assigned a unique ID code in accordance with the registration schema of that Source Authority.

A coded domain most often is managed and presented in matrix form, i.e., they are essentially of a database nature. Here the content or value of each data element (or "cell" as row/column intersects) is predetermined and defined according to the rulebase of the Source Authority. As such, the semantics of its contents are predefined.

At times, the rules governing the assignment of ID codes in a coded domain are designed and structured to support a classification schema, a thesaurus, a taxonomy, etc.

Rule 53:

For any coded domain used in ISO/IEC 15944, the rules governing the coded domain shall be specified either in ISO/IEC 15944 Part itself or by reference to a document(s) of the Source Authority which specify the same including:

a) the rules covering the coded domain as a whole;

b) the rules governing the structure of the coded domain;

c) the rules governing the assignment of ID codes to each of its members;

d) the rules qualifying the entry of new members in a coded domain (as well as the definitions); and,

e) the rules governing the changes to data elements governing the recorded information on each member.

11 Rules governing the registration of coded domains as re-usable business objects

11.1 Principles of registration

A basic purpose of this document is to be able to use a coded domain as an IT-enabled, systematic and cost-efficient, referenceable and re-useable "business object" for which the actual values representing its member entities can be used in an IT-enabled and interoperable manner with associated levels of semantic unambiguity. This is so whether the nature and purpose of a coded domain applies to a scenario, scenario attribute, or a scenario component, i.e., a role, information bundle or semantic component.

Rule 54:

For and coded domain to be used in an Open-edi context "as a re-useable business object in the context of an Open-edi scenario, scenario component, scenario attribute, a role, information bundle, and/or semantic component, it should be registered as a "business object" based on ISO/IEC 15944-2.

Key concepts governing organizations for registration of coded domains in Clause 3 include:

a) coded domain Source Authority (cdSA)

b) coded domain Registration Schema (cdRS)

c) Source Authority

d) coded domain

e) code (in coded domain)

Key concepts governing the organizations for Open-edi registration in Clause 3 include:

a) OeRO

b) OeRA

c) OeRI

d) OeR

e) Open-edi register

Analysis results about the relationship of these concepts:

1) cdSA is one subtype of OeRA

2) entity in coded domain shall possibly be regarded as one subtype of OeRI (entity is an existence, while OeRI is information; in an Open-edi perspective, the management of any entity is through its information)

3) coded domain itself can either be

   i) one subtype of Open-edi register (The IT-enablement of the coded domain)

   ii) one subtype of OeRI (a domain shall be regarded as a group of existences, which is reflected as a group of information, as mentioned above the same as entity to information)

4) code (in coded domain) can either be

   i) part of IRBOI that identified the entity (subtype of OeRI), or

   ii) simply part of the coded domain, which is registered as a whole.

5) coded domain registration schema has both

   i) definition for data fields, which is one subtype of Open-edi register schema(in Part 2, concentrate on the characteristics of OeRI), and

   ii) rules for assignment of Identifiers, which is NOT included in the Open-edi register schema as specified in ISO/IEC 15944-2:2015 Clause 10.

The following is the possible rules that might be adapted from rules in ISO/IEC 15944-2:2015, according to Relations between the key concepts above. Some rules in ISO/IEC 15944-2 are already reflected in rules in other clauses of this document, to make adaptation from these rules will be useless and not listed below.

Rule 55:

The operation of a coded domain shall be carried out under the authority of an Open-edi Registration Organization that is accountable to a coded domain Source Authority, which is one subtype of Open-edi Registration Authority.

NOTE   This rule is adapted from Rule 7 in ISO/IEC 15944-2:2015.]

Rule 56:

OeROs for registration of coded domain entities shall be appointed by the cdSA in accordance with the rules specified by the cdSA, which is often jurisdictional domains, possibly in the form a law, or regulatory requirements.

11.2 Process of registration

Rule 57:

The process for registration of an ISO/IEC 15944-10 compliant coded domain shall be based on the rules governing ISO/IEC 15944-2 the registration of re-useable business objects.

11.3 Coded Domain Registration schema

The purpose of this Clause is two-fold, namely:

a) to provide, in summary form the elements comprising the specification of a coded domain Registration Schema; and,

b) to do so in a manner which will allow I and facilitate such an Open-edi coded domain to be registered as a business object in compliance with ISO/IEC 15944-2:2015.

The Registration scheme of a coded domain is a rule-based and IT-enabled interface of the coded domain, that enables the application of the changes to a coded domain be received, processed and returned its result by the coded domain Source Authority.

Rule 58:

The coded domain Registration Schema shall contain the following:

a) **contact and address of the Source Authority that accepts the application of the changes to a coded domain;**

b) **IT-enabled interface of the Source Authority that enables the automatic acceptation of the coded domain;**

c) **natural language description of the rules and procedures of the application processing; and,**

d) **templates for the result of application processing**

12 IT-enablement of coded domains

12.1 Purpose

The final goal of IT-enablement of coded domains shall be to support automatic IT processing in application. While to describe coded domains by various programming languages well enables the computer processing of coded domains, the coded domain shall also be expressed in an IT-neutral manner. Thus, this document specifies the IT-enabled coded domain as matrix, which uses the traditional type of table presentation that users can easily understand, and the cells of which explicitly defined and uniquely identified by IDs.

12.2 Templates for IT-enabled coded domains — Attributes for Scoping an Open-edi scenario (OeS)

12.2.1 Purpose

In order to maximize an IT-enabled approach, this document makes extensive use of "templates". In this document, only the most primitive templates ISO/IEC 15944-1 introduced the use of "templates" as a key construct and tools in support of implementing Open-edi BOV focused standards. The key purpose of the use of a "Template" (in matrix form) is two-fold; namely:

a) to state in a very systematic, organized and IT-enabled manner the Open-edi scope attributes governing the context and possible use of a scenario attribute; and,

b) to do so in an IT-neutral manner.

12.2.2 Template structure and content

The template structure and content, which follows in 12.2.3 is based on and adapted from existing clauses in ISO/IEC 15944-1, ISO/IEC 15944-2 and ISO/IEC 15944-5.

It is summarized as follows based on the three ISO standards.

It is important to note that the use of a coded domain in support of commitment exchanges pertaining to a business transaction is directly related to the scoping of an Open-edi scenario and related scenario components, i.e. the specified context in which is to be used and applied.

Rule 59:

Where a coded domain is intended to be used as a semantic component in support of an Open-edi scenario, one shall specify the attributes for scoping a scenario.

Guideline 59G1:

It is a recommended business practice to use the Open-edi template for scenario scope attributes in conjunction with the specification of any coded domain and its intended use.

12.3 Template for Scoping Open-edi scenarios

The rules for the specification of Open-edi scenarios and their components are stated in ISO/IEC 15944-1:2023, Clause 7. This clause is based on ISO/IEC 15944-1:2023, Clause 7. The use of the template of attributes for scoping a scenario requires one to enter a "Decision Code" in Column 2 for each of the attributes.

Rule 60:

When this scenario scoping attribute template is used, the Decision Code (Col.2) shall be specified, i.e. it shall not have a "blank" or "null" value. The two valid Decision Codes are:

a) **attribute applies = 1 (Yes); and,**

b) **attribute does not apply = 2 (No).**

Table 3 — Template for specifying the scope of an Open-edi scenario

IT-Interface		Linguistic Human-Interface Equivalents			Spare
Scope Tag ID Code	Decision Code	Name (English)	Name (French)	Name (Other)	
(1)	(2)	(3)	(4)	(5)	(6)
1000		BUSINESS GOAL OF BUSINESS TRANSACTION - NO EXTERNAL CONSTRAINTS			
1010		Business goal of business transaction includes External Constraints			
1040		Persons: (no external constraint)			
1041		Persons: Individual <-> Individual			
1042		Persons: Individual <-> Organization[a)]			
1043		Persons: Individual <-> Public Administration			
1044		Persons: Organization <-> Organizations[b)]			
1045		Persons: Organization <-> Public Administration			
1046		Persons: Public Administration <-> Public Administration			
1060		Bilateral Business Transaction Model			
1061		Mediated Business Transaction Model			
1065		Defined Market Model			
1066		Undefined Market Model			
1070		Immediate or Settlement Model			
1071		Separate Settlement Model			
1080		EXTERNAL CONSTRAINTS AND PUBLIC POLICY			
1081		External constraints of a (general) public policy nature apply			
1082		External constraints of a consumer protection nature apply			
1083		External constraints of a privacy protection nature apply			
1084		External constraints of an "individual accessibility" nature are supported			
1085		External constraints of a human rights nature are supported			

Table 3 *(continued)*

IT-Interface		Linguistic Human-Interface Equivalents			Spare
Scope Tag ID Code	Decision Code	Name (English)	Name (French)	Name (Other)	
(1)	(2)	(3)	(4)	(5)	(6)
1110		AGENTS AND THIRD PARTIES			
1110		Business Transaction allows for Agents[c)]			
1111		Buyer Agent			
1112		Seller Agent			
1130		Business Transaction allows for Third[d)] Parties			
1131		By mutual agreement of buyer and seller (as internal constraints only)			
1132		External Constraint(s) Mandated			
1150		External Constraints and agents			
1151		External constraints require a buyer to use an agent			
1152		External constraints require a seller to use an agent			
1160		EXTERNAL CONSTRAINTS AND THIRD PARTY			
1161		External constraints require participation of a qualified third party			
1170		EXTERNAL CONSTRAINTS AND REGULATOR			
1171		External constraints require participation of a qualified third party			
1172		External constraints allow for a third party to act on behalf of a regulator, i.e. interacting with both buyer and seller			
1173		External constraints allow for an agent to act on behalf of the regulator			
1180		DATE/TIME REFERENCING[e)]			
1181		Applicable Calendar Specified			
1182		Applicable Clock (and level of granularity) specified			
1200		PROCESS COMPONENT: All five sets of distinct activities covered.			
1210		PLANNING			
1215		Public information on goods/services provided by a seller			
1220		Public information on goods/services needed by buyer			
1225		Predefined/referenceable Catalogue			
1230		Buyer initiated goods/service request			
1235		Seller initiated goods/service offer			
1240		Predefined Market Model			
1250		IDENTIFICATION			

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Table 3 *(continued)*

IT-Interface		Linguistic Human-Interface Equivalents			Spare
Scope Tag ID Code	Decision Code	Name (English)	Name (French)	Name (Other)	
(1)	(2)	(3)	(4)	(5)	(6)
1255		Identification for information exchange purposes only (e.g. an address) [f]			
1260		Identification of Person able to make commitment			
1265		Identification of Person as "individual"			
1270		Identification of Person as "consumer"			
1300		NEGOTIATION			
1305		Monetary Payment Involved			
1310		Immediate Settlement Model			
1315		Separate Settlement Model Payment			
1350		ACTUALIZATION			
1355		Immediate Settlement			
1360		Separate Settlement			
1400		POST-ACTUALIZATION			
1405		Includes warranties			
1410		Includes records retention			
1415		Includes staying in contact with buyer (e.g., defect and recall notification)			
1500		DATA COMPONENT			
1505		Predefined and Structured, i.e. code sets			
1520		Data integrity of any IB			
1525		Retention /latency of any IBs			
1530		SPECIFICATION OF RECORDS RETENTION RESPONSIBILITY[g] (in support of internal and/or external constraints)			
1540		SPECIFICATION OF DISPOSITION OF RECORDED INFORMATION[h]			
1541		Specification of disposition of recorded information from an internal constraints perspective			
1542		Specification of disposition of recorded information from an external constraints (jurisdictional domain requirements) perspective			
1550		SPECIFICATION OF RETENTION TRIGGERS[i]			
1560		SPECIFICATION OF STATE CHANGES[j]			
1570		SPECIFICATION OF STORE CHANGE TYPE[k]			
1600		Business Requirements on FSV – No External Constraints[l]			
1610		Service: Information Bundle Integrity			

Table 3 *(continued)*

IT-Interface		Linguistic Human-Interface Equivalents			Spare
Scope Tag ID Code	Decision Code	Name (English)	Name (French)	Name (Other)	
(1)	(2)	(3)	(4)	(5)	(6)
1620		Service: Confidentiality of IB contents			
1625		Service: Non-repudiation of receipt			
1630		Service: Proof of Time IB creation[m]			
1635		Service: Notarization of IBs			
1640		Service: Quality of Service (QoS)			
1700		EXTERNAL CONSTRAINTS[n]			

a) Often referred to as "B2C", i.e., as in "business to consumer". Here it is understood that a "consumer" is an "individual" and not an "organization".

b) Often referred to as "B2B" i.e., as in "business to business".

c) It is assumed that Business Rules and Constraints pertaining to the ability of the two primary parties, i.e. the seller and buyer, to be able to delegate all or part of their role and associated commitments to and Agent(s) will be specified as part of "Role Attributes", see further ISO/IEC 15944-1:2023, 8.4.2.5.

d) It is assumed that Business Rules and Constraints pertaining to the ability of the two primary parties, i.e. the seller and buyer, to commonly agree to delegate all or part of their role and associated commitments to a "third party(ies)" will be specified as part of "Role Attributes", see further ISO/IEC 15944-1:2023, 8.4.2.5.

e) For applicable rules, see ISO/IEC 15944-5:2008, 6.6.4.5.

f) A typical example here is an e-mail address or a P.O. box address.

g) If applicable, i.e. as applying to the set of recorded information pertaining to the business transaction as a whole, use coded domain "ISO/IEC 15944-5:02 Codes representing Specification of Records Retention Responsibility". See also ISO/IEC 15944-5:2008, 6.6.4.2.

h) If applicable, i.e. as applying to the set of recorded information pertaining to the business transaction as a whole, use coded domain "ISO/IEC 15944-5:03 Codes representing Disposition of Recorded Information". See also ISO/IEC 15944-5:2008, 6.6.4.2.

i) If applicable, i.e. as applying to the set of recorded information pertaining to the business transaction as a whole, use coded domain "ISO/IEC 15944-5:04 Codes representing Retention Triggers". See also ISO/IEC 15944-5:2008, 6.6.4.2.

j) If applicable, i.e. as applying to the set of recorded information pertaining to the business transaction as a whole, use coded domain "ISO/IEC 15944-5:06 Codes store change type for Information Bundles and semantic components". See also ISO/IEC 15944-5:2008, 6.6.4.3.

k) If applicable, i.e. as applying to the set of recorded information pertaining to the business transaction as a whole, use coded domain "ISO/IEC 15944-5:05 Codes for specifying state changes allowed for IBs and SCs". See also ISO/IEC 15944-5:2008, 6.6.4.3.

l) See further ISO/IEC 15944-1:2023, 6.5.2.

m) Often referred to as time-stamping services.

n) See further ISO/IEC 15944-5.

12.4 Specification and consolidated template of attributes of Open-edi scenarios, roles, information bundles (IBs) and semantic components (SCs)

ISO/IEC 15944-1:2023, Clause 8 states the rules for the specification of Open-edi scenarios themselves as well as their components which are:

a)   Open-edi scenario (OeS) attributes;

b)   Open-edi roles and role attributes;

c)   Open-edi information bundles (IBs) and IB attributes; and,

d)   Open-edi semantic components (SCs).

The use of the template of attributes of Open-edi scenarios, roles, IBs and SCs require one to enter a "Decision Code" in Column 2 for each of the attributes listed in the template.

Rule 60 applies to assignment of Decision Code values in the Table 4 templates. Table 4 is based on those similar in nature as found in ISO/IEC 15944-1 and ISO/IEC 15944-5. It has been focused from a coded domain perspective.

Table 4 — Consolidated template of attributes of Open-edi scenarios (OeS), roles, information bundles (IBs) and semantic components (SCs)

IT-Interface		Human-Interface Equivalents			Spare
Open-edi Scenario Component ID Code	Decision Code	Name (English)	Name (French)	Name (Other)	
(1)	(2)	(3)	(4)	(5)	(6)
2000		OPEN-EDI SCENARIO AT-TRIBUTES			
2010		OeS Identifier			
2020		OeS Name(s)			
2030		OeS Purpose			
2040		OeS Set of Roles OeS Business Requirements, Rules and Constraints			
2050		OeS Set of Information Bundles OeS Scenario Inheritance Identifier(s) and Cross-References			
2060		OeS Set of Requirements on Open-edi Parties			
2070		OeS Set of external constraints on Business Requirements, i.e., Laws and Regulations			
2080		OeS Inheritance Identifier(s) and Cross References			
2090		OeS Security Service Requirements			
2100		OeS Communication - Quality of Service Requirements			
2120		OeS Role Requirements and Constraints			
2130		OeS Dependency among Roles in a Scenario			
2140		OeS Dependency among Information Bundles in a Scenario			
2150		OeS Dependency among Semantic Components of different Information Bundles			

Table 4 *(continued)*

IT-Interface		Human-Interface Equivalents			Spare
Open-edi Scenario Component ID Code	Decision Code	Name (English)	Name (French)	Name (Other)	
(1)	(2)	(3)	(4)	(5)	(6)
2500		OeS DEMANDS ON OPEN-EDI PARTIES			
2600		OeS DEMANDS ON OPEN-EDI INFRASTRUCTURE			
3000		ROLE ATTRIBUTES			
3005		Role Identifier			
3010		Role Name(s)			
3015		Role Purpose			
3020		Role Business Goal(s)			
3025		Role Business Rules and Constraints			
3030		Role Inheritance Identifiers and Cross-References			
3035		Role external constraints on Business Requirements, i.e., Laws and Regulations			
3040		Role Security Service Requirements			
3045		Role Communications and Quality of Service Requirements			
3050		ROLE DEMANDS ON OPEN-EDI PARTIES			
3060		INTEROPERABILITY DEMANDS AMONG ROLES			
3065		Role States			
3070		ROLE TRANSITIONS			
3075		ROLE EVENTS			
3080		ROLE ACTIONS			
3085		ROLE INTERNAL FUNCTION			
3090		ROLE DEMANDS ON OPEN-EDI SUPPORT INFRASTRUCTURE			
4000		INFORMATION BUNDLE ATTRIBUTES			
4010		IB Identifier			
4020		IB Name(s)			
4030		IB Purpose			
4040		Business Rules Controlling Content of IBs			

Table 4 *(continued)*

IT-Interface		Human-Interface Equivalents			Spare
Open-edi Scenario Component ID Code	Decision Code	Name (English)	Name (French)	Name (Other)	
(1)	(2)	(3)	(4)	(5)	(6)
4050		IB external constraints on Business Requirements, Governing Content of an IB, i.e., Laws and Regulations			
4060		IB contents			
4070		IB recorded information retention – business rules and constraints[a]			
4080		IB recorded information retention – external constraints on business requirements, i.e., laws and regulations			
4081		IB specification of disposition[b]			
4082		IB specification of retention triggers[c]			
4083		IB specification of state changes[d]			
4084		IB time validity characteristics[e]			
4085		IB time validity characteristics[f]			
4090		Relationship of Semantic Components within an IB			
4100		IB security service requirements			
4200		IB INFORMATION FOR INTEROPERABILITY			
4300		IB DEMANDS ON OPEN-EDI SUPPORT INFRASTRUCTURE			
5000		SEMANTIC COMPONENT ATTRIBUTES			
5010		SC Identifier			
5020		SC Name(s)			
5030		SC Definition			
5040		SC Security service requirements			
5081		IB specification of disposition[g]			
5082		IB specification of retention triggers[h]			

Table 4 *(continued)*

IT-Interface		Human-Interface Equivalents			Spare
Open-edi Scenario Component ID Code	**Decision Code**	**Name (English)**	**Name (French)**	**Name (Other)**	
(1)	(2)	(3)	(4)	(5)	(6)
5083		IB specification of stage changes[i]			
5084		IB specification of store change types[j]			
a) If applicable, i.e. as applying to an IB in a scenario or related to a role being modelled, use coded domain "ISO/IEC 15944-5:02 Codes Representing Specification of Records Retention Responsibility". See also ISO/IEC 15944-5:2008, 6.6.4.2.					
b) If applicable, i.e. as applying to an IB in a scenario or related to a role being modelled, use coded domain "ISO/IEC 15944-5:03 Codes Representing Disposition of Recorded Information". See also ISO/IEC 15944-5:2008, 6.6.4.2.					
c) If applicable, i.e. as applying to an IB in a scenario or related to a role being modelled, use coded domain "ISO/IEC 15944-5:04 Codes Representing Retention Triggers". See also ISO/IEC 15944-5:2008, 6.6.4.2.					
d) If applicable, i.e. as applying to an IB in a scenario or related to a role being modelled, use coded domain "ISO/IEC 15944-5:05 Codes Representing State Changes Allowed for the values of Information Bundles and Semantic Components". See also ISO/IEC 15944-5:2008, 6.6.4.2.					
e) If applicable, i.e. as applying to an IB in a scenario or related to a role being modelled, use coded domain "ISO/IEC 15944-5:06 Codes Representing Store Change Type". See also ISO/IEC 15944-5:2008, 6.6.4.2.					
f) If applicable, apply rules of Clause 6.6.4.5 in ISO/IEC 15944-5:2008, "Date/Time Referencing".					
g) If applicable, i.e. as applying to an SC of an IB being modelled, use coded domain "ISO/IEC 15944-5:03 Codes Representing Disposition of Recorded Information". See also ISO/IEC 15944-5:2008, 6.6.4.2.					
h) If applicable, i.e. as applying to an SC of an IB being modelled, use coded domain "ISO/IEC 15944-5:04 Codes Representing Retention Triggers". See also ISO/IEC 15944-5:2008, 6.6.4.2.					
i) If applicable, i.e. as applying to an SC of an IB being modelled, use coded domain "ISO/IEC 15944-5:05 Codes Representing State Changes Allowed for the Values of Information Bundles and Semantic Components". See also ISO/IEC 15944-5:2008, 6.6.4.2.					
j) If applicable, i.e. as applying to an SC of an IB being modelled, use coded domain "ISO/IEC 15944-5:06 Codes Representing Store Change Type". See also ISO/IEC 15944-5:2008, 6.6.4.2.					

Annex A
(normative)

Coded domain registration administration attributes

A.1 Purpose

This annex presents a table that delineates the requirements for inclusion of Open-edi administration attributes for an ISO/IEC 16944-10-compliant coded domain for registration as a re-useable business object.

It is recognized that this document addresses the most primitive aspects only.

Rule A-01:

The specification of the following attributes, as stated in Table A.1 of a coded domain are mandatory as coded domain registration attributes, i.e., as ISO/IEC 15944-2 re-useable business objects.

Guideline A-01G1:

Where information is not available or not applicable, for the information of the content value requested for a specific row, one may use the following:

a) *"99" or "not applicable"; or,*

b) *"98" or "not available".*

Rule A-02:

Unless otherwise specified, the coded domain developer is also assumed to have the role of coded domain maintainer and distributor.

Rule A-03:

Unless otherwise specified, the coded domain developer is also the Source Authority for the contents of the coded domain.

Rule A-04:

Where the coded domain developer is not the Source Authority for all or part of the contents of a coded domain, it is assumed that such contents are either freely available, and if not, the coded domain developer is assumed to have made an appropriate arrangement for re-use of all or part of the applicable content values of coded domain with the appropriate Source Authority(ies).

It is understood that at times the columns of content values in a coded domain may themselves be an aggregation, or integration of those which have several Source Authorities. An example is found in ISO/IEC 15944-5:2008, E.6, Table 7 coded domain whose title is "Coded Domain 15944-5:07 Codes Representing UN Member States and their Official (or de facto) Languages".

Table A.1 provides a summary of the administrative attributes presented in matrix form.

Table A.1 — Organization of columns in Table A.2

Col. ID	Col. Title	Definition/Use
01	Coded Domain Registration Attribute	A composite identifier ID assigned to the coded domain registration attribute composed as follows: 1) "CD" = coded domain attribute. The prefix CD is assigned to differentiate this Open-edi administrative attribute from general Open-edi administrative attributes as found in Part 2, as well as those identified in ISO/IEC 15944 series. 2) nnn = a 3-digit number assigned in a block-numeric as follows: 000-099 – reserved for future use (and to link to Part 2 administrative attributes) 100-199 – information on coded domain developer, maintainer, distributor 200-299 – information on Source Authority 300-399 – information on scoping, purpose, and intended use provided by the coded domain developer 400-499 – coded domain content attributes as provided by the coded domain developer
02	Attribute Title	Administrative attributer title
03	Description	Description or definition of attribute
04	Obligation/Condition (`Presence Type`)	Specifies the obligation and conditionality for the Open-edi registration administration attribute. The codes used are based on those found in the coded domain for "Codes Representing Presence-Type Attributes" as specified in ISO/IEC 15944-1:2023, Annex B. "1" = mandatory — Mandatory administrative attributes are required for the OeRI, without exception. "2" = conditional — Conditional administration attributes are used subject to provisions being met that satisfy one or more rules about the OeRI. "3" = mandatory subject to conditional Mandatory subject to conditional administration attributes are those that depend upon the implementation of a conditional attribute. They are required when the conditional administration attribute upon which they depend is implemented and referenced, including dependencies. "4" = optional — Optional administration attributes are subject to no conditions and are completely discretionary.
05	Maximum Occurrence	Identifies the maximum number of occurrences for the administration attribute within its composite administration attribute
06	DataType	Specifies the datatype of the elementary administration attributes, i.e., components of a composite administration attribute such as a composite identifier or contact information.

A.2 Administrative attributes for registration of a coded domain as a business object

Table A.2 — Administrative attributes for registration of a coded domain as a business object

Coded Domain Registration Attribute	Attribute Title	Description	Obligation/ Condition	Maximum Occurrence	Datatype
(01)	(02)	(03)	(04)	(05)	(06)
CD 000	Reserved for registration of coded domain	ID codes 00-09 reserved for assignment for registration as a "business object" using ISO/IEC 15944-2:2015 administration registration attributes, as found in ISO/IEC 15944-2:2015, Annex B Table B.1.			
CD 100	Information on coded domain developer, maintainer and/or developer	A composite set of data element attributes	1	1	string
CD 101	Coded domain developer	The name of the Person who developed ISO/IEC 15944-10 compliant coded domain if other than the Source Authority.\n\nNOTE This can well happen where the original "code set representing X" is in the public domain and freely available.	1	1	string
CD 10n	Coded Domain Maintainer and distributor (source)	The name of the Person maintaining the coded domain and distributor.\n\nNOTE This can be the Person already identified as the coded domain developer.	2	1	string
CD 200	Identification of Source Authority(ies)	Attributes used to identify the Source Authority.\n\nNOTE The default is the coded domain developer.	1	1	
CD 201	Indicator of number of Source Authority(ies)	Indicator of number of Source Authority(ies) where content values (as rows) are integrated into the coded domain.	1	1+	digit
CD 210	Formal name(s) of Source Authority	The official or legal name(s) of the Source Authority, i.e., as HIEs.	1	1+	string
CD 220	Common name or acronym of Source Authority	The commonly used name or acronym by which the Source Authority is known.	4	1+	string
CD 230	ID of Source Authority	Where this is an ISO, IEC or ITU standard, use the standard ID.\n\nWhere an acronym is used to identify the Source Authority, this should be used.	2	1+	string
CD 240	SA coded domain ID	The coded domain ID as assigned by the Source Authority	1	1+	string
CD 250	SA coded domain official name(s)	The official name(s) as assigned by the SA, i.e., as HIEs.	1	1+	string
CD 260	Coded domain common name	The common use name(s) by which the coded domain is referenced.	2	1+	string

Table A.2 *(continued)*

Coded Domain Registration Attribute	Attribute Title	Description	Obligation/ Condition	Maximum Occurrence	Datatype
(01)	**(02)**	**(03)**	**(04)**	**(05)**	**(06)**
CD 300	Scoping, purpose, and intended use		1	1	
CD 310	Scope	The scope as provided by the coded domain developer.	1	1	string
CD 320	Purpose	The purpose as provided by the coded domain developer.	1	1	string
CD 340	Intended focus of use	Identification/specification of intended use of coded domain.	1	1	string
CD 390	Additional information	Additional information provided by the coded domain developer for intended uses of coded domain.	1	1	string
CD 400	Coded domain content attributes	Specification of attributes on the members of a coded domain.	1	1+	string
CD 410	Exhaustive or non-exhaustive	Information on whether or not the coded domain is exhaustive.	1	1+	string
CD 411	Exhaustive/ non-exhaustive code	1 = exhaustive 2 = non-exhaustive	1	1	digit
CD 420	Exhaustivity specifications	Information on criteria for entity becoming a member of the coded domain.	1	1	string
CD 430	Non-Exhaustivity information	Information on how non-exhaustive aspects of coded domain are addressed	2	1	string
CD 431	Systematic approach code	Coded domain takes a systematic and rule-based approach (using the following codes): 1 = specified ID codes are reserved in the rule-base for the coded domain for categories of non-members 2 = the coded domain is of the nature of a classification system or taxonomy among which governs the assignment (reassignment) of its ID codes for its members	1	1	digit
CD 500+	<<Reserved for future use>>				

NOTE   ISO/IEC 15944-22015, Annex B, Table B.1 provides for `Registration of scenarios and their components as business objects". In this context a coded domain registered as a re-useable business object can be used as a semantic component (SC) or an information bundle (IB).

Annex B
(normative)

Use of IT-enabled coded domains to ensure semantic interoperability in support of the "UN Convention on the Rights of Persons with Disabilities"

B.1   The *UN Convention of Rights of Persons with Disabilities* provides the highest level of source of external constraints for requirements of this nature. This UN Convention is in turn supported and implemented through legislation and regulation at the UN member state level, either individually or collectively (e.g., the EU). This annex is based on ISO/IEC 20016-1:2014, Clause 7. ISO/IEC 20016-1 requires that any individual shall be provided with the semantics in the form of HIEs for any set of recorded information (SRI) provided at a level of unambiguity to be:

1)   fully informed;

2)   at a level of unambiguity to be able to make a decision;

3)   at a level of unambiguity for the individual to be able to make a commitment.

B.2   The key objective of this Annex is to address the context and purpose of HIEs from a semantic interoperability perspective which:

1)   support the implementation of the *UN Convention on the Rights of Persons with Disabilities* and its (level) requirements for semantic interoperability;

2)   other UN level requirements of an "external constraints" nature applicable to UN members;

3)   In addition, it does so in a manner which, maximizes use of existing international and ISO, IEC and/ or ITU standards;

4)   does so in a manner which supports an efficient, cost-effective and IT-enabled approach; and,

5)   places these requirements in a collaboration space context of commitment exchange which is the essential element of a business transaction.

B.3   In addition, it is noted and taken into consideration that:

1)   Many sets of recorded information (SRIs) are of a "one way" nature only. They do not require or are intended to be responded to by an individual per se, (e.g., a publication, a broadcast, a speech, etc.). It is of the nature of a "one-to-many".

2)   These in turn are either of an internal constraint nature or may be subject to external constraints.

3)   A one-way communication may nevertheless be made for the purpose of a conversation, a discourse and even as the introduction to a negotiation leading to a commitment.

4)   The next step after a one-to-many is that of identification of the parties concerned to each other either on a one-to-one basis (dialogue), a many-to-many basis (as a multiparty "multilogue"). The end purpose here may be a conversation, the back-and-forth between or among the parties to ensure that the semantics being conveyed are understood but without the need for an individual to make a decision or eventual commitment.

5) If the purpose of the HIE SRI is to serve in the making of a decision or even a commitment, then the next phase of establishing unambiguousness is that of "negotiation" and then the actual making of a commitment which is then actualized.

6) That once a commitment is actualized there may well be associated "post-actualization" requirements forming part of the commitment made by an individual with an organization or public administration, (e.g., warranties, a 5 to 10 year period to "cancel" the commitment, etc.). Examples here include the obligation of Persons as "organization" or "public administration" to provide a "business transaction identifier' (BTI)" of an actualized business transaction.

Table B.1 captures the above requirements in matrix form.

These primitive levels of semantic unambiguity for semantic interoperability support the *UN Convention on the Rights of Persons with Disabilities*. They are presented in Table B.1 in matrix form and applying the requirements of this document for lexical presentation of an IT-enabled coded domain.

Table B.1 — Codes representing levels of semantic unambiguity in support of semantic interoperability equivalency requirements

IT interface			Semantic interoperability equivalency level (SIEL)	
Coded Domain ID	Table ID	ID Code	ISO English	Other HIEs
ISO/IEC 20016-1	01	0	Not applicable	
ISO/IEC 20016-1	01	1	Informational – External constraints apply	
ISO/IEC 20016-1	01	2	Decision-taking – External constraints apply	
ISO/IEC 20016-1	01	3	Commitment-making – External constraints apply	

NOTE   Table B.1 is based on ISO/IEC 20016-1:2014, Table 1 where "Other" in the column "Other HIEs" represents the facility to add HIE in languages other than ISO English.

Annex C
(informative)

Concept and definition of "coded domain"

C.1 Purpose

In this annex, the use of "[Dnnn]" refers to the ID code of the term/definition entry as Human Interface Equivalents (HIEs) for the concept in English, French, Russian and Chinese as found in ISO/IEC 15944-7. This is an ISO/IEC publicly available standard.

The concept and definition of "coded domain" was introduced as part of the development of ISO/IEC 15944-2.

The concept and definition of "coded domain" incorporates and builds on other key concepts and their definitions introduced in ISO/IEC 15944-1or ISO/IEC 15944-2. They include (in the order in which they appear in the definition):

a) Rulebase [D236]

b) Coded domain source Authority (cdSA) [D035]

c) ID code [D109]

d) Registration Schema (RS) [D224];

e) Source Authority (SA) [D250].

In addition:

a) the definition of the concept of "rulebase" incorporates the ISO/IEC 15944-2 concept and definition of "ID code" and "rule";

b) the definition of coded domain incorporates the ISO/IEC 2382-17 concept and definition of "entity.

Further, the "Notes" to this ISO/IEC definition for coded domain includes terms which in turn represent ISO and ISO/IEC defined concepts. These include (in the order in which they appear in the Notes:

In Note 1:

— rule [D236]

— coded domain Registration Schema (cdRS) [D034]

In Note 2:

— jurisdictional domain [D125]

In Note 3:

— dataset [D063]

— data [D060]

— data element [D061] & D062, i.e., data element (in organization)

— rulebase [D237]

In Note 4

— code [D032]

— Human Interface Equivalent6 (HIE) [D107]

In Note 6:

— pivot ID code [D196]

In Note 7:

— object class [D147]

C.2   Analysis of existing ISO/IEC definition of "coded domain"

C.2.1   "rulebase" and "rule"

A rulebase is a set of predefined rules which interwork and which together form an autonomous whole. Sets of predefined rulebases are of different types and exist at different levels in this document. Further, a whole set of rules as a rulebase can be used and reference as a single (business) object. Examples of rulebases and associated guidelines include:

— those for the specification coded domain;

— those supporting IT-enablement of a coded domain;

— those for the assignment of ID codes;

— those for each entry in a coded domain for the IT-interface and HIEs;

— those for the assignment of unique and unambiguous identifiers for both (1) a coded domain; and, (2) each entry or member of a coded domain;

— those for mandatory and conditional data elements, (e.g., "columns") for each member, i.e., "row" as an entry in a coded domain;

— etc.

C.2.2   "coded domain Source Authority (cdSA)" and "Source Authority (SA)"

A "Source Authority" is a generic concept and pertains to a Person in the role of the authoritative source for a set of "constraints" which itself is a defined concept [D041].

Constraints themselves are "explicitly stated rules that prescribe, limit, govern or specify…". These are not only constraints of an external nature, i.e., external constraints [D098], but also internal constraints. [D119]

Source authorities are different in nature and levels of authority. A Source Authority can be:

(1) this document itself;

(2) another ISO standard;

(3) a jurisdictional domain at whatever level of authority. (See further in ISO/IEC 15944-5:2008, Clause 7)

(4) an international organization recognized as a "global" Source Authority, (e.g., the International Chamber of Commerce (ICC) for "INCOTERMS, WCO for "Harmonized System, ITATA, IMO.

Most of the sets of "codes representing X", i.e., a "code set" are not IT-enabled. They contain entries as members which have a different property or behaviour than the majority of members and overall

criteria for membership in that code set, i.e., that are not members of the same object class. This is not a problem for the Source Authority as its members and participants in the specific industry sector for which it was created and maintained are fully aware of such idiosyncrasies and have dealt with these in their own IT systems and related EDI.

A coded domain Source Authority (cdSA) is the entity which sets the rules governing a coded domain, i.e., applies the rules and guidelines of this document to a code set so that it is transformed into an IT-enabled coded domain with unambiguous semantic components so as to be able to support computational integrity.

After a cdSA is the Source Authority itself or it can be another Person. At times, another organization functions as the Registration Authority and code set "manager".

A cdSA is the Person which transforms the code set of a SA into an IT-enabled ISO/IEC 15944-10 "coded domain" where:

1) all the rules for the SA for the code set are explicitly stated;

2) all the entries in the code set are tagged as being a member of one or the distinct object classes forming code set, (e.g., via a qualifier data element code set such as: (a) codes representing types of currencies and funds listed in ISO 4217; or (b) coded representing types of countries and other political entities listed in ISO 3166-1.

The cdSA does so in the development and completion of the "coded domain specification template" as well as the associated development and issuance of a "matrix" containing the IT-enabled coded domain.

C.2.3 "entity" [D093]

The ISO/IEC definition of the concept "entity" is well established and widely used. From an Open-edi perspective in the context of the business transaction model the fundamental key components for:

— Person;

— process; and,

— data.

ISO/IEC 15944-1 identified three sub-types of Person namely, individual, organizations and public administrations. ISO/IEC 15944-1 also identified existing "coded domains" for the identification and registration of Persons in the form of ISO standards:

— ISO/IEC 6532 for organization;(see ISO/IEC 15944-1:2023, D.4.2.2)

— ISO/IEC 7812 for individuals, organizations and public administrations; and, (ISO/IEC 15944-1:2023, D.4.2.5)

— ISO/IEC 7501 for individuals. (see ISO/IEC 15944-1:2023, D.4.2.3)

With respect to "process", the links to coded domains are those of scenarios and rules.

With respect to "data" (and data element), numerous "sets of codes representing XYZ" exist which are already or can be/should be transformed into IT-enabled domains.

Examples already identified here and used in Open-edi standards development work as potential coded domains include: (See ISO/IEC 15944-7:2009, Annex A for the complete titles and reference for the examples)

ISO Standards	Short Title
ISO 639-2	Language codes – 3-alpha (2T)
ISO 3166-1	Country codes
ISO 3166-2	Country sub-divisions

ISO Standards	Short Title
ISO 3166-3	Country codes formerly used
ISO 4217	Codes for currencies and funds
ISO/IEC 5218	Codes for the human sexes
ISO/IEC 6523-1 ISO/IEC 6523-2	Identification and registration of organizations and organization parts
ISO/IEC 7501-1, ISO/IEC 7501-2, ISO/IEC 7501-3	Passport and visas – identification of individuals
ISO/IEC 7812-1 ISO/IEC 7812-2	Identification cards (Persons as individuals, organizations or public adminis-trations)

C.2.4 "ID code" [D109]

The concept of ID code was introduced in ISO/IEC 15944-2 where it was noted that most ID codes are of the nature of "composite identifiers [D040] uses as IT-interface equivalents [D124] with one or more Human Interface Equivalents (HIEs) [D107]. Then, in the context of ISO/IEC 15944-5 (which focused on jurisdictional domains as sources of external constraints) the concepts of IT-enablement [D123] was defined.

Key rules embedded in the definition of ID code and its Notes include:

(1) it is a code assigned to a member of coded domain (in conformance to the rulebase governing membership in that coded domain) by the cdSA;

(2) any ID code should be unique within the Registration Schema (RS) of that coded domain. This implies that the RS also has an identifier which is unique and unambiguous;

(3) associated with an ID code for a member in a coded domain can be one or more equivalent codes. Here ISO 3166 provides a widely known common example;

See further in ISO/IEC 15944-5:2008, Annexes D, E and J.

(4) where more than one equivalent ID code exists, one of them should be declared as the pivot ID code" (See further 3.94) This should not impact the multiple HIEs which may exist for that entry in the coded domain for that ID code.

(5) an ID code should have at least one Human Interface Equivalent (HIE) representation. It may have (many) more HIEs. (For example of multiple HIEs for an ID code (IT interface equivalent) see ISO/IEC 5218:2022, Annex A.

(6) quite often existing (widely) used code sets, including ISO standards include entries with accompanying ID codes which are not members as peer entities, i.e., are not members of the same object class. A prime example here is ISO 3166-1.

Another type of an example is the code set which is "non-exhaustive", i.e., it allows for "other" "user extensions" (registered or, most often non-registered) and doing so in a non-IT-enabled and unambiguous manner.

C.2.5 "registration schema" [D224]

The concept and definition of "Registration Schema" was introduced in ISO/IEC 15944-1. Basically, it involves a formal definition of the set of rules, (e.g., as explicitly stated in an ISO standard or document similar in nature) governing the entry in the data fields (or sub fields), a.k.a., data elements of the permitted content values for an entity as a member of that registration schema.

Here it is assumed that there is a minimum set of common rules and best practices for the establishment, registration, (change) management, etc., for any entry representing an entity as an (object class) member in that RS, (e.g., as an instantiation).

Here it is also assumed that a Registration Schema (RS) is managed and maintained as a table or matrix either on a simple 2-dimensional XY axis, or if repeatable fields or sub-fields, are involved, on a XYZ axis.

It is also assumed that each member in a Registration Schema is represented as a "row" in that RS with the row entry containing all the mandatory, conditional, and optional data elements for which the permitted content values are governed by rules which may include reference to code sets which in Open-edi context would be ISO/IEC 15944-10compliant "coded domains". Here ISO/IEC 15944-2 addresses registration aspects of business objects.

C.3   Analysis of ISO/IEC concepts and definitions used in the NOTES to the definition of "coded domain"

The definition for "coded domain" includes a number of "NOTES". These NOTES summarize and incorporate other relevant concepts. They also encapsulate rules albeit in an implicit manner.

The added concepts found in the NOTES are:

— coded Domain Registration Schema;

— jurisdictional domain

— dataset

— data element

— Human Interface Equivalent (HIE)

— object class.

In addition, many of the NOTES contain "rules" governing key properties and/or behaviours of a coded domain. These need to be captured and stated explicitly in ISO/IEC 15944-10 (at times with its own subclause).

Annex D
(informative)

Case Study: Example of "e-potato"

D.1   The purpose of this annex is two-fold:

1) to demonstrate that there exists "sets of codes representing X" which are widely used in both a manual world of paper documents as well as in Open-edi among ID systems of parties in a business transaction. The example presented here is based on the "Harmonized System" nomenclature of the World Customs Organization (WCO)[11];

2) to serve as an example of a single ID code in a coded domain having multiple different Human Interface Equivalents (HIEs) not only among jurisdictional domains, but in particular:

   a) more than one HIE in a single jurisdictional domain; and,

   b) more than one and different (official) HIEs in the same (ISO 639-2) language codes as applied and used in that language by differing jurisdictional domains.

D.2   As a coded domain, the Harmonized System (HS) of the WCO provides a (complete) set of predefined ID codes for use by all its WCO members (as well as others).

The example presented below demonstrates that:

1) a jurisdictional domain, in this case a country (as a UN member state) may well have and does have two or more (official) languages of use and thus multiple HIEs for the same ID code; and,

2) there are differences in the use of the same natural language (identified as per ISO 639-2 3-alpha code) among jurisdictional domains who share the "same" natural language as their "official" language.

D.3   This classification system applies to the movement of all goods in and out, i.e. anything imported or exported, among its signatory member jurisdictional domains, i.e. essentially UN member states, but some other categories of jurisdictional domains as well. The HS as a classification system imbeds a coded domain with the ID codes being pre-assigned and structured in a hierarchical manner based on the rulebase of the WCO governing this coded domain.

As a coded domain, the Harmonized System (HS) of the WCO thus provides predefined ID codes for all its member entities which goods of whatever nature being imported and exported among it the jurisdictional domains who are members of the WCO.

It is noted that many classification systems, especially those which are utilized world-wide and/or have status of a jurisdictional domain nature, i.e. the role and stature of the (international) organization which is the Source Authority for the classification system and the use of the ID codes of its coded domain(s) is acknowledged by UN member states.

For example, the IT Interface value (which likely will also serve in any actualized international business transaction as the instantiated value of a semantic component (SC) of the item referenced) utilized in

---

11) The Harmonized System (HS) applies to the classification and coding of the movement of goods in and out (e.g., imports and exports) of jurisdictional domains which are members of the World Customs Organization (WCO). It is a coding system consisting of a high-level coded domain and sub-domains in the form of a tier-structured, block-numeric for assignment of ID codes for its entries. The rulebase for the HS and its maintenance is governed by "The International Convention on the Harmonized Commodity and Coding System" of the WCO. (See http://www.wcoomd.org/home_hsoverviewboxes_hsharmonizedsystem.htm)

this Annex is that for "potato" (fresh or chilled). Fresh or chilled potatoes have been assigned the ID code in the HS of "0701". The human interface equivalents are many and take into account the (official or de facto languages) of jurisdictional domains yielded the following example, given in Table D.1.

Table D.1 — Illustrating IT Interfaces and different HIEs using the WCO HS code for "potato"

Common IT Interface			Human Interface Equivalent	
Code ID	Country Code – UN 3-digit numeric ID code & Short Name (eng) Equivalent		Localization and Multilingual Equivalents (ISO 639-2/T 3-alpha code + HIE term in the official languages in use in that country)	
HS:0701	124	CANADA	(eng):	potato
			(fra):	pomme de terre
			(iku):	patiti[a]
HS:0701	464	MEXICO	(spa):	papa
HS:0701	724	SPAIN	(spa):	patata
HS:0701	040	AUSTRIA	(deu):	erdapfel
HS:0701	276	GERMANY	(deu):	kartoffel
HS:0701	056	BELGIUM	(fra):	pomme de terre
			(nld):	aardappel
HS:0701	246	FINLAND	(fin):	peruna
			(swe):	potatis
a) Inuktitut is an official language only in the "Territory of Nunavut", an administrative sub-division in Canada. The example here uses the Latin-1 alphabet and not the syllabic one.				

The example presented above therefore demonstrates:

— **a jurisdictional domain, in this case a country (as UN member state), having more than one (official) language of use and thus multilingual HIEs; and,**

— **differences in the uses of the same natural language in various countries and thus different multilingual HIEs within a natural language as used in various jurisdictional domains.**

Since "potato" is a very common object which recognized world-wide. Thus, this annex serves as a good analogy.

Annex E
(informative)

Case study: Example of a coded domain with two writing systems for Human Interface Equivalents (HIEs) of a set of ID codes - in Russian use of the Cyrillic alphabet and the romanized form

There are a number of languages for which more than one writing system exists for the words used in that language. That is, although the words are pronounced the same and the verbal use of these words is the same, two different writing systems are used.

This has a result that in the same language the same semantic is represented in written form in the same language with two differing representation of the same. The example presented here is that of the Russian language which in its use utilized both the Russian Cyrillic alphabet and well as the romanized form.

The examples provided here are ISO/IEC 15944-7:2009, Table E.4 and Table E.6.

Annex F
(informative)

Case study: Example of coded domain in Matrix form and XML format as found in Table 2 in ISO/IEC 5218 "Codes representing the human sexes"

F.1 Purpose

The example in this annex is referencing ISO/IEC 5218:2022, Annex A. The coded domain of codes representing human sexes in both matrix form and XML format are presented.

F.2 Matrix form used in ISO/IEC 5218 "Codes for the representation of human sexes" with HIEs

Table/Tableau 02 — Human Interface Equivalents (Linguistic) for "Codes for the representation of human sexes"						
IT Interface / Interface TI		Human Interface Equivalents (Linguistic)/ Équivalents interface humaine (linguistiques)				
Table ID/ Tableau	ID Code/ Code	Australia Australie	Austria Autriche	Belgium Belgique		Brazil Brésil
		036:eng	040:deu	056:fra	056:nld	076:por
ISO/IEC 05218:02	0	not known	unbekannt	inconnu	niet bekend	desconhecido
ISO/IEC 05218:02	1	male	männlich	masculin	man	masculino
ISO/IEC 05218:02	2	female	weiblich	féminin	vrouw	feminino
ISO/IEC 05218:02	9	not applicable	nicht zutref-fend	sans objet	niet van toe-passing	nenhuma resposta

Table ID / Tableau	ID Code/ Code	Canada		China Chine	Denmark Danemark	
		124:eng	124:fra	156:zho	208:dan	
ISO/IEC 05218:02	0	not known	inconnu	不明	ukennt	
ISO/IEC 05218:02	1	male	masculin	男	man	
ISO/IEC 05218:02	2	female	féminin	女	kvinne	
ISO/IEC 05218:02	9	not applicable	sans objet	不适用	gjelder ikke	

Table ID/ Tableau	ID Code/ Code	Finland Finlande		France	Germany Allemagne	Italy Italie
		246:fin	246:swe	250:fra	276:deu	380:ita
ISO/IEC 05218:02	0	tuntematon	okänd	inconnu	unbekannt	sconosciuto
ISO/IEC 05218:02	1	mies	man	masculin	männlich	maschio
ISO/IEC 05218:02	2	nainen	kvinna	féminin	weiblich	femmina
ISO/IEC 05218:02	9	ei sovellu	inte lämplig	sans objet	nicht zutreffend	non applicabile

Table ID/ Tableau	ID Code/ Code	Japan Japon	Korea Corée	Netherlands Pays-Bas	Norway Norvège	Russian Federation Fédération de Russie
		392:jpn	410:kor	528:nld	578:nor	643:rus
ISO/IEC 05218:02	0	不明	알수없음	niet bekend	uvisst	неизвестный
ISO/IEC 05218:02	1	男	남	man	mann	мужсой
ISO/IEC 05218:02	2	女	여	vrouw	kvinne	женский
ISO/IEC 05218:02	9	適用不能	적용불가	niet van toepassing	gjelder ikke	не применяется

Table ID/ Tableau	ID Code/ Code	Sweden Suède	Switzerland Suisse		
		752:swe	756:deu	756:ita	756:fra
ISO/IEC 05218:02	0	okänd	unbekannt	sconosciuto	inconnu
ISO/IEC 05218:02	1	man	männlich	maschio	masculin
ISO/IEC 05218:02	2	kvinna	weiblich	femminile	féminin
ISO/IEC 05218:02	9	inte llämpbar	nicht zutreffend	non applicabile	sans objet

Table ID/ Tableau	ID Code/ Code	United-Kingdom Royaume Uni	United States of America États-Unis d'Amérique
		826:eng	840:eng
ISO/IEC 05128:02	0	not known	not known
ISO/IEC 05128:02	1	male	male
ISO/IEC 05128:02	2	female	female
ISO/IEC 05128:02	9	not applicable	not applicable

F.3 XML format for representing the Matrix form of the coded domain for Table 2 "Codes for the representation of human sexes" with HIEs

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<!--

 This table is edited as a Unicode file and contains ideographic characters.

-->

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     representation of human sexes": Examples of countries and

     their official language(s)</text>

   <text>Équivalents interface humaine

     (linguistique) des " codes de représentation des sexes

     humains " : Exemples de pays et de leur(s) langue(s)

     officielle(s)</text>

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   <text>Interface TI</text>

  </common>

  <content>

   <text>Human Interface Equivalents (Linguistic)</text>

   <text>Equivalents interface humaine (linguistique)</text>
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     <component code="2">female</component>
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   <country code="040">
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    <components type="HIE" lang="deu">
     <component code="0">unbekannt</component>
     <component code="1">männlich</component>
     <component code="2">weiblich</component>
     <component code="9">nicht zutreffend</component>
    </components>
   </country>
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    <names>
     <name type="iso">Belgium</name>
     <name type="iso">Belgique</name>
    </names>
    <components type="HIE" lang="fra">
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```

```
  <component code="1">masculin</component>

  <component code="2">féminin</component>

  <component code="9">sans objet</component>

 </components>

 <components type="HIE" lang="nld">

  <component code="0">niet bekend</component>

  <component code="1">man</component>

  <component code="2">vrouw</component>

  <component code="9">niet van toepassing</component>

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  <name type="iso">Brézil</name>

 </names>

 <components type="HIE" lang="por">

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  <component code="1">masculino</component>

  <component code="2">feminino</component>

  <component code="9">nenhuma resposta</component>

 </components>

</country>

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  <name type="iso">Canada</name>

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 <components type="HIE" lang="eng">

  <component code="0">not known</component>

  <component code="1">male</component>

  <component code="2">female</component>

  <component code="9">not applicable</component>

 </components>
```

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     <component code="0">inconnu</component>

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     <component code="2">féminin</component>

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     <component code="2">女</component>

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     <component code="1">man</component>

     <component code="2">kvinne</component>

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  <component code="0">okänd</component>

  <component code="1">man</component>

  <component code="2">kvinna</component>

  <component code="9">inte lämplig</component>

  </components>

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   </names>

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    <component code="1">masculin</component>

    <component code="2">féminin</component>

    <component code="9">sans objet</component>

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  </country>

  <country code="276">

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      <component code="1">männlich</component>
      <component code="2">weiblich</component>
      <component code="9">nicht zutreffend</component>
    </components>
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      <name type="iso">Italie</name>
    </names>
    <components type="HIE" lang="ita">
      <component code="0">sconosciuto</component>
      <component code="1">maschio</component>
      <component code="2">femmina</component>
      <component code="9">non applicabile</component>
    </components>
  </country>  <country code="392">
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      <name type="iso">Japon</name>
    </names>
    <components type="HIE" lang="jpn">
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      <component code="1">男</component>
      <component code="2">女</component>
      <component code="9">適用不能</component>
    </components>
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```
      <name type="iso">Corée</name>

    </names>

    <components type="HIE" lang="kor">

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     <component code="1">남</component>

     <component code="2">여</component>

     <component code="9">적용불가</component>

    </components>

</country>

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     <name type="iso">Pays-Bas</name>

    </names>

    <components type="HIE" lang="nid">

     <component code="0"> niet bekend </component>

     <component code="1"> man </component>

     <component code="2"> vrouw </component>

     <component code="9"> niet van toepassing </component>

    </components>

</country>

<country code="578">

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     <name type="iso">Norvège</name>

    </names>

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     <component code="1"> mann </component>

     <component code="2"> kvinne </component>

     <component code="9">niet van toepassing</component>

    </components>

</country>
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    <name type="iso">Féderation de Russie</name>
   </names>
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    <component code="1"> мужсой</component>
    <component code="2"> женский</component>
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   </components>
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    <name type="iso">Suède</name>
   </names>
   <components type="HIE" lang="swe">
    <component code="0">okänd</component>
    <component code="1">man</component>
    <component code="2">kvinna</component>
    <component code="9">inte llämpbar</component>
   </components>
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    <component code="1">männlich</component>
    <component code="2">weiblich</component>
```

```
      <component code="9">nicht zutreffend</component>

    </components>

    <components type="HIE" lang="ita">

      <component code="0">sconosciuto</component>

      <component code="1">maschio</component>

      <component code="2">femmina</component>

      <component code="9">non applicabile</component>

    </Components>

    <components type="HIE" lang="fra">

      <component code="0">inconnu</component>

      <component code="1">masculin</component>

      <component code="2">féminin</component>

      <component code="9">sans objet</component>

    </components>

</country>

<country code="826">

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      <name type="iso">Royaume Uni</name>

    </names>

    <components type="HIE" lang="eng">

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      <component code="1">male</component>

      <component code="2">female</component>

      <component code="9">not applicable</component>

    </components>

</country>

<country code="840">

    <names>

      <name type="iso">United States of America</name>

      <name type="iso">Etats-Unis d'Amerique</name>

    </names>

    <components type="HIE" lang="eng">
```

```
        <component code="0">not known</component>

        <component code="1">male</component>

        <component code="2">female</component>

        <component code="9">not applicable</component>

    </components>

</country>

</table>
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Annex G
(informative)

Determining whether the membership in a coded domain is exhaustive or non-exhaustive

G.1 Purpose

This annex supports and expands on subclause 6.2.2.

In the referencing and use of coded domains for the contents of semantic components in a business transaction requirements, one needs to know whether or not a coded domain has the attribute of

a)   being exhaustive; or

b)   being non-exhaustive.

A coded domain which is "exhaustive" is the simplest case and is dealt with first. Coded domains which are non-exhaustive require more detailed rules and attributes in their specification and are dealt with in G.3.

G.2 Key properties and behaviours of an "exhaustive" coded domain

G.2.1 General

The key property of an exhaustive coded domain is that it is fully complete at its current status. All the entities which are members of the coded domain are included.

No allowance or permission is made by the Source Authority of the "set of codes representing X" for the addition of any additional entries except via use of its (documented) maintenance and update rulebase, i.e., procedures.

G.2.2 Examples of exhaustive coded domains

G.2.3 Exhaustive domains which are relatively "static" in nature

An example of an "exhaustive" coded domain is ISO 5218. (See Annex E). Another example is ISO 4217 which lists all of the currently valid 3-alpha codes for currencies and funds for use in trade, commerce and banking.

A third example is found in many of the entries in ISO 3166-2. ISO 3166-2 contains a complete breakdown in to a relevant level of all administrative sub-divisions of all the members of ISO 3166-1.

Each UN member state determines what its administrative sub-divisions are, i.e., as distinct jurisdictional domains and whether or not all such administrative sub-divisions have equal status (as jurisdictional domains). ISO 3166-2 website contains a sample entry for Canada[12].

An example of the presentation of an exhaustive coded domain, which is or could be made ISO/IEC 15944-10 "compliant" is that of ISO 3166-2 set of administrative sub-divisions of Canada. It is noted that Canada has ten (10) provinces and three (3) territories as its administrative sub-divisions (as

---

12)   See further   http://www.iso.org/iso/country_codes/background_on_iso_3166/iso_3166-2 .htm content_strcutrue_3166-2.

established by the Parliament of Canada[13]). The set of codes representing Canada's administrative sub-divisions is "exhaustive". Taking this ISO 3166-2 example and applying a coded domain requirements perspective including the use of a semantic qualifier yields a matrix consisting of the following columns.

Table G.1 — Organization of columns in Table G.2

Column ID	Specification
1	The 3-digit numeric UN (and ISO 3166-1) code for Canada
2	The 2-alpha ISO 3166-1 code for Canada
3	The 2-alpha code for each administrative sub-division[a]
4	Semantic qualifier code where 1 = Province 2 = Territory
5	Sub-division Name 1: (eng)
6	Sub-division Name 2: (fra)
[a] By agreement between Canada, Mexico, and the USA, the 2-alpha sub-division codes of these three countries are harmonized. This means that any ISO 3166-2 e-alpha code used by Canada, Mexico and the USA is unique and not duplicated.	

Table G.2 — ISO/IEC 15944-10 compliant representation of Canada entry in ISO 3166-2 as a coded domain

ID codes				Human Interface Equivalents (HIEs)	
UN/ISO 3-digit country code	ISO 3166-1 2-alpha code	ISO 3166-2 2-alppha code	Semantic Qualifier Code	Sub-division Name 1: (eng)	Sub-division Name 2: (fra)
(1)	(2)	(3)	(4)	(5)	(6)
124	CA	AB	1	Alberta	Alberta
124	CA	BC	1	British Columbia	Colombie-Britannique
124	CA	MB	1	Manitoba	Manitoba
124	CA	NB	1	New Brunswick	Nouveau-Brunswick
124	CA	NL	1	Newfoundland and Labrador	Terre-Neuve-et-Labrador
124	CA	NS	1	Nova Scotia	Nouvelle-Écosse
124	CA	NT	2	Northwest Territories	Territoires du Nord-Ouest
124	CA	NU	2	Nunavut	Nunavut
124	CA	ON	1	Ontario	Ontario
124	CA	PE	1	Prince Edward Island	Île-du-Prince-Édouard
124	CA	QC	1	Quebec	Québec
124	CA	SK	1	Saskatchewan	Saskatchewan
124	CA	YT	2	Yukon	Yukon

G.2.4   Exhaustive domains which are "dynamic" in nature

There are many coded domains which are exhaustive but very dynamic in nature. This is particularly true for those in support of business transactions. Key examples include the following two most widely used multipart international standards:

a)   ISO 7501

---

13) Each UN member state has its highest legislative body, (e.g., Parliament, Diet, National Assembly, Congress, etc.) which decides what its administrative sub-divisions are and the status of such geopolitical sub-division where these are not the same as jurisdictional domains.

b)   ISO 7812.

NOTE   ISO 7812 is the international standard governing the issuance of credit and debit cards, identification cards, affinity cards to individuals (or organization Persons).

The list (or database, i.e., databases of qualified issuers, of ISO 7501 or ISO 7812 is implemented as a dynamic set of connected Open-edi IT systems (often making use of clearing houses). At any point in real-time, this integrated set of Open-edi IT systems is complete and up date, even though well over 1,000,000 – 10,000,000+ additions/changes are made each day to the "complete" list of valid members of either ISO 7501 or ISO 7812.

In order to ensure that entities whose membership status has been "revoked" do not continue to exercise their rights as members. It is a common and best business practice to issue and maintain a "stop list" of the ID codes of coded domain membership.

Rule G-01:

A Source Authority(ies) for a coded domain whose membership is very voluminous, should consider developing a "stop list" for the ID codes of its member whose rights as members is in question.

The reason is very practical and based on best business practices including:

a)   a "stop list" is much shorter/less voluminous than that of the complete set of valid ID codes for members of a coded domain (especially where such membership exceeds 1,000,000 – 10,000,000 plus);

b)   a "stop list" is a very useful tool in preventing (or minimizing) identify fraud; and,

c)   a "stop list" consisting simply of the ID codes of the members of a coded domain supports privacy protection requirements where the buyer in a business transaction is an "individual".

G.3   Key properties and behaviours of a "non-exhaustive" coded domain

G.3.1   Overview

The purpose of G.3 is to introduce the most common and best practices in use by those who have developed and are currently maintaining "sets of codes representing X" which are of a coded domain nature. Those of this nature already identified are:

a)   making provision for "user assigned" ID codes;

b)   user of "Other" and the "00" Rule; and,

c)   use of reserved "99", "98", and "97" etc., ID codes.

G.3.2   Availability of User assigned ID codes

The example of a "set of codes representing X" making provision for the availability of "user assigned" codes is ISO 3166-1.

The key properties and behaviours of an ISO 3166-1 non-exhaustive coded domain include the following

1)   it sets aside a series of 2-alpha reserved codes which are of the nature of "User Extensions", i.e.,. ID codes which may be used by any implementer or user without restrictions. In ISO 3166-1 these include the 2-alpha codes "AA", "QM -> Q2, "ZA -> XZ, and "ZZ". The status of these ISO 3166-1 sets reserved codes is that they are free to be "user assigned".

2)   it is noted that the rules governing ISO 3166-1 including that of its Maintenance Agency (MA) do not require (or provide for a user to register the use of a "User Extension" ID codes nor provide a user to post the use of such a "User Extensions". The result is that different communities of users

have chosen the same "user extension ID code" to use some of ISO 3166-1 codes reserved for user extensions as a user extension(s) in that user community;

3) since the use of a user extension code is not required to be registered or even posted with ISO 3166-1, Maintenance Agency, a user community may have (inadvertently) chosen a user extension code which is already in use by another user community.

One (negative) result of this approach, i.e., the Source Authority requiring notification of use of use extensions, is that this approach leads to interoperability conflicts and problems which is a serious matter in an Open-edi and eBusiness context.

The purpose of this rule is to minimize interoperability conflicts among various eBusiness sectors which use the same set of codes. This rule applies whether or not the code set referenced is an ISO, IEC and/or ITU based international standard and/or has a similar world-wide recognised Source Authority (e.g. as a jurisdictional domain (e.g. those of international organizations which have a world-wide mandate in a specified sector).

Rule G-02:

It is recommended that where the rules governing the assignment of ID codes for members of a coded domain make provision for the "user extensions" by implementers/users that:

a) **at the minimum such implementers/users notify the Source Authority responsible for maintaining that coded domain;**

b) **that once such a "user extension" is registered with the Source Authority (SA), that the SA advises anyone registering a new "user extension" whether or not the member ID code is already being used (and advise that Person to select another member ID code); and,**

c) **for the Source Authority to make provision in its rules to convert a "user extension" member ID code into a "permanent ID code".**

The purpose of the "00' rule is three-fold; namely:

a) to support a systematic and IT-enabled approach to the maintenance of a coded domain; and,

b) to identify candidate additions as new members of a coded domain. This is because if users of a coded domain use the "00" rule: (i) to identify entities as "possible" members of a coded domain, and, (ii) such use identifies numerous implementers then the Source Authority for that coded domain may well decide to take one or more of these "Others", incorporate them into the next version/release of that coded domain as a "full" member with its own ID code.

c) to allow the Source Authority to review all "Others" as added as to systematicity and re-coding, i.e., it is a quality check to new and old use.

G.3.3   Use of "Other" and the "00" Rule

Often a "set of codes representing X" is non-exhaustive in nature because it is recognized by its user community and Source Authority (SA) that,

a) the set of its entries as members of that code set along with their ID codes represent 80-95 %+ of the already identified and recognized most common requirements of that user community; and,

b) it is recognized that additional entries may eventually need to be added based on "common" usage requirements.

Provision is made for supporting this requirement in this document through the application of the "00" rule.

Rule G-03: Use of "Other" (or "00") Rule

Where a coded domain is "non-exhaustive" in nature, the Source Authority should make provision for the use of the "00" ID code for "Other', i.e., for users to be able to identify entities which are relevant to them in their use of that coded domain

G.3.4   Use of reserved "99", "98" "97" etc, ID codes

Note 8   in the definition of "coded domain" as stated in ISO/IEC 15944-2: 2015, 3.13 (also found in ISO/IEC 15944-7:2009 as D033) contains the following text:

> *NOTE 8   A coded domain may contain ID code which pertain to predefined conditions other than qualification of membership of entities in the coded domain. Further, the rules governing a coded domain may or may not provide for user extensions.*
>
> *EXAMPLE   Common examples include: (1) the use of ID Code "0" (or "00", etc.) for "Others, (2) the use of ID Code "9" (or "99", etc.) for "Not Applicable"; (3) the use of "8" (or "98") for "Not Known"; and/or, if required, (4) the pre-reservation of a series of ID codes for use of "user extensions".*

The basis approach is to "reserve" a number of member ID codes at the upper limit of the rules governing the assignment of member ID codes for this purpose.

Rule G-04: Use of reserved "99', "98", "97", etc.

Where a coded domain is of an exhaustive or non-exhaustive nature, but its use allows for implementers to state that content value may not have one of a member ID code or use of the "Other" (= 00" rule), then the use of "Reserved "99", "98", "97", etc." rule should be applied as follows:

a)   **"99" = Not applicable**

b)   **"98" = Not known**

c)   **"97" = Reserved.**

Annex H
(informative)

Examples of identification of different object classes within a coded domain through the use of semantic qualifiers

H.1 Purpose

In summary, any "set of codes representing X" is developed by its Source Authority for use within its specific context and authority domain by that user community. Depending on the context of use and nature of the Source Authority, use of this set of codes is either mandatory or voluntary. Here it is understood that use of a "set of codes representing X" may well be mandatory for all those Persons (e.g., organizations and/or public administrations) which are members of the organization or public administration which serves as the Source Authority. As such, within the user community which is the source of a "set of codes representing X (code set X), the rules governing the code set, the nature of the ID code assigned are implicitly known, even though many of them are not explicitly stated.

However, it is well-known and a common practice that a "set of codes representing X" (code set X) developed by and within its user community is very often used by others in other sectors and applications which are quite different from that of the originating user community and its Source Authority (and associated maintenance Agency (MA)).

Quite often, the "set of codes representing X" developed and managed by its Source Authority when analysed from an object oriented methodology contains two of more sub-object classes.

Open-edi is rule-based and object class methodology is rule based. The international ISO definition of **object class** is given in [3.70](#).

From a coded domain perspective, the default is that coded domain consists of a single objects class, i.e., is one whose members all follow the same rules and have the same (essential) properties and behaviour as members of that coded domain.

This is important from a business transaction and commitment exchange requirements, i.e., any member of a coded domain used as the content for, i.e., where a coded domain serves as the reference for use in a semantic component, any member of that coded domain via its ID code can be used as the content for use of that semantic component.

Given the fact that many "sets of codes representing X" were:

1)   developed by a particular user community for their own use; and,

2)   often grew "organically" based on their use in that user community

means that such a "primary" or "primitive" objects class actually contains two or more or more distinct (sub) object classes.

Rule H-01:

Persons shall use the level of semantic unambiguity contained in a coded domain to make decision on whether or not to use the coded domain in support of commitment exchange in their business transactions.

Semantic unambiguity is achieved in two ways; namely,

1)   through the specification of the rules and attributes of the coded domain at the coded domain level; and,

2) through additional specification, if required, at the entry level, i.e., for a member or a set of members of a coded domain as a "sub-object class" , a so identified via a semantic qualifier (see 3.134).

The concept of and need for a semantic qualifier is best explained through two examples based on two widely used international standards; namely:

1) ISO 3166-1;

2) ISO 4217.

This annex draws much of its information from ISO/IEC 15944-5:2008, Annexes D, E, and H whose titles respectively are:

It is advised that implementers and users of this document to acquaint themselves with the contents of ISO/IEC 15944-5:2008, Annexes D, E, and H.

H.2 First example of need for use of semantic qualifier: ISO 3166-1

H.2.1 Overview

The origin of ISO 3166 lies in that of information science and documentation, i.e., that of ISO TC46 "Information and documentation". Working with the UN, the first edition of ISO 3166 was published in December, 1974 listing 220 "names of countries, dependencies and other areas of particular interest". Most of these entries came from a list provided by the Statistical Office of the United Nations (UN). In 1974, ISO 3166 entries had only 2-alpha codes.

In 1981, the 2nd edition of ISO 3166 included the 3-digit numeric codes and the 3-alpha codes of the UN Statistical Division. The development of ISO 3166-2 was prompted by the recognition that ISO 3166 contained many entries which are "not countries", i.e., jurisdictional domains as members of the UN. (For a list of entries in ISO 3166-1 which are not UN-member states, see ISO/IEC 15944-5:2008, Annex J.) However, the original objection of establishing ISO 3166-2 (in 1988) and:

1) moving all entries in the existing ISO 3166 into ISO 3166-2; and,

2) having the new ISO 3166-1 contain the codes and names for "countries" only, i.e., UN member states or those recognized by the UN as "equivalents" was not realized.

The result is that the same real world geopolitical entity which is not a country still remains as a member of ISO 3166-1 as well as a member of ISO 3166-2 but with different codes.

H.2.2 Analysis of ISO 3166-1 from a coded domain and eBusiness use perspective

The current edition of ISO 3166-1 (and most likely subsequent editions) of ISO 3166-1 contain entries for "members" which are not UN member states, i.e., from an international legal and jurisdictional requirements perspective are not "countries".

ISO/IEC 15944-5 focuses on the "*Identification and referencing of jurisdictional domains as sources of external constraints".* In this context, it is of primary and fundamental importance to be able to differentiate between entries in ISO 3166-1 which: (1) represent Un member states (or equivalents); and, (2) those which are not, i.e., represent other geopolitical entities. This is because many members of ISO 3166-1 are not UN member states.

H.2.3 Nature of data elements and code sets used in an ISO 3166-1 entry

From a coded domain analysis perspective, the essential data elements of ISO 3166 include:

Table H.1 — Identification of Essential Data Elements in an ISO 3166-1 entry

Data element	Specification
UN 3-digit numerical code	A permanent 3-digit numerical code assigned to the geopolitical entity by the UN Statistical Division for UN member states, i.e., countries and other (geopolitical) areas
UN 3-alpha code*	A changeable 3-alpha code assigned by the UN Statistical Division*
ISO 2-alpha code*	A changeable 2-alpha code
Official Short Name(s) of UN member or other geopolitical entity*	The (short) name (s) of a country as accepted and so registered by the UN or the name (s) of a geopolitical entity (usually assigned by the UN member state, i.e., country, of which it is part).
Official Formal (long) Names(s)*	The formal (long) names of a country as accepted and so registered by the UN or the name(s) of a geopolitical entity ((usually assigned by the UN member state, i.e., country, of which it is part).
* Indicates data elements whose values can and do change when a UN member state decides to change its official name(s) and the UN concurs (via its Security Council.	

From a code domain EDI and eBusiness perspectives, it is important to note that the names of countries (and their sub-divisions) can and do change their names and when they do the associated 2-alpha and 3-alpha codes can change also. However, the 3-digit numeric ID code once assigned by the UN Statistical Division to a country or area as a geopolitical entity does not change. This is why the 3-digit numeric code is considered to be the "pivot code' in ISO 3166-1. For example, in the banking and financial services section, the use of the 3-digit UN code is mandated for those involving credit/debit cards, etc. (See ISO 8583-1.)

Consequently, it is advised that one use:

1) the 3-digit numeric UN country code (or area) code within and among IT systems parties the DMAs of to a business transaction[14]; and,

2) that one treat the 2-alpha and 3-alpha codes as well as short and long names of a country in UN English and UN French as well as in the language(s) of that country as HIEs.

H.2.4 Distinct "object classes", i.e., coded domains, contained in ISO 3166

Based on the analysis already undertaken in the development of ISO/IEC 15944-5:2008, E.1, especially from an Open-edi and eBusiness transaction requirements perspectives the need for a number of semantic qualifier codes was identified. These are presented in Table H.2.

Table H.2 — Use of semantic qualifier codes for ISO 3166-1 in an Open-edi and eBusiness context

Semantic Qualifier Code	Specification of geopolitical entity and key property
0	Other, (e.g., Antarctica) [Note: It is a "shared jurisdictional domain" governed by the same set of rules but with several UN member states having "responsibility" for a specified geographic area)
1	Jurisdictional domain which is a UN member state
2	Not a UN member state but is treated as a peer, i.e. as an equivalent jurisdictional domain, (e.g., "Holy See", Vatican, until it became a full participating member recently. Switzerland also had this qualification.).
3	UN member state which has been suspended by the UN as having full member status and rights

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14) For the complete set of the UN 3-digit numeric does and ISO 3-alpha codes as well as the UN official names of the countries or areas which form the source for the same in ISO 3166-1. {See further, <http://unstats.un.org/unsd/methods/m49/m49alpha.htm>.

Table H.2 *(continued)*

Semantic Qualifier Code	Specification of geopolitical entity and key property
4	A geopolitical entity considered as a potential candidate as a member to be recognized by the UN (e.g., 275 Occupied Palestinian Territory).
5	A geopolitical entity which does not have a code 1, 2 3, or 4 status for the UN and which is considered to be a dependency of a UN member state. Note: See further Annex J of ISO/IEC 15944-5:2008. It identifies fifty-two (52) entries in ISO 3166-1 which are not countries.
6	Geopolitical entity which is a UN Trusteeship [Note: These are being discontinued]

From an eBusiness and commitment exchange perspective, the sub-object class, i.e., coded domain in ISO 3166-1 which are really countries, i.e., UN member states, consist of those to which the semantic qualifier ID codes 1 and 2 apply. See further ISO/IEC 15944-5:2008, Annex E.

Similarly, all those entries to which a semantic qualifier code 5 applies are not counties but geopolitical entries of the nature of provinces, territories, cantons, states, etc., as dependencies of the UN member state to which they belong.

H.3 Examples of need to use a semantic qualifier: ISO 4217

H.3.1 Overview

The origin of ISO 4217 lies with the financial services and banking sector. This document is the responsibility of ISO TC68/SC7. As stated in the Abstract for ISO 4217:2018,

> *ISO 4217:2008 specifies the structure for a three-letter alphabetic code and an equivalent three-digit numeric code for the representation of currencies and funds. For those currencies having minor units, it also shows the decimal relationship between such units and the currency itself.*
>
> *ISO 4217:2008 also establishes procedures for a Maintenance Agency, and specifies the method of application for codes.*
>
> *ISO 4217:2008 is intended for use in any application of trade, commerce and banking, where currencies and, where appropriate, funds are required to be described. It is designed to be equally suitable for manual users and for those employing automated systems."*

ISO 4217 has its own maintenance agency. As stated on its official WWW site:

> *SIX Interbank Clearing Ltd acts as ISO 4217 Maintenance Agency on behalf of the International Organization for Standardization (ISO) and its Swiss member SNV (Swiss Association for Standardization). ISO's currency codes were last published in 2008. Between published editions, the currency codes are maintained by SIX Interbank Clearing in accordance with procedures established by the standard. In addition to processing applications for codes, the maintenance agency maintains updated lists and makes them available online.*
>
> *Intended for use in any application of trade, commerce and banking, as well as in the public sector, ISO 4217 publication is designed to be equally suitable for manual use or in information technology applications. As the only recognized, authoritative source on currency code designations, SIX Interbank Clearing supplies interested parties with the most up-to-date currency codes.*

ISO 4217 currency and funds names code elements are freely available at https://www.currency-iso .org/iso_index.htm.

The code list also provides the 3-digit numeric UN Statistical ID code for each geopolitical entity (where applicable).

H.3.2 Analysis of ISO 4217 from a coded domain and eBusiness perspective

ISO 4217 is the recognized standard for codes for representing currencies and funds. Funds here also include the use precious metals such as gold, palladium, platinum and silver. The principles governing an entity for inclusion of entities as a member of ISO 4217 and thereby being assigned a unique ID code is that:

1) they shall represent currencies and fund used within the jurisdictional domains of UN member states or other entities recognized as organization or public administration responsible for the issuance of a currency or fund such as the International Monetary Fund, (IMF), Banque Centrale des Ėtats de l'Afrique de l'Ouest (BCE)); and;

2) the ID codes listed are intended to reflect current status at the date of publication.

NOTE   This means that currencies of no longer in use and for use in any application of trade, commerce and banking are not included in the current version of ISO 4217. A well-known example here in the introduction of the euro (EUR) in the European Community means that such previously existing currencies a French francs (FRF), German deutschmark (DEM), Dutch guilders (NLG), etc., have been removed from ISO 4217.

With respect to the entities which are members of ISO 4217 the following observations need to be made.

a) the 3-alpha code (in CAPS) used for each entry in ISO 4217 is unique within ISO 4217 only. The same 3-alpha currency codes are used for country codes in ISO 3166-1 (at least 25 or more). The same applies to the use of 3-alpha codes in ISO 639-2 "Codes representation the names of languages".

   The problem of the unambiguous interworking and referencing ISO codes representing countries, currencies and languages has been addressed on resolved in ISO/IEC 15944-5:2008, Annex D which provides a default convention for this purpose.

b) a country, i.e., UN member state, has no currency of its own and utilized the currency of another country.

c) a country has more than one than one currency, i.e., its own and that of another country.

d) a country has more than one currency, all its own;

e) a country has both a currency and a funds code;

f) a set of countries collectively sharing and using a currency, (e.g., the euro);

g) special fund types;

h) a "currency" not linked to any country or organization but having a 3-alpha currency code, (e.g., precious metals such as gold) (XAU);

i) special settlement currencies having a 3-alpha code but no corresponding 3-digit numeric code;

j) a code reserved for testing purposes;

k) codes assigned for transactions where no currencies are involved.

The data elements which comprise an entry of an entity as a member of ISO 4217 are the following.

Table H.3 — Identification of essential data elements in an ISO 4217 entry

Title	Specification
Entity	The name of the entity forming a currency or fund.
	NOTE There are entries in ISO 4217 which do not have an "Entity name".
Currency	The name of the currency or fund.
	NOTE 1 Each entry can be associated with more than one currency or fund. These can be the currency of the entity itself or other currency.
	NOTE 2 The United States has three currencies: (a) US dollar (USD); (b) US dollar Same Day (USS); and, (c) US dollar Next day (USN).
	NOTE 3 witzerland also has three currency codes: (a) Swiss Franc (CHF); (b) WIR Franc (CHW)l (c) WIR Euro (CHE)
Code - alphabetic	A unique 3-alpha code assigned to each currency or fund listed which is a member of ISO 4217.
Code – numeric	The 3-digit code assigned by the UN Statistical Division to that jurisdictional domain.
Minor Unit code	A code of the nature of N/A (not applicable), e.g., to precious metals. This is defined as:
	minor unit of currency
	unit of recorded value, i.e., as recorded by banks, which is a division of the respective unit of currency
	EXAMPLE The cent is a one hundredth part of the US Dollar; the penny is a one hundredth part of the Pound Sterling.
	NOTE Some currencies have minor units that are used in low-value coinage within a country or locality, but which are not used by the national or international banking system in making formal records of value. Examples of countries where such coinage, (e.g., Iceland).
	[ISO 4217:2015]]

H.3.3   Distinct "object classes" i.e., coded domains, contained in ISO 4217

From a coded domain perspective ISO 4217 a number of semantic qualifier codes for use of ISO 4217 in an Open-edi and eBusiness context already have been identified and are presented in Table H.4.

Table H.4 — Use of semantic qualifier codes for ISO 4217 in an Open-edi and eBusiness context

Semantic Qualifier Code	Specification
01	A currency code which is under the jurisdictional domain of a single UN member state
02	A currency code which is shared and controlled by several UN member states as per binding legal agreement, (e.g., "EUR" (= euro)
03	Entity listed as member does not have its own currency but uses that of another UN member state
04	A currency code which is shared by several UN member states but which is the responsibility of a Person recognized by UN member states using the same as its official currency, (e.g., "XAF" = "CFA France BEAC) for which the responsible authority is the "Banque Centrale des États de l'Afrique de l'Ouest".
09	Not applicable, i.e., entity listed in ISO 4217 does not have a "universal currency", (e.g., the Aland Islands, Antarctica"
10	Non-currencies
11	ID code of entity listed and its ID code represents a "precious metal), ((e.g., gold (XAU), silver (XAG), etc.)

Table H.4 *(continued)*

Semantic Qualifier Code	Specification
12	Bond Market Unit = ID code of entity list represents a Bond market unit, (e.g., XBA = European composite unit.
13	Special Drawing Right (SDR) = code XDR representing International Monetary Fund (IMF)
14	Special Settlement currencies, i.e., the UIC Franc (= XFU)
15	Codes reserved for testing purposes, i.e,. "XTS" (or "963")
16	Codes reserved for transactions where no currency is involved, I .e, XXX (or "999).

Annex I
(informative)

Exclusions and aspects not currently addressed to the scope

I.1   Exclusions to the scope

I.1.1   IT-systems environment neutrality

This document does not assume nor endorse any specific system environment, database management system, database design paradigm, system development methodology, data definition language, command language, system interface, user interface, syntax, computing platform, or any technology required for implementation, i.e. it is information technology neutral. At the same time, this document maximizes an IT-enabled approach to its implementation and maximizes semantic interoperability.

I.1.2   Differentiation of categories and levels of Source Authorities (SA) for coded domains

Some coded domains are more recognized and more widely used than others. Some coded domains are maintained as international and/or national standards. Some are intended for use in one industry sector only (but are often used outside that sector as well). "Sets of codes representing X" are also maintained by international bodies or owe their origin and use to the implementation of an international treaty, convention, protocol, etc. These have their own categories and levels.

I.1.3   Use of coded domains with respect to Persons and in particular "individuals" and associated privacy protection requirements

ISO/IEC 15944-1:2023contains an Annex C titled "Unambiguous identification of entities in (electronic) business transactions". In addition, it also provides, in an Annex D, examples of coded domains for the unambiguous identification of Persons in business transaction.

I.2   Aspects currently not yet addressed to the scope

I.2.1   Focusing on the most primitive aspects

This edition focuses on the essential, most basic aspects, i.e. primitive aspects. It is anticipated that some or all of these requirements will be addressed in future editions of this document, or in companion standards or technical reports (including possible new parts of ISO/IEC 15944 standard series). The development of new parts of ISO/IEC 15944 on Open-edi descriptive techniques is expected to provide a more detailed specification about IT-enabled presentations of coded domains.

I.2.2   Addressing "Quadrant B, C & D" in Figure 5

It is noted in 0.7, and illustrated in Figure 5, that the focus of this edition focuses "Quadrant A". It may well be aspects of "coded domains" which will be identified in the use of this edition which need to be addressed but are of a "Quadrant B, C or D" in nature.

I.2.3   Use of coded domains in support of the "Process" component in the Business transaction model

The business transaction model (See 0.3) has three fundamental components, i.e., "person", "data" and "process". This edition does not yet address the application of coded domains for identifying or

referencing "processes" (e.g., as a set of pre-defined steps in a process each with their own ID code in a coded domain).

I.2.4   Use of coded domains in support of "public policy" requirements and in particular individual accessibility

Public policy requirements as a type of external constraints are introduced in ISO/IEC 15944-5:2008, 6.3. While this edition is structured to support individual accessibility requirements, including those of the UN Convention of rights of persons with disabilities, this edition addresses the more primitive aspects only. (For more details, see ISO/IEC 20016-1:2014.)

I.2.5   Detailed levels of rules pertaining to change management aspects of coded domains

ISO/IEC 15944-5:2008, 6.6.4 and ISO/IEC 15944-8:2012, 11.3 and 11.4 already address key aspects pertaining to change management such as state changes, records retention, and data deletion. This edition incorporates these relevant aspects at the primitive level only.

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[34]   Convention for the Unification of Certain Rules for International Carriage by Air (Warsaw Convention), 1929+), International Civil Aviation Organization (ICAO)

[35]   General Agreement on Tariffs and Trade (GATT), (1947,1994+) Council for Trade in Goods (Goods Council), World Trade Organization (WTO)

[36]   DESCRIPTION Harmonized Commodity, and Coding System (Harmonized System or HS System, 1983, and subsequent amendments), World Customs Council (WCO)

[37]   International Covenant on Economic, Social and Cultural Rights 1966, United Nations (UN)

[38]   International Convention for the Safety of Life at Sea (SOLAS), 1974, International Maritime Organization (IMO)

[39]   International Maritime Dangerous Goods (IMDG) Code, 1974), International Maritime Organization, (IMO)

[40]   Vienna Convention of the Law of Treaties of the UN, 1969)

[41]   UN CONVENTION ON THE RIGHTS OF PERSONS WITH DISABILITIES 2006

Other documents

[42]   ISO/IEC JTC1-N5296, *Recommendations of the ISO/IEC JTC1 Business Team on Electronic Commerce (BT-EC)*

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15) Withdrawn. Cancelled and replaced by ISO 12620-1:2022 and ISO 12620-2:2022.

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