BS ISO/IEC 15944-10:2013

BSI Standards Publication

Information technology — Business Operational View

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

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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

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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 15944-10 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

ISO/IEC 15944 consists of the following parts, under the general title *Information technology — Business Operational View*:

— *Part 1: Operational aspects of Open-edi for implementation*

— *Part 2: Registration of scenarios and their components as business objects*

— *Part 4: Business transaction scenarios — Accounting and economic ontology*

— *Part 5: Identification and referencing of requirements of jurisdictional domains as sources of external constraints*

— *Part 6: Technical introduction to eBusiness modelling [Technical Report]*

— *Part 7: eBusiness vocabulary*

— *Part 8: Identification of privacy protection requirements as external constraints on business transactions*

— *Part 9: Traceability framework**

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

* Indicates parts of ISO/IEC 15944 under development at the time of publication of this part of ISO/IEC 15944.

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0 Introduction

0.1 Overview of purpose and nature of coded domains

The primary purpose of this Part 10 is to provide an integrated approach in a single consolidated document the key concepts and their definitions as well as rules pertaining to "coded domains" as they already exist in the multipart ISO/IEC 15944 eBusiness standards, especially Parts 1, 2, 5 and 8.

Within an Open-edi context (based on the ISO/IEC 14662 "Open-edi reference model"), 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, that 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 represents 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[1];

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

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";

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[1] For the definition, see entry "D033" and Clause 5.3.2 in ISO/IEC 15944-7:2007.

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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 Part 10 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 Part 10 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).[2]

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 Part 10, 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 multilingual 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 it IT-neutral, i.e., Part 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;

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[2] See further SC32/WG1 N0520 “Amended 15944-1:2010 Figure 22 Focus of BOV Open-edi Standardization Work ”for use in development of Part 10”.

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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[3]).

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 whatever 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 & -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 11179-1:2004 (as referenced as entry "D147" in ISO/IEC 15944-7 and so used in all Parts of ISO/IEC 15944 where applicable including in this Part 10 as found in Clause 3.98 below). Annex H below 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 below, 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[4]. In this part of the ISO/IEC 15944, 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.

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[3] This 1st edition of Part 10, which focuses on the more primitive aspects of "coded domain", also applies the "Pareto Principle" Also know 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 1st edition can be viewed to be the 20% which covers 80% of the common user requirements.

[4] See further the "*Recommendations of the ISO/IEC JTC1 Business Team on Electronic Commerce (BT-EC)*". [Ref: ISO/IEC JTC1 N5296]

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It is a general rule and practice in ISO/IEC 15944 multipart standards development that one maximizes the use of Formal Description Techniques (FDTs). The rules and guidelines along with associated definitions 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 part of the ISO/IEC 15944 also specifies that Open-edi coded domains need to be registered as such in compliance with Part 2 ISO/IEC 15944 requirement. {See further Clause 11 below}

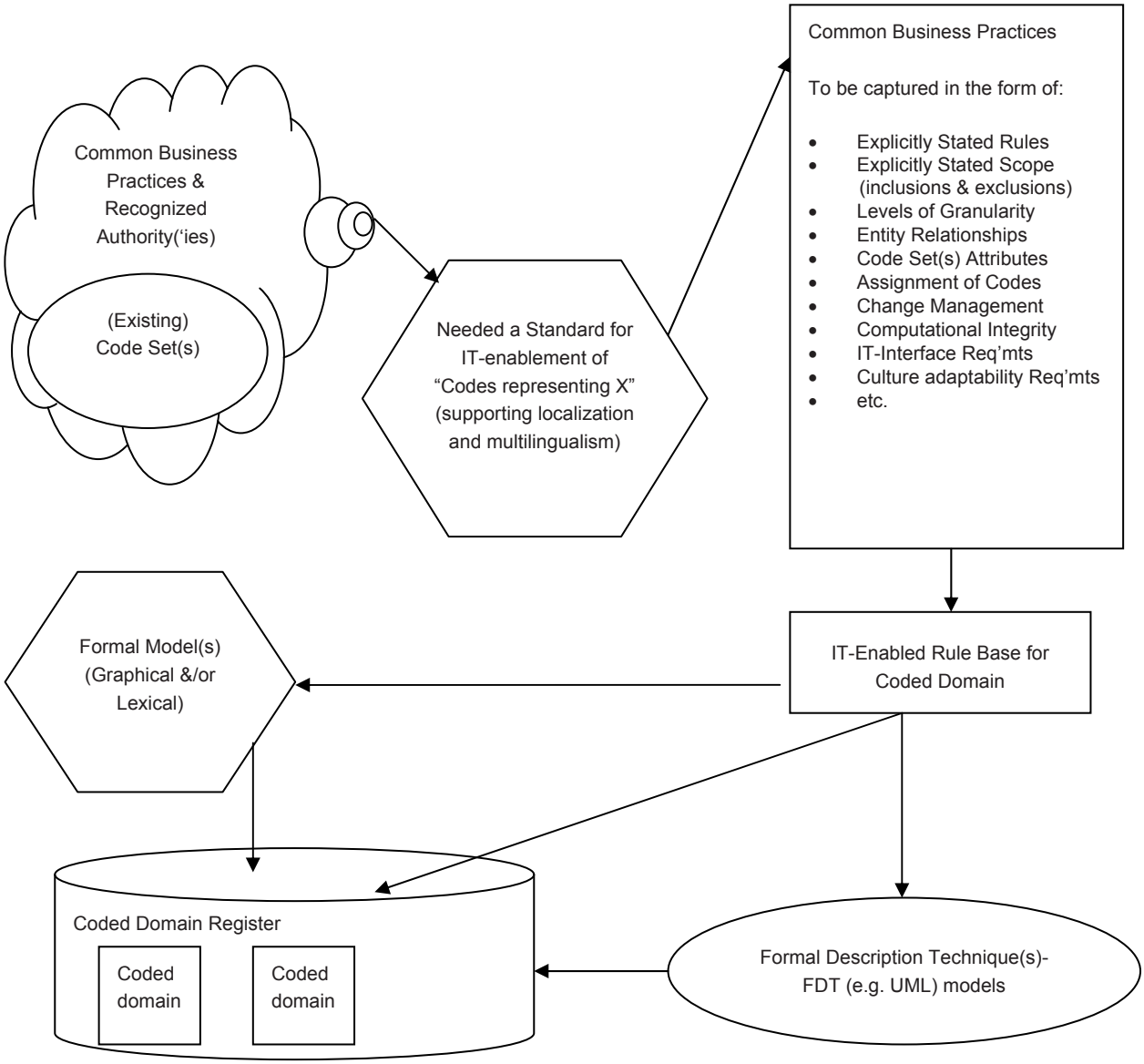

Figure 1 — Need for standard and methodologies for coded domains

Thus, this part of ISO/IEC 15944 facilitates and allows for the:

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

— mapping into existing standards & 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.).

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

As described in clause 6.1.5 in ISO/IEC 15944-1, 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 below, which has been adapted from Figure 7 in ISO/IEC 15944-1.

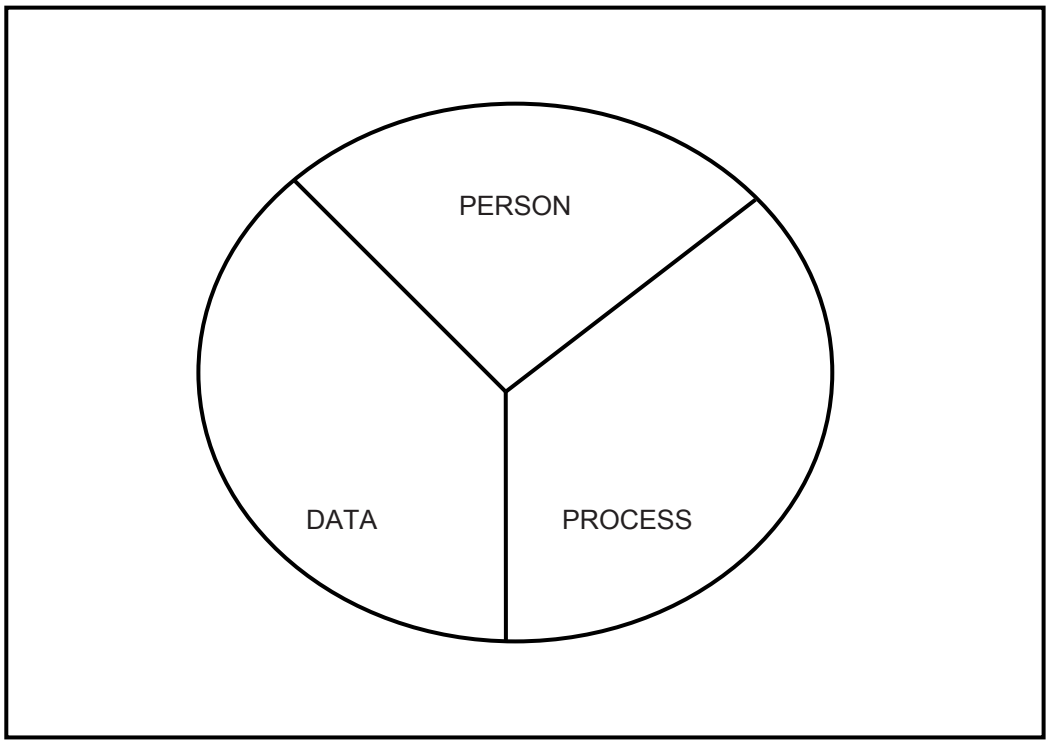

Figure 2 — Business Transaction Model — Fundamental components (Graphic Illustration)

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/should 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.[5]

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.

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5 Annex D “*Existing standards for the unambiguous identification of persons in business transactions (organizations and individuals) and some common policy and implementation considerations*” in ISO/IEC 15944-1 provides further information on these identification schemas are constructed.

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— On the whole, a coded domain consists of predefined and structured data elements. Clause 6.4.2 in ISO/IEC 15944-1 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 below, which are adapted from ISO/IEC 15944-1 Clause 6.4.2.

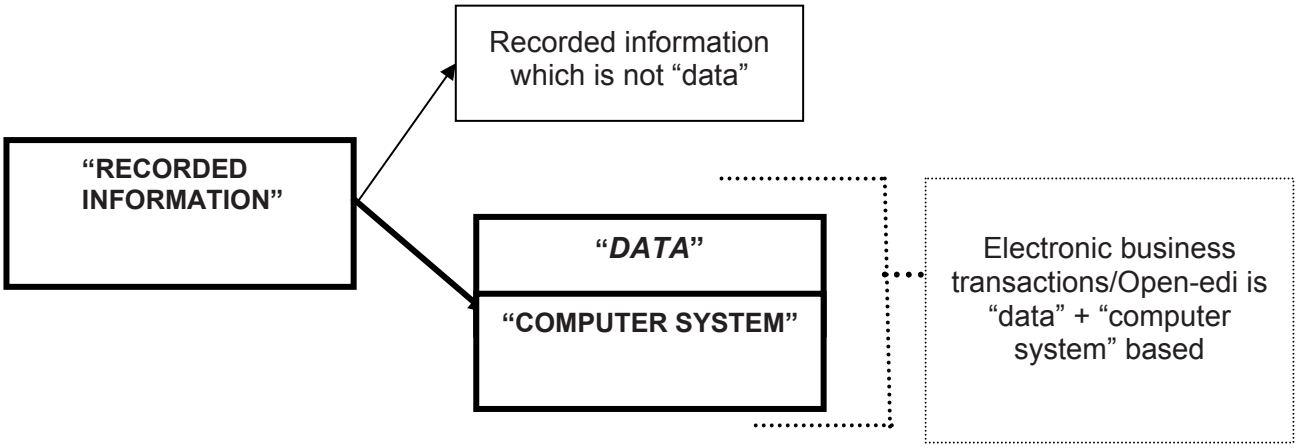

Figure 3 — Relation of "recorded information", "data" and "computer system" in electronic business transactions / Open-edi

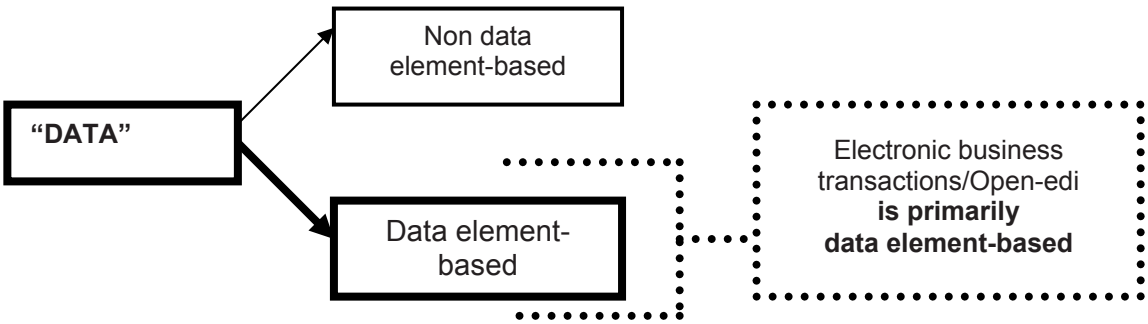

Figure 4 — Relations "data" and "data elements" in electronic business transactions / Open-edi

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[6]. Therefore it is the purpose of this Part 10 of ISO/IEC 15944 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 below.

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6 See further the "*Recommendations of the ISO/IEC JTC1 Business Team on Electronic Commerce (BT-EC)*". [Ref: ISO/IEC JTC1 N5296].

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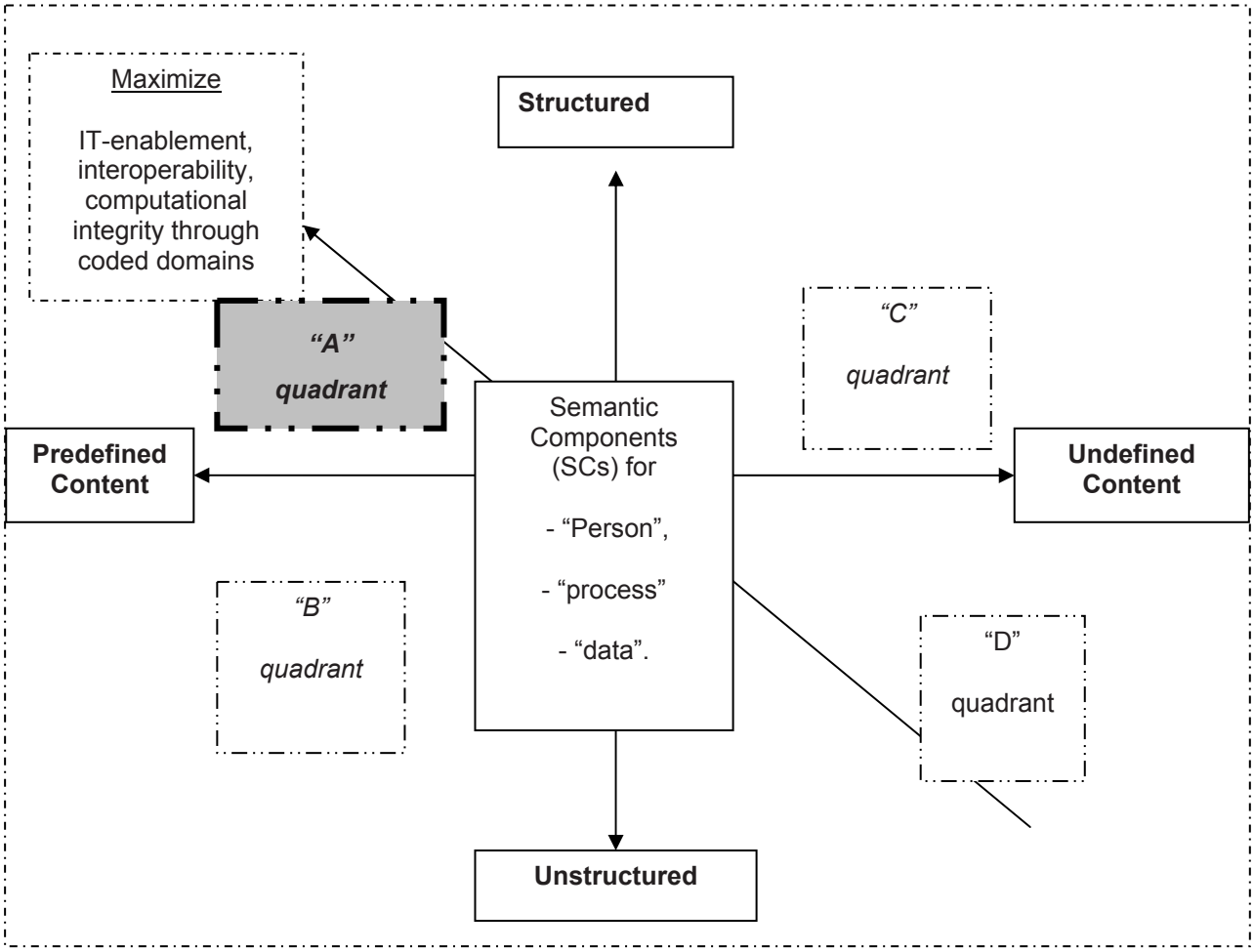

Figure 5 — Purpose of coded domain as IT-enabled and content predefined semantic components

The focus of Part 10 of ISO/IEC 15944 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.

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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)[7] acting on behalf of "Persons". "Persons" are the only entities able to make commitments[8]. Quoting from ISO/IEC 15944-1:2011, 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, 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 could 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".

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7 For the applicable normative elements here, see further in ISO/IEC 14662:2010, Clause 5.2 "*Functional Services View*".

8 The text in this section is based on existing text in 0.3 in ISO/IEC 15944-1:2011 and ISO/IEC 14662:2010.

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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 Clause 5.4 in ISO/IEC 15944-1}

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 part of ISO/IEC 15944:

— 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 14662:2010 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 Clauses 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* ***concepts***” [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

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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[9].

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

ISO/IEC 15944-1, 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.

ISO/IEC 15944-1:2011 defined "unambiguous" as:

> ***unambiguous**: the level of certainty and explicitness required in the completeness of the semantics of the **recorded information** interchanged appropriate to the goal of a **business transaction**.* [ISO/IEC 15944-1:2011 (3.66)]

and "identifier (in business transaction)" as:

> ***identifier (in business transaction)**: 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 15944-1:2011 (3.27)]

Thus users of this part of ISO/IEC 15944 should understand that the "identifier" in this part of ISO/IEC 15944 is used as a defined term as "identifier (in a business transaction)".[10]

As specified in Clause 5.5 and Clause 8 of this part of the ISO/IEC 15944, 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.

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[9] For the normative elements, see further in ISO/IEC 15944-7 “… *eBusiness Consolidated Vocabulary*” Clause “*5.3 “Essential elements of an entry in the eBusiness Vocabulary*”; and, in particular, 5.3.1 “*Rules governing the development of a definition for a concept*”.

[10] Identifiers in business transactions can be simple or composite identifiers. This is dependent on (1) the rules governing "identifiers" as a rule-based process; (2) the "registration schema" used (as well as any permitted combinations of the same).

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0.10 Organization and description of document

This part of ISO/IEC 15944 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.

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 part of ISO/IEC 15944. Some of the aspects that are not currently addressed may be specified in future versions.

Following Clause 2, Clause 3 and Clause 4, Clause 5 describes the overall principles of coded domains that govern all other clauses of this part of ISO/IEC 15944.

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

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Information technology — Business Operational View —

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

1 Scope

1.1 Statement of Scope

This part of ISO/IEC 15944 serves as a methodology and tool for the use of widely used standards, specifications, authority files, etc., of a "codes representing X" nature in business transactions involving the making of (legally-binding) commitments, based on common business practices, and doing so in an IT-enabled manner. The key characteristics of coded domains include:

a) they are rule-based;

b) they have a Source Authority;

c) they are used in support of commitment exchange among Persons engaged in Open-edi business transactions through their IT systems;

d) they support requirements for unambiguousness in the semantics of the electronic data interchange (EDI) among autonomous parties while also supporting localization and multilingual human interface equivalency (HIE) requirements; and,

e) they are IT-enabled as per the rules, criteria and specifications of this part of ISO/IEC 15944.

This part of ISO/IEC 15944 supports all three strategic directions for standards development of ISO/IEC JTC1: namely "portability", "interoperability", and "cultural adaptability".

A key objective of this part of ISO/IEC 15944 is to ensure that existing standards of a "codes representing X" nature can be used in electronic business transactions among parties engaged in Open-edi. Open-edi 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. Parties using Open-edi make the commitment that they will adhere to the predefined rules associated with the registered associated scenario attributes, roles and information bundles (including registered semantic components). The semantics here are identified and referenced via an identifier. With such ID codes can be associated multiple human interface equivalents in many forms and languages. Use of this part of ISO/IEC 15944 therefore facilitates semantic interoperability requirements in support of "cultural adaptability".

Another purpose of this part of ISO/IEC 15944 is to specify the key elements of an IT-enabled coded domain, whose membership is determined by a Source Authority, for use in support of electronic data interchange (EDI) among autonomous parties engaged in commitment exchange. The approach taken is that of the separation of the IT interface requirements of semantic interoperability from their (multiple) human interface linguistic equivalents. This will also ensure that the level of certainty and explicitness required in the completeness of the semantics of the recorded information interchange is appropriate to the goal of the business transaction, i.e. the unambiguous requirement.

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1.2 Exclusions

Excluded from the scope of this part of ISO/IEC 15944 is that of the development of the scope, attributes, content values (as HIEs) of coded domains, etc., as required elements for other coded domain Registration Authorities (RAs), i.e. other than those developed by ISO/IEC JTC 1/SC 32 itself as the Source Authority (SA).

However, the application of this part of ISO/IEC 15944 as a methodology and tool to turn an existing set of "codes representing X…" into an IT-enabled coded domain, conforming to this part of ISO/IEC 15944, is not excluded.[11]

1.3 Aspects currently not yet addressed

The first edition of this part of ISO/IEC 15944 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 part of ISO/IEC 15944, or in companion standards or technical reports (including possible new parts of the multipart ISO/IEC 15944 standard). 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.

1.3.1 Addressing "Quadrant B, C & D" in Figure 5

It is noted in Clause 0.7, and illustrated in Figure 5 above, that the focus of the first edition of this part of ISO/IEC 15944 focuses "Quadrant A". It may well be aspects of "coded domains" which will be identified in the use of the first edition which need to be addressed but are of a "Quadrant B, C or D" in nature.

1.3.2 Use of coded domains in support of the "Process" component in the Business transaction model

The business transaction model (See Clause 0.3 above) has three fundamental components, i.e. "Person", "data" and "process". This first 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).

1.3.3 Use of coded domains with respect to Persons and in particular "individuals" and associated privacy protection requirements

ISO/IEC 15944-1 contains an Annex C (informative) titled "Unambiguous identification of entities in (electronic) business transactions". In addition, it also provides, in an Annex D (informative), examples of coded domains for the unambiguous identification of Persons in business transaction.

1.3.4 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 6.3 of ISO/IEC 15944-5. While this part of ISO/IEC 15944 is structured to support individual accessibility requirements, including those of the UN Convention of rights of persons with disabilities, this first edition addresses the more primitive aspects only[12].

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[11] It is assumed that the party undertaking the IT-enablement of an existing set of "codes representing X…" will make an appropriate working arrangement with the party which is the Source Authority (SA) for that code set (whether already in the public domain or not, whether on a for profit basis or not, etc.).

[12] For more details, see Annex H. See also ISO/IEC 20016-1, *Information technology for learning, education and training — Language accessibility and human interface equivalencies (HIEs) in e-learning applications — Part 1: Framework and reference model for semantic interoperability.*

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1.3.5 Detailed levels of rules pertaining to change management aspects of coded domains

6.6.4 in ISO/IEC 15944-5 and 11.3 and 11.4 in ISO/IEC 15944-8 already address key aspects pertaining to change management such as state changes, records retention, and data deletion. This part of ISO/IEC 15944 incorporates these relevant aspects at the primitive level only.

1.3.6 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.[13]

1.4 IT-systems environment neutrality

This part of ISO/IEC 15944 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 part of ISO/IEC 15944 maximizes an IT-enabled approach to its implementation and maximizes semantic interoperability.

2 Normative references

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

ISO 639-2:1998 (E/F), *Codes for the representations of names of languages — Part 2: Alpha-3 code/Codes pour la représentation des noms de langue — Partie 2: Code alpha-3*

ISO/IEC 2382:1976-2000 (E/F), *Information technology — Vocabulary, Parts 1-34/Technologies de l'information — Vocabulaire, Parties 1-34*

ISO 3166-1:1997 (E/F), *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes/Codes pour la representations des noms de pays et de leur subdivisions — Partie 1: Codes pays*

ISO 8601:2004 (E), *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO/IEC 11179-3:1994 (E), *Information technology — Specification and standardization of data elements — Part 3: Basic attributes of data elements*

ISO/IEC 11179-3:2003 (E), *Information technology — Metadata registries (MDR) — Part 3: Registry metamodel and basic attributes*

ISO/IEC 14662:2010 (E/F), *Information technology — Open-edi reference model/Technologies de l’information — Modèle de référence de l’EDI-ouvert*

ISO/IEC 15944-1:2011 (E), *Information technology — Business Operational View — Part 1: Operational aspects of Open-edi for implementation*

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[13] For example, see Annex H (informative) “Levels of international regulatory regimes” in ISO/IEC 15944-5.

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ISO/IEC 15944-2:2006 (E), *Information technology — Business Operational View — Part 2: Registration of scenarios and their components as business objects*

ISO/IEC 15944-5:2008 (E), *Information technology — Business Operational View — Part 5: Identification and referencing of requirements of jurisdictional domains as sources of external constraints*

ISO/IEC 15944-7:2009 (E), *Information technology — Business Operational View — Part 7: eBusiness vocabulary*

ISO 19115:2003 (E), *Geographic information — Metadata*

ISO/IEC 19501:2005 (E/F) *Information technology — Open Distributed Processing — Unified Modeling Language (UML) Version 1.4.2*

UN Convention on the Rights of Persons with Disabilities (2006)

3 Terms and definitions[14]

For the purposes of this document, the following terms and definitions apply.

3.1
abbreviation
designation formed by omitting words or letters from a longer form and designating the same **concept**

[ISO 1087-1:2000, 3.4.9]

3.2
acronym
abbreviation made up of the initial letters of the components of the full form of the **designation** or from syllables of the full form and pronounced syllabically

EXAMPLE Examples of acronyms are: laser, DOS, GATT, UNESCO, and UNICEF.

[ISO 1087-1:2000, 3.4.10]

3.3
address
set of **data elements** that specifies a **location** to which a **recorded information** item(s), a **business object**(s), a material **object**(s) and/or a person(s) can be sent or from which it can be received

NOTE 1 An address can be specified as either a physical address and/or electronic address.

NOTE 2 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 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).

[ISO/IEC 15944-2:2011, 3.1]

[14] The HIEs ISO French, ISO, Russian and ISO Chinese are found in normative Annex D, E and F respectively in ISO/IEC 15944-7 “Information technology — Business Operation View — Part 7: eBusiness consolidated vocabulary”. This is also an “ISO freely available standard”.

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3.4
administrative note
general note about the **OeRI**

[ISO/IEC 15944-2:2006, 3.2]

3.5
applicant (for an OeRI)
Person who requests the assignment of an **OeRI** and an associated **entry label**

NOTE An applicant can be an individual, organization, or public administration.

[ISO/IEC 15944-2:2011, 3.3]

3.6
attribute
characteristic of an **object** or **entity**

[ISO/IEC 11179-3:2003, 3.1.3]

3.7
authentication
provision of assurance of the claimed identity of an **entity**

[ISO/IEC 10181-2:1996, 3.3]

3.8
business
series of **processes**, each having a clearly understood purpose, involving more than one **Person**, realized through the exchange of **recorded information** and directed towards some mutually agreed upon goal, extending over a period of time

[ISO/IEC 14662:2010, 3.2

3.9
business object
unambiguously identified, specified, referenceable, registered and re-useable **Open-edi scenario** or **scenario component** of a **business transaction**

NOTE As an “object”, a “business object” exists only in the context of a business transaction.

[ISO/IEC 15944-2:2006, 3.6]

3.10
business object identifier
unique **identifier** of a **business object** in an **OeRI** within an **Open-edi Registration Organization(OeRO)**

[ISO/IEC 15944-2:2006, 3.7]

3.11
Business Operational View (BOV)
perspective of **business transactions** limited to those aspects regarding the making of **business** decisions and **commitments** among **Persons**, which are needed for the description of a **business transaction**

[ISO/IEC 14662:2010, 3.3]

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3.12
business transaction
predefined set of activities and/or **processes** of **Persons** which is initiated by a **Person** to accomplish an explicitly shared **business** goal and terminated upon recognition of one of the agreed conclusions by all the involved **Persons** although some of the recognition may be implicit

[ISO/IEC 14662:2010, 3.4]

3.13
business transaction entity
computable representation of any real world **entity** that **participates**, occurs, or is **materialized** during a **business transaction**

[ISO/IEC 15944-4:2007, 3.9]

3.14
business transaction identifier (BTI)
identifier assigned by a **seller** or a **regulator** to an instantiated **business transaction** among the **Persons** involved

NOTE 1 The identifier assigned by the seller or regulator shall have the properties and behaviours of an “identifier (in a business transaction)”.

NOTE 2 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 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 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).

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

3.15
buyer
Person 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

[ISO/IEC 15944-1:2011, 3.8]

3.16
change description
description of why and how the **OeRI** has been modified since the prior version of the **OeRI**

NOTE It is advised that such a change description be accompanied by the “original “ template values used and a “change template” indicating which “Decision Code(s)” has been changed as well as the date the change will take effect.

[ISO/IEC 15944-2:2006, 3.12]

3.17
character
member of a **set** of elements that is used for the representation, organization or control of **data**

Characters may be categorized as follows:

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

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

[ISO/IEC 2382-4:1999, 04.01.01]

3.18
characteristic
abstraction of a **property** of an **object** or of a set of **objects**

NOTE Characteristics are used for describing concepts.

[ISO 1087-1:2000, 3.2.4]

3.19
character set
finite set of different **characters** that is complete for a given purpose

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

[ISO/IEC 2382-4:1999, 04.01.02]

3.20
classification system
systematic **identification** and arrangement of **business** activities and/or **scenario components** into categories according to logically structured conventions, methods and procedural **rules** as specified in a classification schema

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

NOTE 2 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.

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

3.21
code
data representation in different forms according to a pre-established set of **rules**

NOTE In this part of ISO/IEC 15944 the "pre-established set of rules" are determined and enacted by a Source Authority and must be explicitly stated.

[ISO 639-2:1998, 3.1]

3.22
coded domain
value domain for which
(1) the boundaries are defined and explicitly stated as a **rulebase** of a **coded domain Source Authority**; and,
(2) each **entity** which qualifies as a member of that domain is identified through the assignment of a unique **ID code** in accordance with the applicable **Registration Schema** of that **Source Authority**

NOTE 1 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 Source Authorities which are jurisdictional domains are the primary source of coded domains.

NOTE 3 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.

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NOTE 4 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 In a coded domain the rules for assignment and structuring of the ID codes must be specified.

NOTE 6 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 must be specified as the pivot ID code.

NOTE 7 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 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 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”.

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

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

NOTE 10 In the context of metadata registries, a “value domain” is defined as a “set of permissible values” (See further ISO/IEC 11179-3:2012, 3rd edition

[adapted from ISO/IEC 15944-2:2006, 3.13]

3.23
coded Domain Registration Schema (cdRS)
formal **definition** of both (1) the **data** fields contained in the **identification** and specification of an **entity** forming part of the members a **coded domain** including the allowable contents of those fields; and, (2) the **rules** for the assignment of **identifiers**

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

3.24
coded domain Source Authority (cdSA)
Person, usually an **organization**, as a **Source Authority** which sets the **rules** governing a **coded domain**

NOTE 1 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 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 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.

[ISO/IEC 15944-2:2006, 3.14]

3.25
code (in coded domain)
identifier, i.e., an ID **code**, assigned to an **entity** as member of a **coded domain** according to the pre-established set of **rules** governing that **coded domain**

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

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3.26
coined term
neologism especially created in a target language to express a **concept** which is denoted by an existing and recognized **term** in a source language, but which has not previously been expressed in the target language

[ISO 5964:1985, 3.1]

3.27
collaboration space
business activity space where an **economic exchange** of valued resources is viewed independently and not from the perspective of any **business partner**

NOTE 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 is not allowed because they view resource flows from a participant's perspective.

[ISO/IEC 15944-4:2007, 3.12]

3.28
commitment
making or accepting of a right, obligation, liability or **responsibility** by a **Person** that is capable of enforcement in the **jurisdictional domain** in which the **commitment** is made

[ISO/IEC 14662:2010, 3.5]

3.29
composite identifier
identifier (in a **business transaction**) functioning as a single unique **identifier** consisting of one or more other **identifiers**, and/or one or more other **data elements**, whose interworkings are **rule**-based

NOTE 1 Identifiers (in business transactions) are for the most part composite identifiers.

NOTE 2 The rules governing the structure and working of a composite identifier should be specified.

NOTE 3 Most widely used composite identifiers consist of the combinations of:

(1) the ID of the overall identification/numbering schema, (e.g., ISO/IEC 6532, ISO/IEC 7812, ISO/IEC 7506, 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.

[ISO/IEC 15944-2:2006, 3.16]

3.30
composite type
data type that has a **data** structure composed of the **data** structures of one or more **data** types and that has its own set of permissible operations

EXAMPLE A data type "complex number" may be composed of two "real number" data types

NOTE The operations of a composite type may manipulate its occurrences as a unit or may manipulate portions of these occurrences.

[ISO/IEC 2382-17:1999, 17.05.10]

3.31
computational integrity
expression of a **standard** 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

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NOTE 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.

[ISO/IEC 15944-2:206, 3.18]

3.32
concept
unit of knowledge created by a unique combination of **characteristics**

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

[ISO 1087-1:2000, 3.2.1]

3.33
constraint
rule, explicitly stated, that prescribes, limits, governs or specifies any aspect of a **business transaction**

NOTE 1 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 For constraints to be registered for implementation in Open-edi, they must have unique and unambiguous identifiers.

NOTE 3 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".

[ISO/IEC 15944-1:2011, 3.11]

3.34
Contact
instance of a **role** of a **Person** to whom a **recorded information** item(s), a material **object**(s), a **business object**(s), can be sent to or received from in a specified context

NOTE 1 A Person here as a Contact can be an individual, an organization (or organization part or organization Person).

NOTE 2 Contact is capitalized to distinguish it from the many ordinary uses of the term.

NOTE 3 Harmonized with ISO/IEC 11179 but from an eBusiness perspective.

[ISO/IEC 11179-3:2003, 3.3.26]

3.35
Contact Information
information to enable a **Contact** to be located or communicated with

[ISO/IEC 11179-3:2003, 3.3.27]

3.36
Contact name
persona by which a **Person** wishes to be designated as a **Contact**

NOTE 1 Where an organization is the OeRi applicant, it may designate an organization Person, an agent, a third party as its Contact name in applying to register a scenario or scenario component as a business object.

NOTE 2 Harmonized with ISO/IEC 11179 but from an eBusiness perspective.

[ISO/IEC 15944-2:2006, 3.21]

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3.37
Contact position title
name of title of the position held by an **organization Person** as a **Contact**

[ISO/IEC 15944-2:2006, 3.22]

3.38
control body
group of technical experts that makes decisions regarding the content of a **register**

[ISO 19135:2005, 4.1.2]

3.39
controlled vocabulary (CV)
vocabulary for which the entries, i.e., **definition**/**term** pairs, are controlled by a **Source Authority** based on a **rulebase** and **process** for addition/deletion of entries

NOTE 1 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 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 The rule base governing a controlled vocabulary may include a predefined concept system.

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

3.40
creation date
date the **OeRI** for a **business object** was created

[ISO/IEC 15944-2:2006, 3.24]

3.41
data
reinterpretable representation of **information** in a formalized manner suitable for communication, interpretation, or processing

NOTE Data can be processed by humans or by automatic means.

[ISO/IEC 2382-1:1993, 01.01.02]

3.42
data (in a business transaction)
representations of **recorded information** that are being prepared or have been prepared in a form suitable for use in a **computer system**

[ISO/IEC 15944-1:2011, 3.14]

3.43
data element
unit of **data** for which the **definition**, **identification**, representation and permissible values are specified by means of a set of **attributes**

[ISO/IEC 11179-1:2004, 3.3.8]

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3.44
data element (in organization of data)
unit of **data** 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 Differs from the entry 17.06.02 in ISO/IEC 2382-17.

[ISO/IEC 2382-4:1999, 04.07.01]

3.45
dataset
identifiable collection of **data**

NOTE 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.

[ISO 19115:2003, 4.2]

3.46
dataset series
collection of **datasets** sharing the same product specification

[ISO 19115:2003, 4.3]

3.47
date
ISO 8601 compliant representation of a date in a YYYY-MM-DD format using the Gregorian calendar

[ISO/IEC 15944-2:2006, 3.26]

3.48
Decision Making Application (DMA)
model of that part of an **Open-edi system** that makes decisions corresponding to the **role**(s) that the **Open-edi Party** plays as well as the originating, receiving and managing **data** values contained in the instantiated **information bundles** which is not required to be visible to the other **Open-edi Party(ies)** (OeP)

[ISO/IEC 14662:2010, 3.6]

3.49
de facto language
natural language used in a **jurisdictional domain** which has the properties and behaviours of an **official language** in that **jurisdictional domain** without having formally been declared as such by that **jurisdictional domain**

NOTE 1 A de facto language of a jurisdictional domain is often established through long term use and custom.

NOTE 2 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.

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

3.50
defined market model
trade **model** where the **buyer** and **seller** accept the entry terms of a specified market in advance and where that market has an accepted and recognized source for **business rules** and conventions

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NOTE 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.

[ISO/IEC 15944-4:2007, 3.17]

3.51
definition
representation of a **concept** by a descriptive statement which serves to differentiate it from related **concepts**

[ISO 1087-1:2000, 3.3.1]

3.52
designation
representation of a **concept** by a sign which denotes it

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

[ISO 1087-1:2000, 3.4.1]

3.53
distinguishing identifier
data that unambiguously distinguishes an **entity** in the **authentication process**

[ISO/IEC 10181-2:1996, 3.11]

3.54
eBusiness
business transaction, involving the making of **commitments**, in a defined **collaboration space**, among **Persons** using their **IT systems**, according to **Open-edi standards**

NOTE 1 eBusiness can be conducted on both a for-profit and not-for-profit basis.

NOTE 2 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 eBusiness includes various application areas such as “e-commerce”, “e-administration”, “e-logistics”, “e-government”, “e-medicine”, “e-learning”, etc.

NOTE 4 The equivalent French language term for “eBusiness” is always presented in its plural form.

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

3.55
effective date
date an **OeRI** became/becomes available to **registry** users

[ISO/IEC 15944-2:2007, 3.31]

3.56
electronic address
address used in a recognized electronic addressing scheme, (e.g., telephone, telex, IP, etc.), to which **recorded information** item(s) and/or **business object**(s) can be sent to or received from a **Contact**

[ISO/IEC 15944-2:2006, 3.32]

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3.57
Electronic Data Interchange (EDI)
automated exchange of any predefined and structured **data** for **business** purposes among information systems of two or more **Persons**

NOTE This definition includes all categories of electronic business transactions.

[ISO/IEC 14662:2004, 3.8]

3.58
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 An entity exists whether data about it are available or not.

[ISO/IEC 2382-17:1999, 17.02.05]

3.59
entry label
name information uniquely associated with the **identification** and resulting **International Registration Business Object Identifier** of a **business object** as a registered **Open-edi scenario** or **scenario component**

NOTE More than one entry label may be associated with an IRBOI depending on the applicable language(s) used as Human Interface Equivalents (HIEs).

[ISO/IEC 15944-2:2006, 3.33]

3.60
exchange code set
set of **ID codes** identified in a **coded domain** as being suitable for information exchange as shareable **data**

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

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

3.61
external constraint
constraint which takes precedence over **internal constraints** in a **business transaction**, i.e., is external to those agreed upon by the parties to a **business transaction**

NOTE 1 Normally external constraints are created by law, regulation, orders, treaties, conventions or similar instruments.

NOTE 2 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 External constraints can apply to the nature of the good, service and/or right provided in a business transaction.

NOTE 4 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.

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NOTE 5 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 must be recorded.

EXAMPLE 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 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".

[ISO/IEC 15944-1:2011, 3.23]

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

[ISO/IEC 14662:2010, 3.9]

3.63
Functional Service View (FSV)
perspective of **business transactions** limited to those information technology interoperability aspects of **IT Systems** needed to support the execution of **Open-edi transactions**

[ISO/IEC 14662:2010, 3.10]

3.64
glyph
recognizable abstract graphic **symbol** which is independent of any specific design

[ISO/IEC TR 15285:1998, 3.5]

3.65
grammatical gender
grammatical category that indicates grammatical relationships between words in sentences

NOTE The concept of gender varies from language to language and is not a universal feature of all languages.

EXAMPLE In French, 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.

[ISO 12620:1999, E, A.2.2.2]

3.66
homonymy
relation between **designations** and **concepts** in a given **language** in which one **designation** represents two or more unrelated **concepts**

EXAMPLE An example of homonymy is: bark (1) “sound made by a dog”; (2) “outside covering of the stem of woody plants”; (3) “sailing vessel”.

NOTE The designations in the relation of homonymy are called homonyms.

[ISO 1087-1:2000, 3.4.25]

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3.67
Human Interface Equivalent (HIE)
representation of the **unambiguous** and IT-enabled semantics of an **IT interface equivalent** (in a **business transaction**), often the **ID code** of a **coded domain** (or a **composite identifier**), in a formalized manner suitable for communication to and understanding by humans

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

NOTE 2 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 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.).

[ISO/IEC 15944-2:2006, 3.35]

3.68
IB Identifier
unique, linguistically neutral, **unambiguous** referenceable **identifier** for an **Information Bundle**

[ISO/IEC 15944-2:2006, 3.36]

3.69
ID Code
identifier assigned by the **coded domain Source Authority (cdSA)** to a member of a **coded domain** ID

NOTE 1 ID codes must be unique within the Registration Schema of that coded domain.

NOTE 2 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 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 must be specified as the pivot ID code.

NOTE 4 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 must 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 In UML modeling notation, an ID code is viewed as an instance of an object class.

[ISO/IEC 15944-2:2006, 3.37]

3.70
identification
rule-based **process**, explicitly stated, involving the use of one or more **attributes**, i.e., **data elements**, whose value (or combination of values) are used to identify uniquely the occurrence or existence of a specified **entity**

[ISO/IEC 15944-1:2011, 3.26]

3.71
indexing language
artificial language established to characterize the content or form of a document

[ISO/IEC 2382-1:1993, 01.05.10]

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3.72
individual
Person who is a human being, i.e., a natural person, who acts as a distinct indivisible **entity** or is considered as such

[ISO/IEC 15944-1:2011, 3.28]

3.73
individual accessibility
set of **external constraints** of a **jurisdictional domain** as rights of an **individual** with disabilities to be able to use **IT systems** at the human, i.e., user, interface and the concomitant obligation of a **seller** to provide such adaptive technologies

NOTE 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.

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

3.74
Information Bundle (IB)
formal description of the semantics of the **recorded information** to be exchanged by **Open-edi Parties** playing **roles** in an **Open-edi scenario**

[ISO/IEC 14662:2011, 3.11]

3.75
Information Processing Domain (IPD)
Information Technology System which includes at least either a **Decision Making Application (DMA)** and/or one of the components of an **Open-edi Support Infrastructure** (or both), and acts/executes on behalf of an **Open-edi Party** (either directly or under a delegated authority)

[ISO/IEC 14662:2010, 3.12]

3.76
Information Technology System (IT System)
set 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

[ISO/IEC 14662:2010, 3.13]

3.77
internal constraint
constraint which forms part of the **commitment**(s) mutually agreed to among the parties to a **business transaction**

NOTE 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.

[ISO/IEC 15944-1:2011, 3.33]

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3.78
International Registration Business Object Identifier (IRBOI)
internationally unique **identifier** for an **OeRI**

NOTE IRBOIs are of the nature of a composite identifier.

[ISO/IEC 15944-2:2006, 3.42]

3.79
International Standard Identifier
identifier of the version of this part of ISO/IEC 15944 upon which **attributes** are based

[ISO/IEC 15944-2:2006, 3.43]

3.80
IT-enablement
transformation of a current **standard** used in **business transactions**, (e.g., **coded domains**), from a manual to computational perspective so as to be able to support **commitment** exchange and **computational integrity**

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

3.81
IT interface equivalent
computer processable **identification** of the **unambiguous** semantics of a scenario, **scenario attribute** and/or **scenario component**(s) pertaining to a **commitment** exchange in a **business transaction** which supports **computational integrity**

NOTE 1 IT interface equivalents have the properties of identifiers (in business transaction) and are used to support semantic interoperability in commitment exchange.

NOTE 2 The value of an IT interface equivalent at times is a composite identifier.

NOTE 3 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 An IT interface equivalent is at times used as a semantic identifier.

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

NOTE 6 The value of an IT Interface is independent of its encoding in programming languages or APIs.

[ISO/IEC 15944-2:2006, 3.48]

3.82
jurisdictional domain
jurisdiction, recognized in law as a distinct legal and/or regulatory framework, which is a source of **external constraints** on **Persons**, their behaviour and the making of **commitments** among **Persons** including any aspect of a **business transaction**

NOTE 1 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 Jurisdictional domains can combine to form new jurisdictional domains, (e.g., through bilateral, multilateral and/or international treaties).

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

NOTE 3 Several levels and categories of jurisdictional domains may exist within a jurisdictional domain.

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NOTE 4 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 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.

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

3.83
jurisdictional domain identifier
ID code of a **jurisdictional domain** as recognized for use by peer **jurisdictional domains** within a system of mutual recognition

[ISO/IEC 15944-2:2006, 3.47]

3.84
language
system of signs for communication, usually consisting of a **vocabulary** and **rules**

NOTE In this standard language refers to natural languages or special languages, but not "programming languages" or "artificial languages".

[ISO 5127-1:2001, 1.1.2.01]

3.85
language code
combination of **characters** used to represent a **language** or **languages**

NOTE In multipart ISO/IEC 15944 standard, the ISO 639-2/T (terminology) three alpha-code set, shall be used.

[ISO 639-2:1998, 3.2]

3.86
legally recognized language (LRL)
natural language which has status (other than an **official language** or **de facto language**) in a **jurisdictional domain** as stated in an act, regulation, or other legal instrument, which grants a community of people (or its **individuals**) the right to use that **natural language** in the context stipulated by the legal instrument(s)

NOTE The LRL can be specified through either: (a) the identification of a language by the name used; or, (b) the identification of a people and thus their language(s).

EXAMPLE In addition to acts and regulations, legal instruments include self-government agreements, land claim settlements, court decisions, jurisprudence, etc.

[ISO/IEC 15944-5:2008, 3.71]

3.87
legally recognized name (LRN)
persona associated with a **role** of a **Person** recognized as having legal status and so recognized in a **jurisdictional domain** as accepted or assigned in compliance with the **rules** applicable of that **jurisdictional domain**, i.e. as governing the **coded domain** of which the **LRN** is a member

NOTE 1 A 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 The process of establishment of a LRN is usually accompanied by the assignment of a unique identifier.

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NOTE 3 A 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 A Person may have more than one LRN (and associated LRN identifier).

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

3.88
list
ordered **set** of **data elements**

[ISO/IEC 2382-4:1999, 04.08.01]

3.89
localization
pertaining to or concerned with anything that is not global and is bound through specified sets of **constraints** of:

(a) a linguistic nature including **natural** and **special languages** 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.

Within and among "locales", interoperability and harmonization objectives also apply

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

3.90
location
place, either physical or electronic, that can be defined as an **address**

[ISO/IEC 15944-2:2006, 3.50]

3.91
metadata
data about **data elements**, including their **data** descriptions, and **data** about **data** ownership, access paths, access rights and **data** volatility

[ISO/IEC 2382-17:1999, 17.06.05]

3.92
model
abstraction of some aspect of reality

[ISO 19115:2003, 4.9]

3.93
multilateral treaty
treaty (or convention) that has the ambition to become universal (or near universal) and thus bind most of the international community by declaring general **rules** of law

EXAMPLE Law of the Sea, Law on Genocide.

NOTE 1 A multilateral treaty may have the goal of creating a regulatory regime of law for a particular area or major multilateral institution (e.g., Agreement Establishing the WTO, Kyoto Protocol, Safety of Life at Sea Convention).

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NOTE 2 A multilateral treaty may allow for reservations or the treaty may be subject to many amendments which do not bind all parties or require all parties to undertake the same legal obligations, (e.g., the Berne and Paris conventions).

[ISO/IEC 15944-5:2008, 3.81]

3.94
multilingualism
ability to support not only **character sets** specific to a (**natural**) **language** (or family of **languages**) and associated **rules** but also **localization** requirements, i.e., use of a **language** from **jurisdictional domain**, sectoral and/or **consumer** marketplace perspectives

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

3.95
name
designation of an **object** by a linguistic expression

[ISO 5217:2000, 1.1.2.13]

3.96
natural language
language which is or was in active use in a community of people, and the **rules** of which are mainly deduced from the usage

[ISO 5217:2000, 1.1.2.02]

3.97
object
anything perceivable or conceivable

NOTE Objects may be material, (e.g., engine, a sheet of paper, a diamond), or immaterial, (e.g., conversion ratio, a project play) or imagined, (e.g., a unicorn).

[ISO 1087-1:2000, 3.1.1]

3.98
object class
set of ideas, abstractions, or things in the real world that can be identified with explicit boundaries and meaning and whose properties and behavior follow the same **rules**

[ISO/IEC 11179-1:2004, 3.3.22]

3.99
OeRI addition
insertion into a **register** of an **OeRI** that describes a **concept** not described by an **OeRI** already in the **register**

[ISO/IEC 15944-2:2006, 3.54]

3.100
OeRI clarification
non-substantive change to an **OeRI**

NOTE 1 A non-substantive change does not change the semantics or technical meaning of the OeRI.

NOTE 2 A clarification does not result in a change to the registration status of the OeRI.

[ISO/IEC 15944-2:2006, 3.55]

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3.101
OeRI harmonization
resolution of any potential duplicate or overlapping of **OeRIs**, accounting for justifiable differences that may exist among the harmonized **OeRIs**

[ISO/IEC 15944-2:2006, 3.56]

3.102
OeRI language code
language code of the **language** used for the **OeRI** by the **submitting organization**

[ISO/IEC 15944-2:2006, 3.57]

3.103
OeRI retirement
declaration that an **OeRI** is no longer suitable for use in the production of new **data**

NOTE The status of the retired OeRI changes from 'valid' to 'retired'. A retired OeRI is kept in the register to support the interpretation of data produced before its retirement.

[ISO/IEC 15944-2:2006, 3.58]

3.104
OeRI supersession
replacement of an **OeRI** by one or more new **OeRIs**

NOTE The status of the replaced item changes from "valid" to "superseded".

[ISO/IEC 15944-2:2006, 3.59]

3.105
official language
external constraint in the form of a **natural language** specified by a **jurisdictional domain** for official use by **Persons** 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** involving **commitment**(s)

NOTE 1 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 A jurisdictional domain decides whether or not it has an official language. If not, it will have a de facto language.

NOTE 3 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 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 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 must be specified.

NOTE 6 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.

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