
**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**

*Technologies de l'information pour l'apprentissage, l'éducation et la
formation — Accessibilité au langage et équivalences d'interface
humaines (HIEs) dans les application d'apprentissage électronique —*

*Partie 1: Cadre et modèle de référence pour l'interopérabilité
sémantique*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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 20016-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 36, *Information technology for learning, education and training*.

ISO/IEC 20016 consists of the following parts, under the general title *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*

Introduction

0 Introduction

0.1 Purpose and overview

In an “Access for All” (AfA) approach, a key missing component in the development of ITLET standards, in support of culture, language, and individual needs is one which focuses on the (intended) meaning and use of the contents of the recorded information being interchanged among, on the one hand, (1) an individual as a learner, and, on the other, (2) other Persons in an ITLET context. This requires the assurance of the development and availability of contents, (e.g. as Human Interface Equivalents (HIEs), in any ITLET application which support individual accessibility requirements in the form of language accessibility.

The primary purpose of this multipart standard is to ensure that “individual accessibility” rights are supported from a “content” and semantic interoperability requirements perspective, both:

- 1) within the IT system(s) of an organization, and/or public administration; and,
- 2) Open-ended interchanges of the IT system(s) of that organization and/or public administrations with any individual.

It is also recognized that there already exist international standards (ISO, ISO/IEC and/or ITU) which need to be integrated and/or taken into account in the development of this Part of ISO/IEC 20016 “*Framework and Reference Model*”.

Further, it is recognized that localization requirements of a cultural adaptability and multilingual requirements nature need to be capable of being supported in this multipart standard.

In addition, this standard is based on the principle of maximizing use of applicable / relevant international standards.

The *UN Convention of the Rights of Persons with Disabilities* (2006) provides a unifying basis for legal and regulatory requirements of jurisdictional domains as external constraints pertaining to language accessibility and the provision of human interface equivalents in support of semantic interoperability.

A primary purpose of ISO/IEC 20016-1 Framework and Reference Model is to make organizations and public administrations aware, that where they are content providers to develop content, (e.g., as sets of recorded information (SRIs)) for use by individuals that such SRIs meet applicable language accessibility requirements from an individual accessibility requirements needs perspective, i.e., as applicable in that jurisdictional domain doing so through the parallel development of required human interface equivalents for these SRIs.

As such, the development of any SRI requires the assurance of the development and availability of its contents in any learning, education and training (LET) application in a manner that supports individual accessibility requirements. This requires the development and preparation in a non-temporal manner of all the HIEs (from both content and presentation perspectives) as are required in the accordance with the requirements of individual accessibility the applicable jurisdictional domain (at whatever level) for use in a LET context.

The language(s) used in a learning, education and training (LET) context is determined by four key factors; namely:

- 1) the language of the learner (apart from the learner wanting to learn another language);
- 2) language of instruction (LOI);

- 3) the needs of the learner with disabilities and anyone in a disabling context (this includes providing the semantics of the contents in the form of a Human Interface Equivalents (HIEs) and doing so in a systematic and IT-facilitated manner)¹;
- 4) the fact that the language of instruction (LOI), and thus the development of LET related products and services is often governed by: (a) general rules governing the use of an official language (or de facto language) of the jurisdictional domain in which the LET activity takes place; (b) a particular law or regulation of a jurisdictional domain which pertains to the use of a language for LET purposes, i.e., as a “legally recognized language (LRL)”.

Jurisdictional domains have also instituted policies or legislation that require the ability to provide access to education in one or more languages and to do so increasingly in support of cultural diversity within a single country as a jurisdictional domain. Examples include: (1) Gaelic and Welsh in addition to English in the UK; (2) aboriginal and native languages in addition to English and/or French in Canada; and (3) multiple official languages in the states of South Africa, India, Nigeria and many other countries. In addition, the EU as a jurisdictional domain has multilingual Human Interface Equivalency requirements within itself as a single (supra) jurisdictional domain.

This multipart standard recognizes that jurisdictional domains have also instituted policies, legislation, regulations, etc., that require LET provides to (1) have the ability from both ICT and content semantic perspectives to provide learning, education, and/or training in one or more languages; and, (2) to do so in support of not only its cultural diversity but more importantly in support of any “LET language (LET-L). This work integrates regulatory requirements from both “accessibility” and “language” requirements of jurisdictional domains.

In addition to the three strategic directions of ISO/IEC JTC1 standards development work, i.e. (1) portability, (2) interoperability, and, (3) cultural adaptability, this standard also adds individual accessibility² requirements (as stated in the “*UN Convention on the Rights of Persons with Disabilities*”). {See further below Annex B} As such, linguistic adaptability and use of language are of importance.

The ISO/IEC 20016 multipart standard, and in particular ISO/IEC 20016-1 *Framework and Reference Model for Semantic Interoperability*, has been developed and structured in a manner to be able to support and facilitate legal and regulatory requirements governing the application and use of ITLET standards and solutions.

0.2 Benefits to implementers of this multipart ISO/IEC 20016 standard

There are several benefits from taking an integrated approach: First, this standard provides for a systematic, cost-efficient and effective approach to the creation of robust, (re-)useable and accessible contents components for individual users, i.e., human interface equivalents (HIEs) at any level of granularity from that of simple (atomic) data element to that of a “book” or a law or regulation, the contents of a whole Website, etc. Without this standards development work, it will be very difficult to achieve workable solutions to providing language accessibility alternatives to individuals in their use of information technologies (IT) in support of learning, education, and training (LET) as provided by organizations and public administrations.

¹ There already exist both different forms of written representations of a language as well as in the form of symbols, glyphs, oral, pictorial, etc. We also have other forms of recorded information of a language including audio, visual, transforms, (e.g., Braille, etc.).

² While “individual accessibility” here is a right of individuals in support of any individual being informed, provided recorded information at a level of unambiguity to be able to support “decision-taking” and/or commitment-making”, the more generic requirement here in support of the same among individuals, organizations and/or public administrations is that of “semantic interoperability”.

Second, this multipart standard will provide cost savings to those organizations and public administrations, individual users and LET providers of LET-based products and services, ("LET providers"). In addition, it will provide the benefits of semantic interoperability, re-usability and accessibility (access) for all (AfA). It will do so from a multilingual requirements³ perspective and in support of cultural adaptability and diversity.

Third, having a common IT-facilitated approach will: (1) benefit individual users world-wide (doing so in respect and support of cultural diversity); (b) ensure that requirements of jurisdictional domains (at whatever level) can be supported in a very cost-effective and efficient manner; and, (2) also benefit LET providers of LET focused products.

Fourth, essential to interoperability are elements for making e-learning accessible to all. Without this work, solutions to providing language accessibility alternatives in the use of information technologies in support of learning, education, training (LET): (1) will not be integrated across IT platforms and organizations; (2) will be unnecessarily re-invented in every organization and public administration involving added large costs; (3) will exacerbate current lack of interoperability; (4) lead to waste of potential accessibility gains for individuals unable to identify and access e-learning systems and content in their language of use; and, (5) increase loss of usability and re-usability gains and benefits for everyone.

The present (and potential) world of use of IT systems in support of LET is gradually establishing networks and cooperative approaches which include multiple jurisdictional domains, implement accessibility alternatives, etc. Here and elsewhere, there is a requirement for metadata to support the ability to specify language accessibility and human interface equivalency in the provision of content and services. As such, this ISO/IEC 20016 multipart standard serves to further enable this developmental process.

The concept of semantic collaboration space (SCS), introduced in Clause 7 below, with respect to language accessibility and human interface equivalents (HIE) aspects of semantic interoperability requirements is directed at supporting the implementation of the *UN Convention on the Rights of Persons with Disabilities* in an ITLET context.

However, this multipart ISO/IEC 20016 standard, while developed in an ITLET context, like the multipart ISO/IEC 24751 standard, has many aspects which are not ITLET specific. The ISO/IEC 24751 multipart standard is being used by many Persons, (organizations and public administrations), for implementation in domains which are not ITLET specific. This ISO/IEC 20016-1 *Framework and Reference Model for Semantic Interoperability* standard supports a similar "Access for All" (AfA) approach.

0.3 Primary sources of requirements

The evolution of information communication technologies has created the ability to be able to support any and all language accessibility and provide human interface equivalents (HIEs) representations for any set of recorded information (SRI) in support of:

- 1) individual accessibility requirements; and,
- 2) to do so at whatever level of unambiguity and granularity required.

There are therefore no information or communication technology (ICT) barriers to the ability to support individual accessibility requirements for sets of recorded information (SRIs) within the IT systems of organizations and public administrations.

³ Multilingual communications (whatever the supporting IT platform used including the Internet) is already supported by existing technologies. Many ISO/IEC and ISO standards already exist (or are under development) whose contents can and will be used as building blocks for the integration of this new LET standard.

The primary source of requirements governing the development of this multipart standard and in particular underline this Part of ISO/IEC 20016 is the “*UN Convention on the rights of persons⁴ with disabilities*”.⁵

This UN Convention represents a common (global) high level integration of applicable laws and regulations of UN member states as jurisdictional domains who are signatories to this UN Convention. It is understood that the actual implementation and use of this Part of ISO/IEC 20016 “*Framework and Reference Model*” and subsequent Parts 2+) in any jurisdictional domain will be conditioned by the applicable laws and regulations of that jurisdictional domain.

Figure 1 provides an integrated view of these requirements⁶.

⁴ The majority of JTC1/SC36 P-members if not ISO/IEC JTC1 members are either already signatories of this UN Convention (or have already put in place national legislation of an equivalent nature). {See further ISO/IEC 24751-1:2007 Annex C (informative) “*Accessibility policies and legislation/Politiques et législation en matières d’accessibilité.*”}

⁵ It is understood and this standard is based on the assumption that “person” here = an “individual” (and not an “organization” or “public administration”, i.e., a legal or artificial person).

⁶ The arrangement of the ‘boxes’ in illustrative Figure 1 is as follows:

- a) the left-hand side represents different levels and categories of legal & regulatory requirements which this standard must be able to support;
- b) the right hand-side represents the key aspects of the approach which SC36/WG7 has already decided to take in the development of this standard;
- c) In addition, placing the UN Convention at the top recognizes and supports the key SC36/WG7 decision that this multipart standard shall be ‘architected and structured’ to fully support the UN Convention and its requirements as applicable;
- d) the use of the thick black line of “box” for “Laws & Regs of UN member States...” denotes the fact that while this UN Convention provides a global requirements perspective, there are laws and regulations of UN member states which give effect to individual accessibility right and enforce them; and,
- d) the two boxes at the bottom reflect the fact that the Sources of requirements are summarized in the 11 Principles (Clause 6) and that Box at the bottom provide the link to this multipart standard.

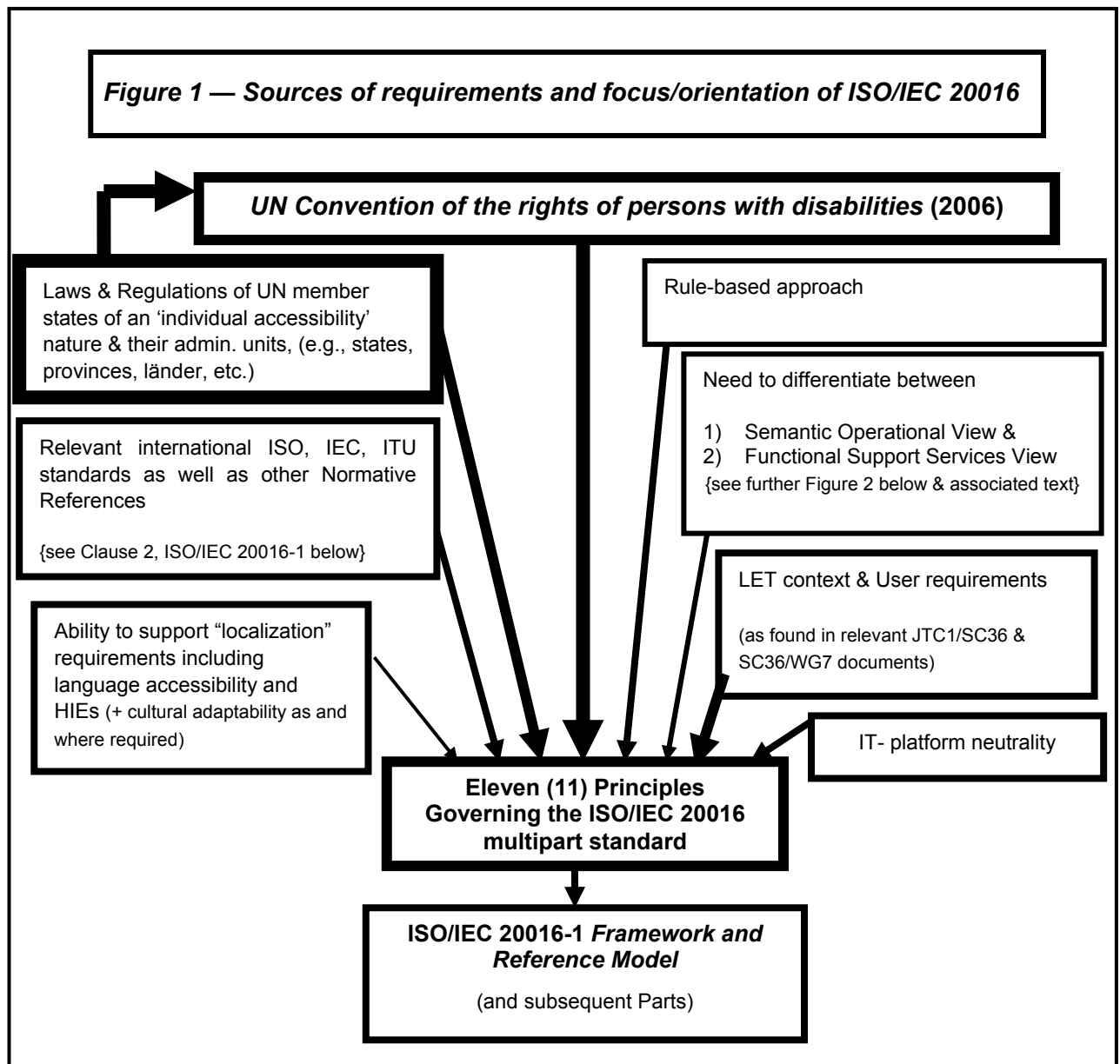


Figure 1—Sources of requirements and focus/orientation of ISO/IEC 20016

The development of ISO/IEC 20016-1 integrates these sources of requirements and serves as the basis for the eleven (11) principles provided in Clause 6 below.

0.4 Key concept of “individual accessibility”

A key unifying concept of this *Framework and Reference Model* is that of “individual accessibility”.

“Individual accessibility” is a right of an individual (which is modelled as an “external constraint”. Closely related rights here of an individual include “consumer protection” and “privacy protection”. Collectively, these rights of individuals are known as “public policy” requirements. {See further below Clause 8 “*Public policy requirements of jurisdictional domains*”}

0.5 Holistic approach

This *Framework and Reference Model* for ISO/IEC 20016 takes a holistic approach (based on the fundamental principles and assumptions as stated in Clause 6 below). In addition, it is based on a key, if not primary, requirement of the “*UN Convention of persons with disabilities*”, which is that individuals be provided with unambiguous semantics of the recorded information at the level required for informed consent for the making of decisions, and/or in the making of commitments, i.e., an individual with disabilities has the same and equal rights as any other individual. In support of these universal rights of an individual, {See further (normative) Annex B below}, this multipart ISO/IEC 20016 standard in ISO/IEC 20016-1 “*Framework and Reference Model*” differentiates between those aspects which are:

- 1) content related, i.e., the provision of recorded information at a level of unambiguity required for the purpose and use of such recorded information from a language accessibility and Human Interface equivalent(s) (HIEs) perspective. One can label this as the “Semantic Operational View” (SOV). The SOV focuses on standards which address perspectives and requirements limited to those aspects regarding the provision of recorded information as unambiguous semantics to individuals so that they are fully informed, able to make decisions, able to make commitments; and,
- 2) non-content related, i.e., the provision of functional support services of an ICT nature capable of supporting any individual accessibility requirement in support of those of a language accessibility and HIE nature with respect to the provision and presentation of such existing contents, i.e. sets of recorded information, capable of being made available at the human interface level through as any combination of ICTS. One can label this as the “Functional Accessibility Services View” (FASV). Many of the standardization requirements of this nature are already being addressed via the multipart ISO/IEC 24751 standard.

Here it is noted that the need to: (1) ensure unambiguity in the provision of recorded information in order for any Person to be able to participate in a commitment exchange of whatever nature, (commonly known as a “business transaction” or in an ITLET context as a “learning transaction”); and, (2) differentiate these requirements from those of the supporting ITC infrastructures and services, has been already recognized as a fundamental principle in the development of the “Open-edi” family of international standards. Here the common framework or reference model supported by the ISO, IEC, ITU, ISO/IEC JTC1, UN/EDIFACT (as well as other organizations such as OASIS) is that of the ISO/IEC 14662 “*Open-edi Reference Model*” - (a freely available ISO/IEC standard, first introduced in 1997 and one which has basically remained unchanged and now is in its 3rd 2010 edition. {See further below Annex M}

The approach to need to differentiate between:

- 1) the content-related and associated operational view; and,
- 2) the non-content related functional support services view

is based on the ISO/IEC 14662 *Open-edi Reference Model* (a widely used and freely available ISO/IEC standard new in its 3rd edition. {See further Annex L below for a summary overview of the *Open-edi Reference Model*”.

Adopting the Open-edi Reference Model in an ITLET context in support of individual accessibility requirements yields the following Figure 2.

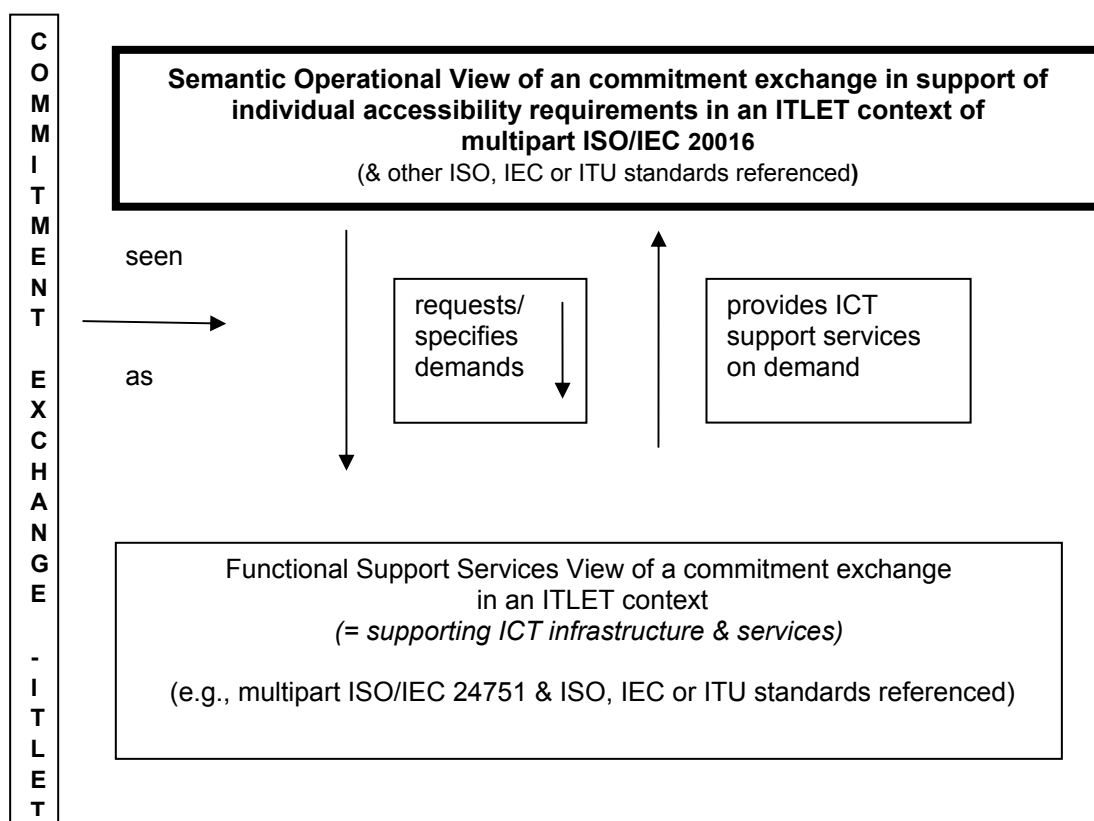


Figure 2 — Commitment exchange involving an ‘individual’ in a (potential) commitment exchange with an organization or a public administration in an ITLET context

The focus of the development of ISO/IEC 20016 is on the development of the “Semantic Operational View”⁷ in an “individual accessibility” requirements context, i.e., with “individual accessibility” as a set of external constraints.

Figure 3 provides an overview of key components for ISO/IEC 20016-1 “individual accessibility *Framework and Reference Model*”. The key components of this *Framework and Reference Model* include:

- 1) the sources of requirements (as summarized in Clause 0.3 above and associated Figure 1)
- 2) the individual accessibility model (IAM) {See further Annex D (normative) and Figure D-3}
- 3) Semantic interoperability levels (SIEL) {See further Clause 7 and Table 1}
- 4) semantic collaboration space (SCS) {See further Clause 9 and Figure 6}
- 5) Human interface equivalency model (HIEM) {See further Clause 12 and Figure 9}
- 6) degrees of linguistic equivalence {See Clause 11 and Table 4}

⁷ The multipart ISO/IEC 24751 standard focuses on the “(“non-content”) functional support services view as do other existing or under development ISO/IEC, ISO, IEC or ITU international standards.

The overall context of the “sources of requirements” {See Figure 1 above} and the application of the “Open-edition Reference Model”, as adapted in an ITLET context {See Figure 2 above}, provides an integrated approach in support of semantic interoperability of individual accessibility requirements. This integrated support view is presented in an illustrative manner in Figure 3 below.

A. Semantic Operational View (SOV)

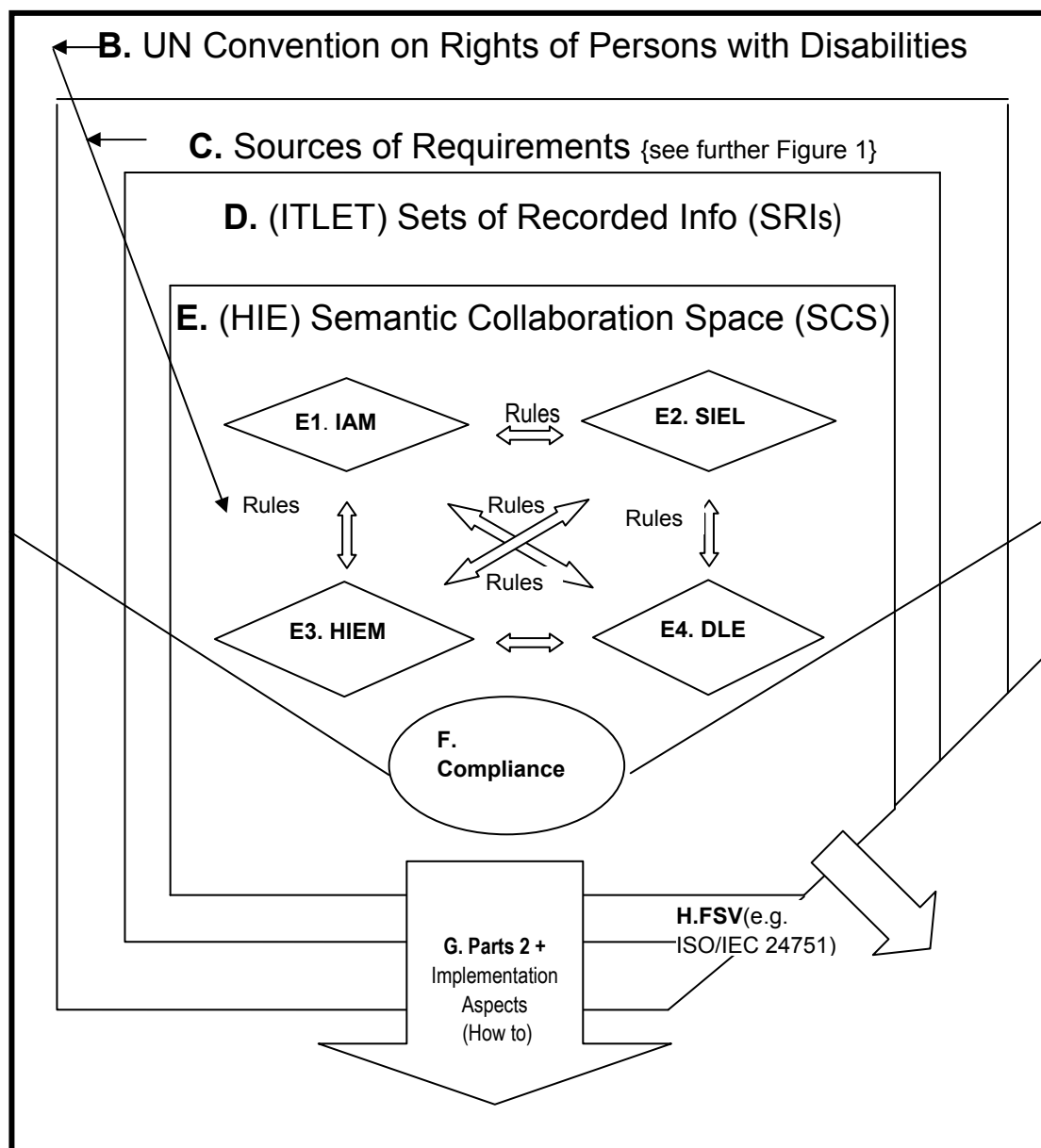


Figure 3 — Overview of key elements for ISO/IEC 20016-1 “individual accessibility” Framework and Reference Model for Semantic Interoperability

With respect to Figure 3 above, the following informative notes are provided for each of the elements (and sub-elements) below.

A. Semantic Operational View

The context is all recorded information⁸, individual accessibility language “, and HIEs*

B. *UN Convention on Rights of Persons with Disabilities*

This international convention to which all of JTC1/SC36 P-members are signatories is the basis for the Framework and Reference Model which states that all individuals have the right to informed consent.

C. Sources of Requirements

These sources are illustrated further in more detail in Figure 1 above. Included here in no particular order (in addition to the overarching *UN Convention*) are:

- 1) laws and regulations of UN member states of an individual accessibility nature (on the whole these are harmonized with the *UN Convention*)
- 2) laws and regulations of UN member states of an educational ad/or language nature
- 3) relevant international standards
- 4) localization requirements
- 5) LET content and user requirements
- 6) rules (necessary for IT implementation)
- 7) ISO/IEC 20016-1 principles

These represent external constraints which will apply to the use of the SRIs and the negotiation process which takes place in the Semantic Collaboration Space (SCS)*

D. (ITLET) Sets of Recorded Information (SRIs)*

Represented here are all the possible SRIs that are used in an ITLET context to which the ISO/IEC 20016-1 *Framework and Reference Model* applies.

E. (HIE) Semantic Collaboration Space (SCS)*

This is the space where the negotiation on requirements for semantic unambiguity and language equivalency takes place, (e.g., through the use or development of HIEs). Where there are no external constraints, (e.g., two parties are engaged in an activity as they agree to use whatever language they choose, and use whatever learning resources can required), the negotiation process is open and the levels of semantic interoperability are at the discretion of each of the participants.

However, where external constraints apply, four (4) sets of rules and tools apply. They interwork as a series of decisions which will ensure that any SRI will be ISO/IEC 20016-1 and *UN Convention* compliant.

The four (4) components of the (HIE) Semantic Collaboration Space SCS are:

- 1) Individual Accessibility Model (IAM)
- 2) Semantic Interoperability Equivalence Level (SIEL)*

⁸ * indicates that the term/concept is defined in the standard, Clause 3.

- 3) Human Interface Equivalence Model (HIEM)
- 4) Degrees of Linguistic Equivalence Levels

Bi-directional rules apply to each of these components. Each of the components represents a decision process.

There is no order to the use of these components, however there are more efficient ways to go about making the decisions than others depending on the nature of the SRIs. The most efficient approach is presented below.

E.1 IAM (Individual Accessibility Model)

The individual accessibility model (IAM) is an adaptation and use of the Open-edition Business Transaction Model (BTM) as follows: {see also Annex L below}:

- 1) "Person" becomes "individual" who has rights as individuals as external constraints, the most universal of these are those of a "public policy" nature. IN ISO/IEC 20016-1 the focus is on "individual accessibility";
- 2) "data" becomes "SRI" (set(s) of recorded information) used in an ITLET context;
- 3) "process" becomes SCS (semantic collaboration space);
- 4) the primary types of public policy which apply, i.e., as a right of an individual are
 - a) individual accessibility
 - b) consumer protection
 - c) privacy protection
 - d) (other) human rights

E.2 Semantic Interoperability Equivalence Level (SIEL)*

This component represents the types of goal of the semantic collaboration space which applies to the SRI(s). The choices here are:

- 1) not applicable
- 2) information
- 3) decision-taking
- 4) commitment-making

E.3 HIEM (Human Interface Equivalency Model)

Associated with the SIEL is the nature of the SRIs(S) used in a SCS. A systematic approach (at the primitive level is provided in the form of the Human Interface Equivalency Model (HIEM). At the primitive level it consists of the intersection of two axes namely: (1) "predefined" <-> "undefined"; and, (2) "structured <-> unstructured contents of a SRI. This results in four sub-types:

- 1) "A" – Structured and predefined
- 2) "B" – Unstructured and predefined
- 3) "C" – Structured and undefined
- 4) "D" – Unstructured and undefined.

E.4 DLE (Degrees of Linguistic Equivalence)

This component works at the textual content level and allows one to choose what type of HIE equivalency level is required based on the previous decisions, (e.g., based on the goal of the SCS and resulting SIEL level applicable of the text would be required at the official language level. This component allows for 5 choices where:

- 1 - exact equivalence
- 2 – inexact equivalence
- 3 – partial equivalence
- 4 – single-to-multiple equivalence
- 5 – non-equivalence

F. Compliance

Once the decisions and rules have been applied to the SRI in the negotiated SCS, the result is UN Convention (including applicable laws and regulations of jurisdictional domains) and ISO/IEC 20016-1 compliancy.

G. Parts 2+ Implementation Aspects (How to)

Once the compliancy has been established, what is outside the scope of this Framework and Reference Model is the “HOW” the HIEs are developed and what tools are used to achieve the required SIEL for each HIE and language accessibility for each SRI. Tools include coded domains, machine translation, natural language processing, conversion tools, etc. The choice of tools is largely dependent on the interworking of the SIEL, the HIEM, and the linguistic equivalency levels and rules.

H. FSV, (e.g. ISO/IEC 24751)

The decisions made on the semantic operational view level including collaboration on the agreed goal of the commitment exchange results in a set of requirements or demands on the Functional Services View. The FSV in turn provides ICT support services on demand. The multipart ISO/IEC 24751 standard not only serves as an example of FSV-type of standard, but also does so in an ITLET context.

0.6 Use of "jurisdictional domain", jurisdiction, country⁹

Multiple definitions are currently in use for “jurisdiction”. Some have legal status and others do not. Further, it is a common practice to equate “jurisdiction” with “country”. Yet, at the time, it is also a common practice to refer to “provinces”, “states”, “länder”, “cantons”, “territories”, “municipalities”, etc., as jurisdictions. In addition, several UN member states can combine to form a “jurisdiction”, (e.g., the European Union, NAFTA, etc.).

In summary, “jurisdiction” is commonly used with many different meanings in various contexts. Finally, there are differing “legal” definitions of “jurisdiction”. In this standard:

- the use of “jurisdictional domain” represents its use as a defined term; and,
- the use of “jurisdiction(s)” and/or country(ies) represent their use in generic contexts.

⁹ For more detailed information on this and related matters pertaining to “jurisdictional domain”, see 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*. This is a freely available ISO/IEC standard.

Most often in this document “jurisdictional domain” is used as it represents the primary source of external constraints pertaining to use of language and especially as a source of rights of individuals including “individual accessibility” rights.

0.7 Use of “person”, “individual”, “organization”, “public administration” and “person”

It is important to differentiate an “individual” from the other two sub-types of Person, namely that of an “organization” and a “public administration”. There are several reasons why this is necessary. These include:

- a) the fact that in UN conventions, charters, treaties, etc., as well as in the laws and regulations of jurisdictional domains, the word “person” is often used without explicitly specifying whether here “person” applies only to a human being, a natural person, etc., i.e., as an “individual,” but also other types of persons recognized in law, i.e., legal persons such as organizations and public administrations¹⁰.

For example, the human right of “freedom of expression” which is stated in the UN Charter as well as the Constitution (and/or Charter of Human Rights) and of most jurisdictional domains was written and was intended to be a right of human beings (natural persons) only. However, in some jurisdictional domains, corporations have been allowed to claim the right of “freedom of expression” since they are also “Persons” i.e., “legal persons” (or artificial), with the result that “freedom of expression” rights are applied to “advertising”.

As such, this multipart standard is based on the premise that human rights apply only to “individuals” and not to “organizations” or “public organizations”.

- b) the need to ensure that public policy requirements of jurisdictional domains {see further Clause 6 below} which are created and intended for human beings continue to pertain to human beings only, i.e., “individual”;
- c) for the first 20-30 years, the use of ICT was restricted to organizations and public administrations. The advent of the Internet and the World-Wide Web (WWW) has resulted in “individuals” becoming full participants in the use of ICT.

Consequently, many, if not most of the ISO/IEC JTC1 standards, as well as other ICT based standards of ISO, IEC and ITU (and others) do not distinguish whether or not the real end user is: (a) another IT system; or, (b) a Person, i.e., an entity able to make a commitment; and then whether that entity making a commitment is doing so on behalf of itself, i.e., as an “individual”, or on behalf of an organization, i.e., as an organization Person.

To address these and related requirements, the additional concept and term of “Person” was introduced and defined¹¹ in such a way that it is capable of having the potential legal and regulatory constraints applied to it, i.e., as “external constraints”¹². In the context of this standard, these include:

¹⁰ The “UN Convention on the Rights of Persons with Disabilities” does not explicitly state or define what a “Person” is. From its purpose and context, one deduces that these are “natural persons” only and not “legal persons”, (e.g., not organizations or public administrations). In an ICT environment (or the virtual world) one needs to be very explicit here.

¹¹ See further Clause 6.2 “Rules Governing the Person component” in ISO/IEC 15944-1:2011 (3rd ed.) titled “Information technology — Business operational view — Part 1: Operational Aspects of Open-edl for implementation”. [The multipart ISO/IEC 15944 eBusiness standard, as well as the ISO/IEC 14662 *Open-edl Reference Model* standard, are “publicly available” ISO standards, see <http://standards.iso.org/ittf/PubliclyAvailableStandards/index.html>].

¹² See further below Annex D (Normative) Individual Accessibility Model (IAM)

- external constraints of a public policy¹³ nature in general and of an “individual accessibility” nature in particular as legal rights of an individual; and,
- external constraints of a public policy nature in general and of an individual accessibility nature in particular, which apply to organizations or public administrations as legal obligations to be complied with when providing goods and services to any individual.

In summary, there are three broad categories of a Person as a player in any process involving the making of a decision; and/or the making of a “commitment” 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, i.e., the making of a commitment of whatever nature, namely “buyer”, “seller”, and “regulator”.

The reader of this standard should understand that:

- the use of Person with a capital “P” represents Person as a defined term, i.e., as the entity 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 the ISO/IEC 14662 and ISO/IEC 15944-1 standards. A “party” to any decision making process, a commitment making process (including any kind of business transaction) has the properties and behaviours of a “Person”.

0.8 Importance of definitions and terms¹⁴

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 in Clause 3.

A primary objective of the ISO/IEC 20016-1 standard on Human Interface Equivalents (HIEs) is the need:

- 1) to have clear, unambiguous and explicitly stated definitions for the concepts introduced or used;
- 2) to appreciate and understand that one needs to be careful in the choice of the “label” i.e., term, to be associated with a concept; and,
- 3) to understand that (1) and (2) are essential to language accessibility and the creation and provision of human interface equivalents (HIEs) of the semantics of the content of what is intended to be communicated.

If one looks at any UN Convention, Treaty, Covenant, any law or regulation of a jurisdictional domain, an international standard, etc., one will find that their first two chapters, clauses or sections are: (1) “purpose” or “scope”, and, (2) “definitions”. From an academic and scientific LET perspective, the introduction of a new concept, its definition, what it “is” (or meant to be understood as), how and where it fits or is to be used, etc., is the focus of many papers, presentations etc.

¹³ See further Clause 8 below which covers external constraints of a public policy nature which pertain to, i.e., are rights, of an individual, (e.g., consumer protection, privacy protection, individual accessibility, etc.), as well as any other “human right”.

¹⁴ See further, the document titled “*Importance of Definitions for Concepts*”, (2008-05-20) SC36/WG7 N0129.

Similarly, a key element of this Part of the multipart ISO/IEC 20016 standard (which involves multiple and quite different sectors, disciplines, etc.), is to ensure that key concepts in support of “inclusive design” objectives are clearly defined (and explained).

Definitions of concepts form the foundation of research, even more so in a multidisciplinary network context. As such, it is important that definitions be explicit, unambiguous, and precise with respect to the semantics conveyed.

This is important because the “definition” and associated label, i.e., “term”, of a concept not only:

- 1) serves as the basis for a “common understanding” of all parties involved; but also,
- 2) serves as the basis for (a) any other (non-involved) individual to be able to understand the meaning and use of a concept as per its definition; and, (b) a common bridge between ICT-based and ICT-neutral approaches.

At times, in order to ensure that the concept being defined is not confused with other related concepts, i.e., via word, label, or term, used to denote the concept, it is necessary to introduce, i.e., invent or “coin”, a new term as the label for that concept. The key purpose here is not to have multiple different meanings associated with a single label or term. Not only does this cause confusion in the use of a single language but causes even more difficulties in the development of multiple HIEs in various languages let alone the ability to support language accessibility requirements.

0.9 Standard based on rules and guidelines

This standard is intended to be used within and outside of the ISO, IEC, and ITU communities by diverse sets of users having different perspectives and needs.

ISO states that a new standard is a:

“documented agreement containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics to ensure that materials, products, processes and services are fit for their purpose”.

This standard focuses on “other precise criteria to be used consistently as rules, guidelines or definitions of characteristics, to ensure that products, processes and services are fit for their purpose”, i.e., from an operational and user perspective by individuals and in compliance with applicable external constraints.

This means that this standard is based on rules which are predefined and mutually agreed to. {See further Clause 6.2.6 below}

0.10 Size of document and role of “iso/iec 20016-1 framework and reference model for semantic interoperability”

While in an ITLET context, ISO/IEC 20016-1 may seem to be voluminous, it is noted that there are many ISO/IEC JTC1 (and ISO or IEC) standards which are over 1,000 pages in size. The purpose of this “Part of ISO/IEC 20016 *Framework and Reference Model for Semantic Interoperability*” is exactly that, to provide an overall “*Framework and Reference Model*” in an ITLET context to identify the requirements and context for implementation of these requirements in subsequent Parts of this multipart standard.

It is also recognized that (many) users and implementers of this multipart ISO/IEC 20016 may not be familiar with ISO, IEC, and/or ITU international standards, i.e., they may well be first time users of ISO/IEC standards. The two primary reasons here are that (1) this ISO/IEC 20016 multipart standard focuses on the operational view while many ISO, IEC, and/or ITU standards focus on the functional support services view, i.e., only the “C & T” aspects in an ICT context and not the “I” (=content) aspects; and, (2) that for many organizations and public administrations the need and requirement to include and support public policy requirements, i.e., those

of an individual accessibility nature, in addition to consumer protection, and privacy protection requirements, is rather new. As such, ISO/IEC 20016-1 needs to be as self-contained and self-explanatory as possible.

In order that subsequent Parts 2+ of this multipart standard can be as “short” as possible, it is necessary for them to be able to use and reference normative and informative Clauses and Annexes of this Part of ISO/IEC 20016 document.

0.11 Organization and description of document

This document provides the concepts, rules and constructs in the form of a framework and reference model required for addressing semantic interoperability requirements in language accessibility and HIE context including those required to support external constraints of jurisdictional domains in support of individual accessibility requirements.

Following the standard Clauses 1, 2, 3, and 4 (and their sub-clauses), and Clause 5 (Conformance), this document begins Clause 6 with an overview of the key aspects of the “*Framework and Reference Model for Semantic Interoperability*”.

Clause 6 identifies the fundamental principles governing individual accessibility requirements and does so in an ITLET and commitment exchange context. This Clause 6 not only provides the principles applicable to this Part of ISO/IEC 20016 “*Framework and Reference Model*” but also for other subsequent Parts of this multipart standard.

The purpose of Clause 7 is two-fold; namely: (1) to introduce the concept of semantic interoperability (in an ITLET context), and; (2) to support it through the construct of levels of semantic equivalency.

The purpose of Clause 8 is to place the Clause 6 individual accessibility requirements (identified as “Fundamental Principles”) in the context of other generic public policy requirements of a similar nature. These include consumer protection, privacy protection and other similar rights of an individual.

Clause 9 focuses on placing individual accessibility rights of an individual (as identified in Clause 6) in the context of the use of the “collaboration space” modelling construct. “Collaboration space” is where the development of information exchange, decision-taking, and commitment-making takes place between an individual and participating Persons, (e.g., as parties to a commitment exchange. The goal of the use of semantic collaboration space is directly linked to being able to determine the level of semantic equivalency in support of individual accessibility requirements.

Use of language(s) in jurisdictional domains and external constraint requirements to support the same are presented and summarized in Clause 10. The key concepts include “official language”, “de facto language”, “legally recognized language (LRL)”, (grammatical) language gender codes, and declared semantic equivalent (DSE”).

Clause 11 introduces the constructs of levels and degrees of linguistic equivalency. It does so based on best practices of translation theory and its application as well as ISO standards which already address language accessibility requirements in a generic manner.

The Human Interface Equivalency Model (HIEM) is introduced in Clause 12 along with its four basic Quadrants. Its purpose is to facilitate the categorization of a HIE requirement (based on application of Clause 9) and facilitate the preparation of required equivalent HIEs.

The purpose of Clause 13 is to introduce a “template” based approach to be used in Parts 2+ users and implementers of the multipart ISO/IEC 20016 standard.

Clause 14 provides the rules governing the structure, management and addition of new Parts of this multipart standard. As Parts 2+ of ISO/IEC 20016 are developed, this may well lead to changes in Clause 14.

Finally, annexes are provided for elaboration of points raised in the main normative text.

Annex A (normative) is a consolidated list of the definitions of key concepts and their associated terms used in ISO/IEC 20016-1 in ISO English and ISO French.

Annex B (normative) identifies and summarizes key requirements of the *UN Convention on the rights of persons with disabilities* which apply to ISO/IEC 20016.

Annex C (normative) and Annex G (informative) provide added text and figures in support of Clause 11 on language equivalency.

Annex E (normative) presents default conventions for the unambiguous identification and interworking of codes representing countries (including their administrative sub-divisions), their languages and their currencies.

Annex F (normative) provides an elaboration on the Open-edi construct of classes of constraints doing so in an ITLET context.

Informative Annex H and I provide practical examples of the use of coded domains as HIEs of a HIEM Quadrant “A” nature, while Annex I provides a coded domain example in support of the need to use (grammatical) gender codes in support of semantic interoperability.

Annex K (informative) provides “notes” on the use of the template provided in Clause 13 for use in the development of Parts 2+ of ISO/IEC 20016.

The purpose of Annex L (informative) is to elaborate on Clauses 0.5, 7 and 9 with respect to the Open-edi Reference Model to this standard as well as applying the construct of “collaboration space” in an ITLET and individual accessibility requirements context, i.e., as semantic collaboration space.

Although ISO/IEC 20016-1, as a “*Framework and Reference Model*” is not intended to address implementation aspects, Annex M (informative) provides considerations and examples of implementation of ISO/IEC 20016. (This is the role and purpose of Parts 2+ of this multipart standard),

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

1 Scope¹⁵

1.1 Statement of scope – Multipart standard¹⁶

This part of ISO/IEC 20016 states the principles, rules and metadata elements for specifying language accessibility and Human Interface Equivalents (HIEs) in e-learning environments. It is structured to be able to support the requirements of applicable jurisdictional domains and in particular that of the *UN Convention on the Rights of Persons with Disabilities*.

Many jurisdictional domains have enacted legislation¹⁷, regulations or policies that require equal access to education or information¹⁸.

Like the ISO/IEC 24751-1 “Framework” standard, this part of ISO/IEC 20016 is intended to support and meet the needs of learners with disabilities in a disability context. While focused on e-learning environments, this part of ISO/IEC 20016, like ISO/IEC 24751, identifies and supports generic individual accessibility requirements.

The primary difference between the two “AccessForAll” ISO/IEC 24751 and ISO/IEC 20016 multipart standards is that the former focuses on the functional services view (FSV) perspective and the latter on the content operational support (COS) perspective of learners with disabilities including multilingual requirements, decision-taking and commitment-making. As such, these two sets of standards interwork to support generic individual accessibility requirements.

¹⁵ At its Jeju March, 2008 meeting, JTC1/SC36/WG7 adopted the following resolution #1 (see WG7N0123)

“WG7 Resolution 01: Support the principles of UN-Convention

SC36/WG7 resolves, that in its current standards development work and any of its new standards development projects, as well as any amendments or new editions of its existing standards, that these standards shall be architected and structurally engineered to support and facilitate the implementation of the objectives and requirements of the 2006 “UN Convention on the Rights of Persons with Disabilities” and Optional Protocols, both generally and especially in the fields of e-learning, education, and training.

Approved”

¹⁶ This is the scope of the multipart ISO/IEC 20016 standard itself based on the approved New Work Item Proposal (NWIP) as stated in document JTC1/SC36N1830. The “scope” for ISO/IEC 20016-1 “*Framework and Reference Model and Reference Model*” for Semantic Interoperability” is provided in Clause 1.2 below.

¹⁷ Such legislation, and pursuant regulations, exists in jurisdictional domains at various levels of jurisdictional domains, (e.g., at the country level, state, province, or länder level, and even at the “supranational regulatory governance” level such as the European Union).

¹⁸ See further, *Annex C (informative) Accessibility Policies and Legislation* in ISO/IEC 24751-1:2006.

This multipart standard also supports individual needs and preferences related to language and culture (which are generic in nature and apply irrespective of individual accessibility requirements).

This first edition of this part of ISO/IEC 20016 focuses on the fundamental, i.e., primitive requirements, and does so from four key perspectives; namely:

- 1) the need to be able to support rights and needs of individuals especially those with disabilities to specify their needs and preferences from a “human language” perspective including equal access to recorded information especially in e-learning;
- 2) support the requirement for individuals with disabilities - of their individual autonomy and independence, including the freedom to make their own choices. **This includes being provided with unambiguous semantics of the recorded information at the level required for informed consent and the making of decisions which involve the making of a commitment(s).**
- 3) the need to be able to support external constraints of jurisdictional domains as they apply to official, (or “de factor”) or “legally recognized languages (LRL)”¹⁹; and,
- 4) the need to take a systematic approach and focus on the fundamental, i.e., most primitive, requirements first.

1.2 Scope of this part of ISO/IEC 20016 “framework and reference model for semantic interoperability”

The scope of this part of ISO/IEC 20016 is to provide a framework and reference model²⁰ in support of the implementation of the *UN Convention on the Rights of Persons with Disabilities* and related public policy requirements and to do so in an ITLET focused context²¹.

As such, this part of ISO/IEC 20016 provides the key concepts and their definitions, as well as the overall approach to addressing semantic interoperability requirements.

The primary purpose of this part of ISO/IEC 20016 is four-fold:

- 1) serving as a framework and reference model for semantic interoperability in support of language accessibility requirements, doing so in a systematic and structured manner, in order to support and facilitate the incorporation of legal and regulatory requirements in ITLET applications. The common global legal/regulatory requirement here is that of the *UN Convention on the Rights of Persons with Disabilities* provides a unifying and common basis for requirements of an external constraints nature for those UN jurisdictional domains which are signatories to this UN Convention²².
- 2) incorporating and integrating applicable aspects of existing international standards deemed very relevant to this multipart ISO/IEC 20016 standard; namely those which focus on:

¹⁹ For the definition of “legally recognized language (LRL), see Clause 3.088 below. See also further below Clause 10 “Rules governing language and language accessibility”.

²⁰ This ISO/IEC 20016 multipart standard focuses on semantic interoperability aspects from a *language accessibility and HIE perspective*. It is possible that other *Framework and Reference Models* will be developed in the form of international ISO standards in support of other aspects of this *UN Convention*.

²¹ See further below Annex B which identifies which Clauses of this *UN Convention* are of particular relevance to ISO/IEC 20016.

²² The *UN Vienna Convention on the Law of Treaties* (1969) provides rules governing the legally binding nature of the UN member state.

- a) the making of decisions and commitments by an individual based on the individual being fully informed, i.e., in support of minimizing ambiguity in semantic interoperability
 - b) semantic aspects from a linguistic and/or translation theory and practical perspective
- 3) to provide for a systematic approach to the development and presentation of Parts 2+ of this multipart ISO/IEC 20016 standard; and,
- 4) to provide an initial template for use by organizations and public administrations.

1.3 Exclusions

1.3.1 Physical aspects of individual accessibility

This multipart ISO/IEC 20016 standard focuses on individual accessibility from a content perspective. Therefore, the primary focus is that of semantic aspects of individuals with (or without) disabilities to be informed to be able at the appropriate level of semantic interoperability the content provided, i.e., decision-taking or commitment-making (= commitment exchange) independent of any physical aspects (including interface) support of a commitment exchange. Any other related physical aspect of a “user preference” nature, (e.g., ISO/IEC 24751) and/or user interface resource, i.e., JTC1/SC35 standard is “excluded” from the scope of this multipart standard.

Therefore, this multipart ISO/IEC 20016 standard, which focuses on content-related ICT aspects as well as specific ICT dependent functional services, does so in a manner which is neutral to “physical” aspects of supporting individual accessibility requirements of individuals in access and use of ICT dependent elements. The multipart ISO/IEC 24751 standard is directed at providing requirements for ICT to be able to provide support, at the functional services level.

1.3.2 Person: individuals, organizations, and public administrations

This part of ISO/IEC 20016 does not define how to deal with types and roles of Persons and two of its three sub-types; namely, organization, public administration. (The third is “individual”). Other standards exist or are under development that address these and related issues²³.

This standard focuses on individuals, their (legal) rights, their needs and preferences from an individualized accessibility perspective with respect to language accessibility and HIEs in support of, i.e., independent of “inclusive design”, “universal design”, etc.

1.3.3 Artificial languages: Programming languages, Mark-up languages, etc

This part of ISO/IEC 20016 includes clauses which focus on external constraints of jurisdictional domains which pertain to the use of a “natural language” or a “special language” for use in the provision of human interface equivalents in the semantics of the recorded information interchanged of organizations and public administrations with individuals.

With respect to the use of language(s) to provide Human Interface Equivalent semantics, the following are excluded from the scope of this part of ISO/IEC 20016; namely:

- artificial languages;

²³ See further ISO/IEC 15944-1:2011 *Information technology – Business Operational View — Part 1: Operational Aspects of Open-edi for implementation; and its — Part 5: Identification and referencing of requirements of jurisdictional domains as sources of external constraints*. Both are “publicly available” standards at <http://standards.iso.org/ittf/PubliclyAvailableStandards/index.html>.

- programming languages;
- hypertext languages;
- indexing languages²⁴; and,
- mark-up languages²⁵.

However, mark-up languages such as SGML, XML, etc., may be used in Annexes as part of examples of HIEs.

1.3.4 Non-recorded information

This standard applies only to information or data which is recorded, i.e., recorded information, irrespective of the form, media, digital or non-digital, in electronic or non-electronic form, etc.

Information or data which is not recorded such as human conversations, i.e., communication of information among humans in any form of which no record is kept, is excluded from this standard. This is because non-recorded information cannot be processed and used in IT systems, (e.g., as HIEs).

1.3.5 Determining the individual's capability(ies) to communicate in a language(s)

The primary purpose of this standard is to provide methodologies, tools, etc., to facilitate the development and maintenance of Human Interface Equivalents (HIEs) of recorded information communicated to/among individuals with a focus on maximizing the unambiguity in the semantics being communicated especially where these support individual accessibility rights and the making of commitments.

It is outside the scope of this standard to evaluate or determine the capability or competency of an individual with respect to a particular natural or special language including any “accessibility language” of the set(s) of recorded information (SRIs) being communicated.

1.3.6 Universal design and related Functional Services View (FSV) aspects

“Universal design” as defined by the *UN Convention of the Rights of Disabled Persons* focuses on the “mechanical aspects” of IT systems, akin to the “Functional Services View (FSV): of the ISO/IEC 14662 *Open-ended reference Model*. This multipart ISO/IEC 20016 standard focuses on the semantics, i.e., meaning, of the recorded information interchanged among two or more Persons (including individuals, or organization Persons, as part of an organization or public administration). As such, the development of this Part of ISO/IEC 20016 (and future Parts) of ISO/IEC 20016 assumes that requirements of a FSV nature are already covered in existing ISO/IEC, IEC and ITU standards or those under development²⁶. Should any gap here of a FSV nature be identified, then this would serve as the basis for a new standards development project.

²⁴ There may be requirements of a jurisdictional domain for the use of an “indexing language” as a specified and predefined terminology, a controlled vocabulary, etc. If this is the case they can be handled as a type of Quadrant A in the HIEM model. {See further below Clause 12} However, on the whole “indexing languages” are outside the scope of this Part of ISO/IEC 20016.

²⁵ This Part of ISO/IEC 20016 is independent of, but facilitates its mapping to any mark-up languages which may be used as a syntax for its implementation, (e.g., SGML, HTML, XML, RELAX-NG, ebXML, DSSL, etc.).

²⁶ For example, the multipart ISO/IEC 24751 standard which focuses on specifying user preferences is independent of contents, i.e., semantics of the recorded information being interchanged. As such, it provides a functional services view (FSV).

1.3.7 General aspects of culture and environment

General aspects of culture and environment are excluded from this multipart standard. The focus of this standard is language accessibility and human interface equivalents in a commitment exchange context. In addition, specific other “rights” identified in the UN Convention such as “privacy” are being addressed in ISO standards as well as in an ITLET context through the JTC1/SC36 ISO/IEC 29187 standard.

1.4 Aspects not currently addressed in this 1st edition

1.4.1 Introduction - Focus and scope of 1st edition of ISO/IEC 20016-1

This is a multipart ISO/IEC standard for which the focus of this first edition of this part of ISO/IEC 20016 is directed at addressing the most essential, i.e., primitive, aspects only.

It is recognized that there are and will be:

- 1) additional aspects to be addressed; and,
- 2) that these issues once identified by ISO/IEC JTC1/SC36 will be addressed in one of four ways; namely:
 - a) a “corrigenda” to this 1st edition;
 - b) an “addendum: to this 1st edition;
 - c) a 2nd edition from ISO/IEC 20016-1; and/or,
 - d) a new Part of ISO/IEC 20016. (This is the most likely approach)

1.4.2 The creation of accessible HIEs

This part of ISOIEC 20016 does not yet (nor do the other parts of ISO/IEC 24751) describe how to create accessible content and associated HIEs. Rather, this standard provides tools and methodologies for facilitating language accessibility and developing Human Interface Equivalents for content. The aspect of creation and maintenance of accessible HIE in support of semantic interoperability may be addressed in a future edition of this standard and/or as a separate new part of this multipart standard, (e.g., as an IS or as a TR).

What this Framework document does is provide a template {see below} for use in support of a systematic approach for the identification of the level of unambiguity which an HIE should have depending on its purpose and sue in semantic collaboration space, doing so in support of the implementation of the requirements of the *UN Convention on the Rights of Persons with Disabilities*.

1.4.3 Rules and procedures governing the four quadrants (each or combinations) of the Human Interface Equivalency Model (HIEM)

Clause 12 below introduces the primitive aspect of the HIEM including its four quadrants “A”, “B”, “C” and “D”. Detailed rules and guidelines pertaining to each of these quadrants in support of HIEs and semantic interoperability remain to be developed.

A key challenge here is determining whether or not there exist HIE equivalents in another official language, a de factor language, or any LET language (LET-L), and if not to develop methodology and approach for addressing issues of this nature.

1.4.4 Creation of abbreviations and acronyms as HIEs

An abbreviation or an acronym is a very short character string that serves as an “aide-memoire” (or short-hand facilitating the identification of (1) a concept, and its definition for a HIE perspective; (2) in communication and interchange among parties exchanging semantics including those pertaining to a commitment exchange; and, (3) in the modelling of the identification and representation of concepts and/or in the use of formal description techniques.²⁷

1.4.5 Template for specifying semantic interoperability requirements

The concept of and need for the use of a “template” for specifying semantic interoperability requirements are introduced in Clause 13 below as an essential methodology and tool in this part of ISO/IEC 20016 Framework and Reference Model. The key constructs and approach to the use of a “HIE requirements template” are presented in an integral element of this *Framework and Reference Model*. The development of the more detailed operational aspects, i.e., management and implementation, has not been addressed in this 1st edition.

1.4.6 Localization aspects

The first edition of ISO/IEC 20016-1 introduces localization requirements (in 8.7 below) as a key aspect of public policy requirements applicable to individual accessibility requirements.

There are many localization aspects which may require standards development work. These include those pertaining to whether the location of an individual users and/or LET provider, i.e., as specified via a physical address and/or electronic address. This may impact semantic interoperability requirements with respect to the provision of HIEs at the appropriate level of semantic unambiguity, i.e., as a SIEL.

1.4.7 Various aspects of HIE semantic collaboration space (SCS)

Clause 9.2 below focuses on the essential and most primitive aspects only of “semantic collaboration space”. It is a construct necessary to support the implementation of the *UN Convention on the Rights of Persons with Disabilities*. Here two figures; namely:

- a) Figure 6 - (HIE) Semantic Collaboration Space (SCS); and
- b) Figure 8 - Two perspectives of semantic collaboration space (SCS);

require further standards development from an implementation and use perspective. This is to be addressed in the second edition of ISO/IEC 20016-1 or in Parts 2+ of this multipart standard.

1.4.8 Role of an “AfA agent”²⁸

It is a very common occurrence in an individual accessibility requirements context that either the individual, and/or the organization or public administration with which the individual is communicating involves the services of someone to server as an “AfA agent” to: (1) provide a usable understandable HIE of the semantics of the content being provided; (2) assist the individual with his/her participation in a semantic collaboration space; and, (3) assist the individual to communicate in a semantic collaboration space. Further, it is very important to differentiate between (1) an “AfA agent, i.e., someone who acts on behalf of the individual as an “interlocutor”; and, (2) IT agents such as automatons, bobots, etc, which perform or execute FSV functions on behalf of a real Person.

²⁷ For some introductory work in this area, see further Clause 5.2.3 *Rules governing the assignment of an abbreviation (or acronym) for a concept* in ISO/IEC 15944-7, *Information technology — Business Operational View — Part 7: eBusiness Vocabulary*.

²⁸ For the definition of this concept, see below Clause 3.008.

1.4.9 Privacy protection, consumer protection, human rights, etc.

It is recognized that “individual accessibility” is but one of several public policy requirements of a global nature which are:

- 1) recognized and supported by UN conventions, treaties, etc., as well as in specific laws and regulations of UN member states (as well as their administrative sub-divisions); and,
- 2) international ISO, IEC, and/or ITU-T standards.

Two examples here are:

- 1) “consumer protection” for which COPOLCO (Committee on Consumer Policy) of ISO coordinates and harmonizes standards development; and,
- 2) “privacy protection” in support of which many ISO, ISO/IEC, and ITU-T committees have already developed international standards.²⁹

As such, “consumer protection”, “privacy protection”, and related public policy requirements which are not of an “individual accessibility” nature, i.e., HIE content availability nature are excluded, from the scope of ISO/IEC 20016. However, at the same time, it is necessary to position “individual accessibility” in the context of the overall set of common public policy requirements. This has been done below in Clause 7 below titled “*Public policy requirements of jurisdictional domains*”.

This part of ISO/IEC 20016 is a “*Framework and Reference Model*”. As such, it does not address specific technical aspects with respect to its implementation and use. This is the purpose and focus of Parts 2+. Nevertheless, this first edition of this part of ISO/IEC 20016 includes Annex L (informative) “*Implementation considerations for the ISO/IEC 20016-1 Framework and Reference Model*”.

In addition, the first edition of this part of ISO/IEC 20016 does not currently support the following:

- 1) rules and methods for establishing equivalencies within a natural language, i.e., synonyms or quasi-synonyms; and,
- 2) registration and re-use of HIEs.

1.5 IT-systems environment neutrality

This standard does not assume nor endorse specific ICT systems environment, database management system, database design paradigm, systems development methodology, data definition language, command languages, mark-up language, system interface, syntax (including syntax-based languages), programming language, computing platform, Formal Description Technique (FDT) methodology or FDT tools, or any ICT required for its implementation, i.e., it is IT-neutral. Yet at the same time, this standard maximizes an (1) IT-enabled approach to its implementation; (2) maximizes semantic interoperability; and, (3) facilitates the same in a sustainable manner, (e.g., cost-efficient, logic-based, explicitly stated, documented, etc.).

²⁹ In an ITLET context, JTC1/SC36 is developing its multipart ISO/IEC 29187 standard titled *Information technology - Identification of Privacy Protection Requirements pertaining to Learning, Education and Training (LET)* for which its Part 1 titled “*Framework Model and Reference Model*” is expected to reach the IS stage in 2012.

2 Normative references

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

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

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*

ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

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

3 Terms and definitions

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

3.001

abbreviation

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

[ISO 1087-1:2000 (3.4.9)]

3.002

access for all (AfA)

approach to providing **accessibility** in a computer mediated environment in which the **digital resources** and their method of delivery are matched to the needs and preferences of the user

Note 1 to entry: This definition is also found in IMS AccessForAll Meta-data Specification Version 1.

[ISO/IEC 24751-1:2008 (3.1)]

3.003

accessibility

usability of a product, service, environment or facility by **individuals** with the widest range of capabilities

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

Note 2 to entry: Adapted from ISO TS 16071.

[ISO/IEC 24751-1:2008 (3.2)]

3.004

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

Note 1 to entry: Examples of acronyms are: laser, DOS, GATT, UNESCO, UNICEF.

[ISO 1087-1:2000 (3.4.10)]

3.005**adaptability (in e-learning context)**

ability of a digital resource or delivery system to adjust the presentation, control methods, structure, access mode, and user supports, when delivered

[ISO/IEC 24751-1:2008 (3.4)]

3.006**adaptation (in e-learning context)**

digital resource that presents the intellectual content of all or part of another digital resource

Note 1 to entry: Adaptations may also include the adjustment of the presentation, control methods, access mode, structure, and user supports.

[ISO/IEC 24751-1:2008 (3.5)]

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

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

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

Note 4 to entry: Adapted from ISO/IEC 15944-2.

3.008**AfA agent**

someone, i.e. a real person, acting on behalf of an individual in a clearly specified capacity in and access for all (AfA) context

Note 1 to entry: Adapted from definition of “agent” in ISO/IEC 15944-1:2011.

[ISO/IEC 24751-1:2008 (3.6)]

3.009**AfA context**

particular situation or environment in which a set of **AfA accessibility** needs and preferences might be used

[ISO/IEC 24751-2:2008 (3.05)]

3.010**artificial language**

language whose rules are explicitly established prior to its use

[ISO 5127:2001 (1.1.2.03)]

3.011**attribute**

characteristic of an object or entity

[ISO/IEC 11179-3:2003 (3.1.3)]

3.012

business object

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

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

[ISO/IEC 15944-2:2006 (3.6)]

3.013

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)]

3.014

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)]

3.015

business transaction identifier (BTI)

identifier assigned by a seller or a regulator to an instantiated business transaction among the Persons involved

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

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

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

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

[ISO/IEC 15944-5:2008 (3.12)]

3.016

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)]

3.017

character

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

Characters may be categorized as follows:

TYPES AND EXAMPLES

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

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

[ISO/IEC 2382-4:1999 (04.01.01)]

3.018

characteristic

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

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

[ISO 1087-1:2000 (3.2.4)]

3.019

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 646-1.

[ISO/IEC 2382-4:1999 (04.01.02)]

3.020

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

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

[ISO/IEC 15944-5:2008 (3.17)]

3.021

code

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

Note 1 to entry: In this standard 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)]

3.022

coded domain

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

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

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

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

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

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

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

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

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

Note 9 to entry: 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.

[ISO/IEC 15944-2:2006 (3.13)]

3.023

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 15944-5:2006 (3.21)]

3.024

coded domain Source Authority (cdSA)

Person, usually an organization, as a Source Authority which sets the rules governing a coded domain

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

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

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

[ISO/IEC 15944-2:2006 (3.14)]

3.025

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)]

3.026

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)]

3.027

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

[ISO/IEC 15944-4:2007 (3.12). Withdrawn.]

3.028

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)]

3.029

commitment exchange

establishment of a **commitment** among two or more **Persons** to accomplish an explicitly shared and agreed to goal which is terminated upon one recognition of one of the agreed conclusions by all the involved **Persons**, although some recognition may be implicit

Note 1 to entry: A LET transaction is a type of commitment exchange.

Note 2 to entry: It is important that the appropriate semantic interoperability equivalency level (SIEL) in support of semantic interoperability requirements be established and agreed to no later than the end of the negotiation phase in the establishment of commitment exchange.

3.030

communication

transfer of meaning by means of transmission of signals

[ISO 5127:2001 (1.1.3.01)]

3.031

communication (in accessibility)

transfer of meaning among **individuals** by means of transmission of signals in a manner which supports **accessibility**

Note 1 to entry: From a content perspective, communication includes languages, display of text, Braille, tactile communication, large print, accessible multimedia as well as written, audio, plain-language, human-reader and augmentative and alternative modes.

Note 2 to entry: From an ICT perspective, communication includes the means and formats of communication, such as accessible information and communication technology.

3.032

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

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

Note 3 to entry: Most widely used composite identifiers consist of the combinations of:

- (1) the ID of the overall identification/numbering schema, (e.g., ISO/IEC 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)]

3.033

concept

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

Note 1 to entry: 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)]

3.034

constraint

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

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

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

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

[ISO/IEC 15944-1:2011 (3.11)]

3.035

consumer

a buyer who is an individual to whom consumer protection requirements are applied as a set of external constraints on a business transaction

Note 1 to entry: Consumer protection is a set of explicitly defined rights and obligations applicable as external constraints on a business transaction.

Note 2 to entry: The assumption is that a consumer protection applies only where a buyer in a business transaction is an individual. If this is not the case in a particular jurisdiction, such external constraints should be specified as part of scenario components as applicable.

Note 3 to entry: It is recognized that external constraints on a buyer of the nature of consumer protection may be peculiar to a specified jurisdiction.

[ISO/IEC 15944-1:2011 (3.12)]

3.036

consumer protection

set of **external constraints** of a **jurisdictional domain** as rights of a **consumer** and thus as obligations (and possible liabilities) of a **vendor** in a **business transaction** which apply to the good, service and/or right forming the **object** of the **business transaction** (including associated information management and interchange requirements including applicable (sets of) **recorded information**)

Note 1 to entry: Jurisdictional domains may restrict the application of their consumer protection requirements as applicable only to individuals engaged in a business transaction of a commercial activity undertaken for personal, family or household purposes, i.e., they do not apply to natural persons in their role as "organization" or "organization Person".

Note 2 to entry: Jurisdictional domains may have particular consumer protection requirements which apply specifically to individuals who are considered to be a "child" or a "minor", (e.g., those individuals who have not reached their thirteenth (13th) birthday).

Note 3 to entry: Some jurisdictional domains may have consumer protection requirements which are particular to the nature of the good, service and/or right being part of the goal of a business transaction.

[ISO/IEC 15944-5:2008 (3.33)]

3.037

content provider

Person who provides the content of the **set of recorded information (SRI)** which provide the basis for the establishment of the semantics interchanged in the **semantic collaboration space** and in support of the fulfilment with an **individual user** of an agreed upon LET activity including those of the nature of a **commitment exchange**

Note 1 to entry: A content provider shall provide content in support of the goal of a commitment exchange at the level of semantic unambiguity appropriate to the specified goal of the commitment exchange including meeting applicable language accessibility requirements, i.e., as HIEs, of the jurisdictional domain of the individual user.

3.038

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

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

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

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

[ISO/IEC 15944-5:2008 (3.34)]

3.039

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)]

3.040

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)]

3.041

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

[ISO/IEC 2382-4:1999 (04.07.01)]

3.042

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)]

3.043

declared semantic equivalent (DSE)

set of recorded information (SRI) declared suitable for use as a **human interface equivalent (HIE)** at the applicable **semantic interoperability equivalency level (SIEL)** in support of **semantic interoperability** requirements in accordance with **external constraints** of the applicable **jurisdictional domain** and the nature and intended purpose of use of the **SRI** as provided by a **Person** to an **individual**

3.044

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

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

[ISO/IEC 15944-5:2008 (3.42)]

3.045

definition

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

[ISO 1087-1:2000 (3.3.1)]

3.046

designation

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

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

[ISO 1087-1:2000 (3.4.1)]

3.047

dictionary

list of words or a category of words from a **language** arranged alphabetically or systematically and explained in that **language** or translated into one or more other **languages**

[ISO 5127:2001 (2.2.1.16)]

3.048

digital resource (DR)

any type of resource that can be transmitted over and/or accessed via an **information technology system (IT system)**

Note 1 to entry: A digital resource should be referenceable via an unambiguous and stable identifier in a recognized identification system, (e.g., ISBN, ISAN, UPC/EAN, URI, etc.).

[ISO/IEC 24751-1:2008 (3.11)]

3.049**digital resource delivery**

presentation of a digital resource by a display

[ISO/IEC 24751-1:2008 (3.12)]

3.050**disability (in digital resource delivery)**

any obstacle to the use of a **digital resource** experienced due to a mismatch between the needs of a user and the **digital resource** delivered

Note 1 to entry: Disability in an AfA context is not a personal trait but a consequence of the relationship between the user and their resource system.

Note 2 to entry: In an e-learning context, disability refers to a mismatch between the needs of a learner and both the educational resource and/or the method of delivery

[ISO/IEC 24751-1:2008 (3.13)]

3.051**display**

rendering or presentation of a user interface and/or **digital resource** in a range of access modes

Note 1 to entry: Access modes include, but are not limited to, visual, auditory, olfactory, textual and tactile.

[ISO/IEC 24751-1:2008 (3.15)]

3.052**display transformability**

characteristic of a **digital resource** that supports changes to specific aspects of its **display**

Note 1 to entry: See further the coded domain in ISO/IEC 24751-3 (Annex B.3).

[ISO/IEC 24751-1 :2008 (3.16)]

3.053**display transformation (DT)**

restyling or reconfiguration of the rendering or presentation of a user interface and/or **digital resource**

[ISO/IEC 24751-1:2008 (3.17)]

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

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

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

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

[ISO/IEC 15944-7:2008 (3.06)]

3.055

e-learning

learning facilitated by information and communications technology

[ISO/IEC 24751-1:2008 (3.18)]

3.056

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)]

3.057

Electronic Data Interchange (EDI)

automated exchange of any predefined and structured **data** for business purposes among information systems of two or more **Persons**

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

[ISO/IEC 14662:2010 (3.8)]

3.058

entity

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

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

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

[ISO/IEC 2382-17:1999 (17.02.05)]

3.059

exchange code set

a 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 15944-5:2006 (3.49)]

3.060

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

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

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

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

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

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

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

Note 5 to entry: Where the information bundles (IBs), including their Semantic Components (SCs) of a business transaction are also to form the whole of a business transaction, (e.g., for legal or audit purposes), all constraints 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 to entry: A minimum external constraint applicable to a business transaction often requires one to differentiate whether the Person, i.e., that is a party to a business transaction, is an "individual", "organization", or "public administration". For example, privacy rights apply only to a Person as an "individual".

[ISO/IEC 15944-1:2011 (3.23)]

3.061

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)]

3.062

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-edl transactions

[ISO/IEC 14662:2010 (3.10)]

3.063

glyph

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

[ISO/IEC TR 15285:1998 (3.5)]

3.064

grammatical gender

grammatical category that indicates grammatical relationships between words in sentences

Note 1 to entry: 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 12620:2009 (E) (A.2.2.2)]

3.065

homonymy

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

Note 1 to entry: 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 12 to entry: The designations in the relation of homonymy are call *homonyms*.

[ISO 1087-1:2000 (3.4.25)]

3.066

HIE identifier (HIE-ID)

composite identifier assigned to the **human interface equivalents (HIEs)** of the **semantic component**, in whatever presentation format, which is capable of being used by any **individual**, from a **semantic interoperability** perspective, in support of being able to exercise his/her rights with respect to (1) the provision of **recorded information**; (2) decision-taking; and/or, (3) commitment-making in compliance of the rights of that **individual** in compliance with the requirements of the *UN Convention on the Rights of Persons with Disabilities*

3.067

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

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

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

[ISO/IEC 15944-2:2006 (3.35)]

3.068

ID Code

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

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

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

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

Note 4 to entry: A coded domain may contain ID codes pertaining to entities which are not members as peer entities, i.e. have the same properties and behaviours, such as ID codes which pertain to predefined conditions other than member entities. If this is the case, the rules governing such exceptions 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 to entry: In UML modelling notation, an ID codes is viewed as an instance of an object class.

[ISO/IEC 15944-2:2006 (3.37)]

3.069

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)]

3.070

identifier (in business transaction)

unambiguous, unique and a linguistically neutral value, resulting from the application of a **rule-based identification process**

Note 1 to entry: Identifiers must be unique within the identification scheme of the issuing authority.

Note 2 to entry: An identifier is a linguistically independent sequence of characters capable of uniquely and permanently identifying that with which it is associated. {See ISO 19135:2005 (4.1.5)}

[ISO/IEC 15944-1:2011 (3.27)]

3.071

indexing language

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

[ISO/IEC 2382-1:1993 (01.05.10)]

3.072

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)]

3.073

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

EXAMPLE Examples of disabilities in the form of functional and cognitive limitations include:

- people who are blind;
- people with low vision;
- people with colour blindness;
- people who are hard of hearing or deaf, i.e., are hearing impaired;
- people with physical disabilities;
- people with language or cognitive disabilities.

[ISO/IEC 15944-5:2008 (3.60)]

3.074

individualized accessibility (in e-learning)

facility of an **IT system** based learning environment to address the needs of an **individual** as learner (through **adaptation**, re-aggregation and substitution)

Note 1 to entry: Accessibility is determined by the flexibility of the education environment (with respect to presentation, control methods, structure, access mode, and learner supports) and the availability of equivalent content deemed to be adequate alternatives.

[ISO/IEC 24751-1:2008 (3.21)]

3.075

individual user

individual who has the right to require that the contents of any information exchange with a **content provider**, i.e., as a **set(s) of recorded information (SRIs)** be provided **unambiguously** at the appropriate level of unambiguity in the preferred **HIE** to be made available

3.076

information law

any law, regulation, policy, or code (or any part thereof) that requires the creation, receipt, collection, description or listing, production, retrieval, submission, retention, storage, preservation or destruction of recorded information, and/or that places conditions on the access and use, confidentiality, privacy, integrity, accountabilities, continuity and availability of processing, reproduction, distribution, transmission, sale, sharing or other handling of **recorded information**

[ISO/IEC FDIS 15944-8:2012 (3.62)]

3.077

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)]

3.078

intellectual content

recorded information of a **digital resource** independent of its representation and/or access mode

[ISO/IEC 24751-1:2008 (3.23)]

3.079

internal constraint

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

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

[ISO/IEC 15944-1:2011 (3.33)]

3.080

interoperability

ability of two or more **IT systems** to exchange information and to make mutual use of the information that has been exchanged

[ISO/IEC TR 14252:1996 (2.2.2.21)]

3.081

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)]

3.082

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

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

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

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

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

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

[ISO/IEC 15944-2:2006 (3.48)]

3.083

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

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

EXAMPLE Included here, for example, are the European Union (EU), NAFTA, WTO, WCO, ICAO, WHO, Red Cross, the ISO, the IEC, the ITU, etc.

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

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

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

[ISO/IEC 15944-5:2008 (3.67)]

3.084

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 15944-2:2008 (3.47)]

3.085

language

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

Note 1 to entry: 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)]

3.086

language (in accessibility)

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

Note 1 to entry: In this standard, language refers to natural languages or special languages, but not "programming languages" or "artificial languages".

Note 2 to entry: In this standard, language includes spoken and signed languages and other forms of non-spoken languages.

Note 3 to entry: Adapted from ISO 5127-1.

3.087

language code

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

Note 1 to entry: In this multipart ISO/IEC 24751 standard, the ISO 639-2/T (terminology) three alpha-code, shall be used.

[ISO 639-2:1998 (3.2)]

3.088

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 1 to entry: 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)]

3.089

LET language (LET-L)

legally recognized language (LRL) in LET context as the language of instruction (LOI) in a LET context

Note 1 to entry: A LET-L may exist at any level of a jurisdictional domain. This can be at the level of (1) an international regulatory regime; {See Annex H (informative) in ISO/IEC 15944-5:2009}; (2) a UN member state {See Annex E (informative) Codes representing UN member states and their official or de facto languages}; (3) an administrative unit of a UN member state (as identified in ISO 3166-2); (4) any additional sub-level of any administrative unit of a UN member state functional as a jurisdictional domain.

EXAMPLE Examples here include local school boards, LET providers, use of LOI in support of treaty obligations (similar types of agreements) with aboriginal peoples with respect to use of one or more of their languages as a language of instruction which has LRL status.

3.090

list

ordered set of **data elements**

[ISO/IEC 2382-4:1999 (04.08.01)]

3.091

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)]

3.092

location

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

[ISO/IEC 15944-2:2006 (3.50)]

3.093

medium

physical material which serves as a functional unit, in or on which information or **data** is normally recorded, in which information or **data** can be retained and carried, from which information or **data** can be retrieved, and which is non-volatile in nature

Note 1 to entry: This definition is independent of the material nature on which the information is recorded and/or technology used to record the information, (e.g., paper, photographic, (chemical), magnetic, optical, ICs (integrated circuits), as well as other categories no longer in common use such as vellum, parchment (and other animal skins), plastics, (e.g., bakelite or vinyl), textiles, (e.g., linen, canvas), metals, etc.).

Note 2 to entry: The inclusion of the "non-volatile in nature" attribute is to cover latency and records retention requirements.

Note 3 to entry: This definition of "medium" is independent of: i) form or format of recorded information; ii) physical dimension and/or size; and, iii) any container or housing that is physically separate from material being housed and without which the medium can remain a functional unit.

Note 4 to entry: This definition of "medium" also captures and integrates the following key properties: i) the property of medium as a material in or on which information or data can be recorded and retrieved; ii) the property of storage; iii) the property of physical carrier; iv) the property of physical manifestation, i.e., material; v) the property of a functional unit; and, vi) the property of (some degree of) stability of the material in or on which the information or data is recorded.

[ISO/IEC 15944-1:2011 (3.34)]

3.094

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)]

3.095

model

abstraction of some aspect of reality

[ISO 19115:2003 (4.9)]

3.096

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)]

3.097

name

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

[ISO 5127:2001 (1.1.2.13)]

3.098

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 5127:2001 (1.1.2.02)]

3.099

object

anything perceivable or conceivable

Note 1 to entry: 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)]

3.100

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 behaviour follow the same rules

[ISO/IEC 11179-1:2004 (3.3.22)]

3.101

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

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

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

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

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

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

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

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

Note 1 to entry: A jurisdictional domain may have more than one official language but these may or may not have equal status.

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

Note 7 to entry: The BOV requirement of the use of a specified language will place that requirement on any FSV supporting service.

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

[ISO/IEC 15944-5:2006 (3.87)]

3.102

Open-edi

electronic data interchange among multiple autonomous **Persons** to accomplish an explicitly shared business goal according to Open-edi standards

[ISO/IEC 14662:2010 (3.14)]

3.103

organization

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

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

EXAMPLE 1 An organization incorporated under law.

EXAMPLE 2 An unincorporated organization or activity providing goods and/or services including:

- 1) partnerships;
- 2) social or other non-profit organizations or similar bodies in which ownership or control is vested in a group of individuals;
- 3) sole proprietorships;
- 4) governmental bodies.

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

[ISO/IEC 6523-1:1998 (3.1)]

3.104

original access mode

access mode through which the **intellectual content** of the **digital resource** was originally designed to be communicated

[ISO/IEC 24751-3:2008 (3.25)]

3.105

Person

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

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

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

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

[ISO/IEC 14662:2010 (3.24)]

3.106

persona

set of **data elements** and their values by which a **Person** wishes to be known and thus identified in a **business transaction**

[ISO/IEC 15944-1:2011 (3.48)]

3.107

personal information

any information about an identifiable **individual** that is recorded in any form, including electronically or on paper

Note 1 to entry: Some examples would be record information about a person's religion, age, financial transactions, medical history, address, or blood type.

[ISO/IEC 15944-5:2008 (3.103)]

3.108

physical address

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

[ISO/IEC 15944-2:2006 (3.80)]

3.109

pivot code set

set of ID codes in a coded domain which is made publicly known and available, the most stable, representing the defined semantics (most often it is the same as the ID code)

Note 1 to entry: The use of the pivot code set (as per Part 5) as distinguished from the ID code supports the requirement of a Source Authority to maintain internally and on a confidential basis the ID code of its members.

Note 2 to entry: At times a coded domain has more than one valid code set, (e.g., ISO 639, ISO 3166, etc.).

EXAMPLE In ISO 3166-1 the 3-digit numeric code is the pivot. The 2-alpha and 3-alpha code sets can change when the name of the entity referenced is changed by that entity.

[ISO/IEC 15944-5:2008 (3.104)]

3.110

pivot ID code

most stable ID code assigned to identify a member of a coded domain where more than one ID code may be assigned and/or associated with a member of that coded domain

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

- a three digit numeric code;
- a two alpha code
- a three alpha code.

Here, the three digit numeric code serves as the pivot code. It is the most stable, remains the same even though the two alpha and/or three alpha codes may and do change.

[ISO/IEC 15944-5:2008 (3.105)]

3.111**polysemy**

relation between **designations** and **concepts** in a given **language** in which one **designation** represents two or more **concepts** sharing certain **characteristics**

Note 1 to entry: An example of polysemy is: bridge (1) “structure to carry traffic over a gap”; (2) “part of a string instrument”; (3) “dental plate”.

Note 2 to entry: The designations in the relation of polysemy are called *polysemes*.

[ISO 1087-1:2000 (3.4.24)]

3.112**portability**

capability of a program to be executed on various types of data processing systems often involving recompiling, with little or no manual modification

[ISO/IEC 2382-1:1998]

3.113**principle**

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

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

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

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

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

[ISO/IEC 15944-2:2006 (3.81)]

3.114**privacy protection**

set of external constraints of a jurisdictional domain pertaining to recorded information on or about an identifiable individual, i.e., personal information, with respect to the creation, collection, management, retention, access and use and/or distribution of such recorded information about that individual including its accuracy, timeliness, and relevancy

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

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

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

[ISO/IEC 15944-5:2008 (3.109)]

3.115**process**

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

[ISO/IEC 15944-1:2011 (3.53)]

3.116

programming language

artificial language for expressing programs

[ISO/IEC 2382-1:2007 (01.05.10)]

3.117

property

peculiarity common to all members of an object class

[ISO/IEC 11179-1:2004 (3.3.29)]

3.118

public administration

entity, i.e., a Person, which is an organization and has the added attribute of being authorized to act on behalf of a regulator

[ISO/IEC 15944-1:2011 (3.54)]

3.119

public policy

category of external constraints of a jurisdictional domain specified in the form of a right of an individual or a requirement of an organization and/or public administration with respect to an individual pertaining to any exchange of commitments among the parties concerned involving a good, service and/or right including information management and interchange requirements

Note 1 to entry: Public policy requirements may apply to any one, all or combinations of the fundamental activities comprising a business transaction, i.e., planning, identification, negotiation, actualization and post-actualization. {See further Clause 6.3 "Rules governing the process component" in ISO/IEC 15944-1:2011}

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

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

[ISO/IEC 15944-5:2008 (3.113)]

3.120

recorded information

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

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

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

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

[ISO/IEC 15944-1:2011 (3.56)]

3.121

Registration Authority identifier (RAI)

identifier assigned to a Registration Authority (RA)

[ISO/IEC 11179-1:2004 (3.3.32)]

3.122

regulator

Person who has authority to prescribe external constraints which serve as principles, policies or rules governing or prescribing the behaviour of Persons involved in a business transaction as well as the provisioning of goods, services, and/or rights interchanged

[ISO/IEC 15944-1:2011 (3.59)]

3.123

role

specification which models an external intended behaviour (as allowed within a scenario) of an Open-edition Party

[ISO/IEC 14662:2010 (3.25)]

3.124

romanization

representation of non-Latin writing systems in the Latin alphabet by means of transliteration transcription or both

[ISO 5127:2001 (1.1.2.24)]

3.125

romanized form

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

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

EXAMPLE See example in A.2.1.10 and A.2.1.11 in ISO 2620:2009

[ISO 12620:2009 (E) (A.2.1.12)]

3.126

rule

statement governing conduct, procedure, conditions and relations

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

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

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

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

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

Note 5 to entry: Specification of rules in an Open-edition business transaction should be compliant with the requirements of ISO/IEC 15944-3 "Open-edition Description Techniques (OeDT)".

[ISO/IEC 15944-2:2006 (3.101)]

3.127

rulebase

pre-established set of rules which interwork and which together form an autonomous whole

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

[ISO/IEC 15944-2:2006 (3.102)]

3.128

seller

Person who aims to hand over voluntarily or in response to a demand, a good, service and/or right to another Person and in return receives an acceptable equivalent value, usually in money, for the good, service and/or right provided

[ISO/IEC 15944-1:2011 (3.62)]

3.129

semantic collaboration space (SCS)

collaboration space where the semantics of the set(s) of recorded information (SRIs) required to achieve a commitment exchange between an individual as the primary Person and all other Persons, i.e., as participating parties, is viewed independently of any party to that commitment exchange

3.130

Semantic Component (SC)

unit of recorded information unambiguously defined in the context of the business goal of the business transaction

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

[ISO/IEC 14662:2010 (3.27)]

3.131

semantic identifier (SI)

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

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

[ISO/IEC 15944-5:2008 (3.136)]

3.132

semantic interoperability

assurance of the development and existence of required semantic interoperability equivalency level (SIEL) of the human interface equivalent(s) (HIEs) of the semantics of any set of recorded information (SRI) intended for use by an individual, in support of language accessibility and communication accessibility requirements of the *UN Convention on Rights of Persons with Disabilities*

Note 1 to entry :A set of recorded information (SRI) can be as “small” as a simple (atomic) data element or as “large” as a “book”, the contents of an entire Web site, etc.

Note 2 to entry: Depending on the context and purpose of use, a SRI can be “atomic” or be composed of several SRIs which are “bundled” into a (new) distinct SRI. The approach here to bundling of SRIs is dynamic in nature and placed in commitment exchange context which determines the SIEL.

3.133**semantic interoperability equivalency level (SIEL)**

assurance that the semantics of any set of recorded information (SRI) is being provided to an individual in order for that individual to be (1) fully informed; (2) able to take decisions; and/or, (3) able to make a commitment, based on the SRI(s) provided.

Note 1 to entry: Based on the *UN Convention on the Rights of Persons with Disabilities*, the four most primitive levels of semantic equivalency are: (a) Level 0 - Not applicable; (b) Level 1 – Provision of information; (c) Level 2 – Informed consent and decision-taking; and, (d) Level 3 – Informed consent at (*higher) level of unambiguity required to support Commitment-making

Note 2 to entry: The semantic interoperability equivalency level (SIEL) applicable is determined by the goal and purpose of the (intended) use of a SRI in support of semantic interoperability requirements.

3.134**set of recorded information (SRI)**

recorded information of an organization or public administration, which is under the control of the same and which is treated as a unit in its information life cycle

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

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

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

[ISO/IEC 15944-5:2008 (3.137)]

3.135**sign**

any physical phenomenon interpreted to convey meaning

[ISO 5127:2001 (1.1.3.02)]

3.136**Source Authority (SA)**

Person recognized by other Persons as the authoritative source for a set of constraints

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

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

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

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

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

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

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

[ISO/IEC 15944-2:2006 (3.109)]

3.137

special language

language for special purposes (LSP), language used in a subject field and characterized by the use of specific linguistic means of expression

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

[ISO 1087-1:2000 (3.1.3)]

3.138

standard

documented agreement containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose

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

[ISO/IEC 15944-1:2011 (3.64)]

3.139

symbol

designation by means of letters, numerals, pictograms or any combination thereof

[ISO 5127:2001 (1.1.2.11)]

3.140

term

designation of a defined concept in a special language by a linguistic expression

Note 1 to entry: A term may consist of one or more words i.e. simple term, or complex term or even contain symbols.

[ISO 1087:2000 (5.3.1.2)]

3.141

terminology

set of designations belonging to one special language

[ISO 5127:2001 (3.1.5)]

3.142

text

data in the form of characters, symbols, words, phrases, paragraphs, sentences, tables, or other character arrangements, intended to convey a meaning and whose interpretation is essentially based upon the reader's knowledge of some natural language or artificial language

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

[ISO/IEC 2382-23:1994 (23.01.01)]

3.143

third party

Person besides the two primarily concerned in a business transaction who is agent of neither and who fulfils a specified role or function as mutually agreed to by the two primary Persons or as a result of external constraints

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

[ISO/IEC 15944-1:2011 (3.65)]

3.144**unambiguous**

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)]

3.145**usability**

extent to which a product can be used by specified users to achieve specified goals, with effectiveness, efficiency, and satisfaction, in a specified context of use

[ISO 9241-11:1998 (3.1)]

3.146**vendor**

seller on whom consumer protection requirements are applied as a set of external constraints on a business transaction

Note 1 to entry: Consumer protection is a set of explicitly defined rights and obligations applicable as external constraints on a business transaction.

Note 2 to entry: It is recognized that external constraints on a seller of the nature of consumer protection may be peculiar to a specified jurisdiction.

[ISO/IEC 15944-1:2011 (3.67)]

3.147**vocabulary**

terminological dictionary which contains designations and definitions for one or more specific subject fields

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

[ISO 1087-1:2000 (13.7.2)]

4 Symbols and abbreviated terms

For the purposes of this document, the following abbreviated terms apply.

Abbreviated term	Meaning
AfA	Access for All
ASN.1	Abstract Syntax Notation 1
BOV	business operational view
BTI	business transaction identifier
BTM	Business Transaction Model
cdRS	coded domain Registration Schema
cdSA	coded domain Source Authority
COPOLCO	Committee on Consumer Protection (of the ISO)
COS	content operational support
CV	controlled vocabulary
DLE	degrees of linguistic equivalence
DR	digital resource
DSE	declared semantic equivalent
DSSL	Document Style Semantics Specification Language
DT	display transformation
EDI	Electronic Data Interchange
(E)	English

E/F	English/French
ebXML	electronic business using eXtensible Markup Language
EU	European Union
FDIS	Final Draft International Standard
FDT	Formal Description Technique
FSSV	Functional Services Support View
FSV	Functional Services View
HIE	human interface equivalent
HIE ID	human interface equivalent identifier
HIEM	Human Interface Equivalent Model
HS	Harmonized System Nomenclature (of the WCO)
HTML	Hypertext Mark-up Language
IAM	Individual Accessibility Model
IB	information bundle
ICAO	International Civil Aviation Organization
ICT	information communications technologies
ID	identification
INCOTERMS	International Commercial Terms
IEC	International Electrotechnical Committee
IETF	Internet Engineering Task Force
ILO	International Labour Organization
IMO	International Maritime Organization
IS	International Standard
ISAN	International Standard Audiovisual Number
ISBN	International Standard Book Number
ISO	International Organization for Standardization
IT	information technology
ITLET	Information Technology for Learning Education and Training
IT System	information technology system
ITU	International Telecommunications Union
ITU-T	International Telecommunications Union – Telecommunications sector
JTC	Joint Technical Committee (of the ISO and IEC)
LET	learning, education and training
LET-L	LET-language
LOI	language of instruction
LSP	languages for specific purposes
NAFTA	North American Free Trade Association
NWIP	New work item proposal
OeDT	Open-edition Description Technique
OO	object oriented
POSIX	Portable Operating System Interface (for Unix)
RA	Registration Authority
RAI	Registration Authority identifier
RELAX-NG	ISO/IEC 19752-2 Document Schema Definition Language (DSDL) – Part 2: Regular grammar-based validation – RELAX _ NG
RER	Referencing Explanatory Reports
RFC	Request for comments
RS	Reference specifications
SA	Source Authority
SC	Semantic Component
SC36	Sub-Committee 36 Information Technology for Learning Education and Training
SCS	semantic collaboration space
SI	semantic identifier
SIEL	semantic interoperability equivalent level
SOV	semantic operational view
SRI	set of recorded information
ST	source text
STG	semantic transaction goal
TOC	table of contents
TT	target text

UI	user interface
UML	Unified Modelling Language
UN	United Nations
UN/ECE	UN Economic Commission for Europe
UN/EDIFACT	UN/Electronic Data Interchange for Administration, Commerce and Transport
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPC/EAN	Universal Product Number/European Article Number
W3C	World Wide Web Consortium
WCO	World Customs Organization
WTO	World Trade Organization
WWW	World Wide Web
XML	Extensible Mark-up Language
YYYY-MM-DD	Year-Month-Day

5 Conformance

5.1 Introduction

There are two levels of conformance to this multipart ISO/IEC 20016 standard; namely:

- a) that to this Part of ISO/IEC 20016 “*Framework and Reference Model*”, itself; and,
- b) those which may apply to a specific ISO/IEC 20016 Part 2+ which focuses on implementation aspects.

5.2 Conformance to this part of ISO/IEC 20016 “framework and reference model”

Rule 001:

Conforming to this ISO/IEC 20016-1 Framework and Reference Model shall apply only to semantic interoperability aspects and not to those pertaining to functional support services, (e.g., such as those being provided by the multipart ISO/IEC 24751 standard or other non-content related ISO/IEC, ISO, ITU international standards).

Rule 002:

ISO/IEC 20016 Parts 2+ of this multipart standard shall state:

- 1) the list of the basic concepts of this Part of ISO/IEC 20016-1 *Framework and Reference Model* for semantic interoperability to which it refers, i.e., via reference to the number of concepts in Clause 3; and,
- 2) that all the other concepts of the standard are consistent with and defined in reference to the above mentioned basic concepts.

Rule 003:

The conformance statement shall be in the following form:

“This standard is in conformity to the ISO/IEC 20016-1: *Framework and Reference Model for Semantic Interoperability*. It uses the following basic concepts (x, y, z) as defined in Clause 3 in this *Framework and Reference Model for Semantic Interoperability*. All new concepts introduced in this standard are defined and referenced to those basic concepts and used consistently with them”.

6 Fundamental principles and assumptions

6.1 Introduction

There are a number of key principles which govern the development of this multipart standard. The majority of these principles are already embedded here in this 1st edition of ISO/IEC 20016-1: *Framework and*

*Reference Model for Semantic Interoperability*³⁰. In Parts 2+ of this multipart standard, other fundamental principles and assumptions may be added as appropriate for that Part.

These principles state the fundamental and primary assumptions and qualities which serve as the objectives of this standard. The principles, stated below, also serve as a synergistic approach to supporting the key objectives of this standard. The principles in turn are enforced and clarified in the Clauses of this standard through rules as statements governing conduct, procedures, conditions and/or relations. As such, the rules serve as clear, predefined statements which are unambiguous and understandable by all parties concerned. They also are explicit enough to facilitate their IT-enablement and implementation.

In addition, in Clause 3 above are stated the key concepts and their definitions which are necessary for the understanding of the principles and rules found in Clauses 6+ and the Annexes following.

These objectives include (in no particular order):

- ensuring that provision of HIEs in support of language accessibility is integrated into LET applications;
- providing added value in addressing existing ambiguities in context (of recorded information) intended for use by individuals, especially in decision-taking and commitment-making;
- constructing this Part (and other Parts) of this multipart standard in a manner which maximizes their widespread adoption and global use;
- maximizing cost-effectiveness and efficiency in the implementation of applications based on this Part (and other Parts) of this multipart standard;
- facilitating the implementation and use of Human Interface Equivalents (HIEs) in a cost-effective and efficient manner;
- creating an enabling and sustainable collaborative framework for the development and maintenance of each part of this accessibility standard as well as ensuring a harmonized approach with other international ISO standards;
- supporting accessibility, cultural and linguistic diversity of users around the world;
- supporting the development and maintenance of HIEs as re-useable objects thus reducing resource requirements in the development and maintenance of HIEs;
- architecting and structuring this Part to be able from the outset to be able to support “accessibility” rights of an individual, i.e., individual accessibility;
- supporting the three strategic directions of ISO/IEC JTC1 standards development, namely portability, interoperability, and cultural adaptability; and,
- ensuring that the requirements of the *UN Convention on the Rights of Persons with Disabilities* can be implemented systematically; and,
- ensuring that the requirement of the *UN Convention on the Rights of Persons with Disabilities*: (1) can be implemented systematically; and, (2) in a manner which supports requirements pertaining to semantic interoperability for language accessibility and human interface equivalents (HIEs).

³⁰ Many of these are inherited from other ISO standards from which key concepts and constructs are taken and integrated into this standard.

The synthesis of these objectives resulted in eleven (11) principles which not only govern the development of ISO/IEC 20016-1, but also serve as “construction principles” for this and subsequent Parts of this multipart standard.

It is understood that **the enforcement of individual accessibility requirements is the responsibility of each jurisdictional domain**, i.e., of each UN member state (and, where these are federated countries, possibly that of their respect provinces, states, länder, counties, territories, etc.).

It is also understood that while the *UN Convention on the Rights of Persons with Disabilities* provides a common international reference, the text of the laws and pursuant regulations of each jurisdictional domain do differ. However, the eleven (11) principles provided below are deemed to be generic in nature. They integrate the “sources of requirements” identified above in Clause 0.3 and Figure 1 above.

6.2 Principles governing the ISO/IEC 20016 multipart standard

6.2.1 Principle #1 - Support the requirements of the *UN Convention on the Rights of Persons with Disabilities*³¹

This standard (as well as any amendments or new editions) shall be architected and structurally engineered to support and facilitate the implementation of the objectives and requirements of the 2006 *UN Convention on the Rights of Persons with Disabilities (and Optional Protocols)* both generally and especially in the fields of learning, education, and training (LET).

ISO/IEC 20016-1 therefore views individuals as subjects, who are capable of claiming their rights and taking decisions for their lives based on free and informed consent as well as being active members of society, on an equal basis with others.

This principle recognizes and supports the importance for individuals with disabilities of their individual autonomy and independence, including the freedom to make their own choices. This is understood to mean that any recorded information provided to any individual shall be provided in a form, format and language of representation of communication to allow for, and support, any individual being equally informed with respect to ensuring equivalency in the semantics. That is, with respect to semantic equivalency, of such sets of recorded information (SRIs) in the preferred language of communication as stated by the individual, especially those SRIs which may involve a process leading to informed consent in decision-taking, as well as the added requirement of an individual's ability to make commitments³².

6.2.2 Principle #2 - Support requirements of jurisdictional domains on language accessibility and Human Interface Equivalents (HIEs)

This principle recognizes and supports the fact that any standard where the primary end user is an individual, i.e., a natural person, human being, that such a standard must be structured to be able to support not only the requirements of the jurisdictional domains in which they are expected to be used, but also public policy requirements which such jurisdictional domains impose as rights of an individual and thus to be supported, including in ICT applications. {See further Clause 8 below}

A key common requirement here of jurisdictional domains, i.e., as an external constraint, pertains to the use of language – top-down as official, de facto, or legally recognized, and bottom-up from an individual's needs perspective, i.e., that of language accessibility.

³¹ On the direct linkages between this Principle #1 and the UN Convention, see further below Annex B titled (*normative*) *Impacts and requirements of the UN Convention on the Rights of Persons with Disabilities on requirements for semantic interoperability for language accessibility and human interface equivalents (HIEs)*. This Annex identifies which of the Clauses in the UN Convention apply to ISO/IEC 20016.

³² On the *UN Convention* and its impact on this (and other standards), see Annex B below.

In order to support this and other principles, the concept and definition of Human Interface Equivalent (HIE) plays a key role in support of Principle #2.

In support of Principle #2 and taking into account the requirements of the following rules apply.

Rule 004:

Any set of recorded information (SRI) whose use is mandatory in a LET context shall: (1) be provided by the content provider (or via its agent or third party) in the official, de facto or legally recognized language (LRL) in which the SRI is to be used in a LET context; and, (2) in a form and representation which supports individual accessibility context.

Rule 005:

Any set of recorded information (SRI) whose use is mandatory in a LET context shall be provided as human interface equivalents (HIEs) appropriate to the semantic interoperability equivalency level (SIEL) which applies i.e., in support of the context and purpose of its use (including possible commitment exchange).

6.2.3 Principle #3 - Support linguistic diversity and cultural adaptability of individual users around the world

The development of this standard is driven by clearly stated and agreed upon user requirements in the areas of learning, education and training (LET). This user-driven approach is based on the assumption that irrespective of the combination of information and communication technologies (ICT) used: (1) the real user is the “individual” learner, student, trainee, etc; and, (2) that those providing LET-based goods or services in the private or public sectors, (e.g., as LET providers) do so with the goal of providing the same to individuals (via their role as clients, students, consumers, etc.).

It is also assumed that those creating or producing LET-based products or services (for free or for a fee) do want these to have as widespread an uptake and use as possible. This requires the ability to tailor one’s product or service to be user environment of the local “market” including those of jurisdictional domains at any level, i.e., must be adaptable and flexible. Being successful in a market requires not only understanding of the needs of clients but also being able to communicate with them in their language especially the use of a language in a particular culture. As such, this standard is structured and designed to support the linguistic and cultural diversity of individuals around the world, doing so in an IT-facilitated manner.

6.2.4 Principle #4 - Inclusive design³³

This principle integrates a number of factors, including (in no particular order) at the fundamental, i.e., primitive, generic level, that with respect to both: (a) the information, i.e., content perspective; and, (b) the “technical”, i.e., functional services support perspective:

- 1) an approach which is designed to exclude no one, i.e., as is expressed in the definitions for the concepts of “individualized accessibility”;
- 2) a multilingual approach involves an approach which is structured to be able to include and support any human language which an individual uses to communicate with other individuals either directly, i.e., face-to-face, or using some form of recorded information and supporting ICT (of whatever nature including both digital and non-digital forms);

³³ As per SC36/WG7 Terms of Reference and Scope (SC36/WG7 N0159 2009-03-23) , “inclusive design” is defined as follows:

inclusive design:

refers to the design of ITLET resources and tools that support the full range of user needs, including needs associated with culture, language, learning approach, age and disability. Inclusive design is a derivative of universal design that achieves the goals of universal design (as referenced in the UN Convention on the Rights of People with Disabilities) by harnessing the adaptability of digital systems and content to optimize the design for each individual user.

Also, the definition is found in Resolution #35 of the Wellington, NZ Plenary in document 36N1802 (2009-04-06).

- 3) an approach which is designed to support public policy requirements as rights of an individual as stated by jurisdictional domains at various levels (or categories)³⁴. This is expressed in the definition of the concept of “public policy” and “individual accessibility”.

In this context, the principle of inclusive design is an approach to the provision of recorded information and supporting ICT infrastructure and tools which not only enables but also encourages the full and effective participation of all and any individual in society on an equal basis with others. Inclusive design is directed at supporting the needs and rights of the complete range of human diversity with respect to culture, use of language, gender, age, class, ability and other forms of human differences. A primary goal of inclusive design is to optimize individual accessibility by matching the provision of the recorded information and the configuration of ICT systems, tools applications, products, services, etc., to meet the unique combination of the need of each individual³⁵.

6.2.5 Principle #5 - Multiple source languages

It is a fact that many (if not most) of the concepts with their associated definitions/terms introduced in JTC1/SC36 (and other ISO standards) have been introduced and supplied by English speaking contributors. In addition, the general approach to providing equivalency(ies) in another language(s) is based on the construct of a single “source” language and then providing equivalencies in one or more “target” languages. The ISO 5964 “multilingual thesaurus” standard, now withdrawn, took a similar approach³⁶.

This standard supports the principle of multiple source languages and doing so within a multilingual context. The three primary reasons here include that:

- it is a user requirement and is inherent to an inclusive design-based approach;
- it is a requirement of any jurisdictional domain (of whatever nature and whatever level) which has more than one official language; and,
- within ISO there are not only three official languages, i.e., English, French and Russian, but all member countries are considered equal, many have other languages. The participants of ISO member countries and whose participation is a source for concepts, requirements, etc., based on their language of use.

Consequently, this standard is based on the principle that any language can serve as a source language for a SRI and subsequently the development of its Human Interface Equivalents (HIEs).

6.2.6 Principle #6 - Rule-based approach

Principles in turn are supported through “rules” as explicit statements governing conduct, procedures, conditions and/or relations³⁷. As such, rules serve as clear, predefined statements which are unambiguous and understandable by all parties concerned. Rules must be expressed, i.e., stated, at a level of explicitness to facilitate their IT-enablement in implementations of this standard.

The important aspects of the use of a rule-based approach to specifying requirements include:

- the fact that a rule is a statement governing conduct, procedure, conditions and relations pertaining to language accessibility, HIEs and ensuring semantic equivalency;

³⁴ See further in ISO/IEC 15944-5: (1) Clause 5.3 *Jurisdictional domain as a source of external constraints*; (2) Clause 6 *Principal requirements of jurisdictional domains*; and, (3) Annex H (Informative) *Levels of international regulatory regimes*.

³⁵ In the private (for profit) sector, this is analogous to the principle of “markets-of-one”, i.e., provide customized products and services to an individual “customized” to the particular and specified needs of that individual.

³⁶ See further below Annex C (Normative) *Degrees of linguistic equivalences based on ISO 5964*.

³⁷ For the definitions of the concepts of “principle” and “rule” and how they interrelate, see above Clause 3.113 and 3.126 respectively.

- that rules specify the conditions that must be complied with;
- that rules are either mandatory or conditional in nature, i.e., as a “shall” or if criteria “a”, and/or “b” and “c”, etc., is met, then “do”, “shall”, etc.;
- that in this Part of ISO/IEC 20016, rules formally specify the nature of both linguistic equivalency(ies) and semantic equivalency(ies) i.e., with respect to the content of data elements and metadata elements and are applied to the conditions governing the same thereby ensuring the required level of unambiguity in the data and its context (of use); and,
- rules must be capable of being specified using a Formal Description Technique (FDT).

6.2.7 Principle #7 - Ability to support various levels of granularity and scale-ability

A key success factor in maximizing interoperability is the degree to which existing ambiguities in the semantics of the content of a resource can be reduced, i.e., be made unambiguous. A major characteristic of cost-effective and efficient ICT applications, their implementations and maintenance is that of “paying attention to details”. From a “data” perspective, this need for preciseness in data elements is known as “granularity”. With respect to granularity, precision is necessary to avoid ambiguity, in communications, maximize search and discovery, as well as integrity, re-usability, etc. The higher the degree of granularity, the greater will be the level of precision or certainty in the unambiguousness of the semantics which are intended to be communicated.

Further, this standard is constructed in a manner which supports its implementation in very large IT-systems to those which are very small, (e.g., on a single PC). That is, this standard supports “scale-ability” requirements.

As such, this standard incorporates and supports granularity and scale-ability requirements. The level of granularity supported in the use of this standard in an implementation reflects the degree of detail appropriate to the level of precision of the semantic resource being communicated in support of user requirements. The Human Interface Equivalent Model (HIEM) supports these requirements. {See further Clause 12 below}

6.2.8 Principle #8 - Integrated approach to internal and external constraints³⁸

Constraints are rules, explicitly stated, that prescribe, limit, govern or specify any aspect of ICT. They can be quite general, (e.g., require an Internet connection, to use only characters defined in ISO/IEC 10646 (Unicode), must be recorded information in a digitized form, etc.). They can also be very specific, granular and detailed.

However, from language accessibility and HIE use perspectives, this standard focuses on the two basic and primitive sub-types of constraints; namely:

- internal constraints; and,
- external constraints.

The key characteristic of internal constraints is that they are self-imposed and mutually agreed to by and among the parties, i.e., individuals and Persons. A key example here would be “choice of language”. As such, they provide a simplified view for modelling purposes, and the development of common scenarios which are independent of any external constraints or restrictions pertaining to the nature, purpose, use, commitments, etc., on the recorded information being communicated.

³⁸ On internal and external constraints, see further below *Annex D (normative) Individual Accessibility Model (IAM): Classes of constraints*.

Depending on the nature, purpose, context, different combination of internal and external constraints applies. External constraints often apply and the use of the set(s) recorded information being communicated among the parties concerned where such a communication involves any one or more of the following:

- 1) an individual and any organization or public administration;
- 2) an individual making a commitment³⁹ of any kind with any other Person, i.e., as an individual, organization, or public administration; and,
- 3) any organization or public administration providing any good, service, and/or right to an individual, (e.g., any activity of a learning, education and/or training nature to an individual the results of which an individual wants to use and/or be recognized by others, which involves a fee, is mandated, etc.), will most likely invoke and require compliance with external constraints.

Basically, an “external constraint” is a constraint which takes precedence over any internal constraint which may have been mutually agreed to by the parties concerned, i.e., is “external” to those agreed to by the parties concerned. The primary sources of external constraints are created by law, regulation, regulatory instruments, treaties, conventions, etc., of jurisdictional domains of whatever level.

Within the context of the scope and purpose of this standard, the focus is on maximizing support for external constraints which are of the nature of:

- 1) accessibility rights of an individual in a specified jurisdictional domain (at whatever level) to be able to use any representation form for both communication and/or commitment exchange purposes; and,
- 2) the requirement of an organization or public administration to provide information verbally or as recorded information in a specified natural language(s) to the individual in accordance to the rules governing the jurisdictional domain of that organization or public administration.

6.2.9 Principle #9 - Maximize use of existing international standards and specifications

Many of the requirements which drive the development of this standard, whether from a user perspective, a LET provider perspective, an ICT perspective, etc., are not unique to this standard nor are they unique to the field of e-learning, education, training. As such, it is likely that existing international ISO standards and specifications already have addressed various requirements of this standard. Therefore, the development of this standard maximizes use of existing international standards and specifications (or applicable parts thereof) to the greatest degree possible⁴⁰.

6.2.10 Principle #10 - Maximize an approach which is systematic, IT-enabled, supports computational integrity, and yet is (specific) IT-platform neutral

This standard 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 standard maximizes an IT-enabled approach to its implementation and maximizes semantic interoperability.

IT-enablement pertains to the transformation of current standards used in many areas from a manual to a computational perspective so as to be able to support computational integrity and electronic data interchange.

³⁹ ISO/IEC 15944-1 (3.9) defines “*commitment*” as follows:

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.*

⁴⁰ Clause 2 *Normative References* above identifies existing international standards used. Clause 3 *Definitions* contains many concepts and their definitions based on existing international standards, and the bibliography includes others which are not considered “normative” for the purposes of this standard.

IT-enablement applies particularly to semantics/meaning, i.e., where the permissible contents of a metadata element can be structured and predefined, (e.g., coded domain).

6.2.11 Principle #11 - Support the three strategic directions of ISO/IEC JTC1 standards development namely: (1) portability; (2) Interoperability; and, (3) and cultural adaptability

ISO/IEC JTC1 (Joint Technical Committee 1) has established three strategic directions which govern the development of standards by itself and its sub-committees (SCs). They are (1) portability; (2) interoperability; and, (3) cultural adaptability.

The development and content of this multipart standard supports these three strategic directions.

6.3 Added principles governing the development of ISO/IEC 20016-1

This 1st edition of ISO/IEC 20016-1 contains no added Principles, i.e., in addition to the eleven (11) already stated in Clause 6.2 above which apply to all Parts of this multipart standard.

It may be that the 2nd edition of ISO/IEC 20016-1 will contain added Principles which are either unique to ISO/IEC 20016-1 or apply to all Parts 2+ of ISO/IEC 20016.

7 Semantic interoperability and levels of semantic equivalency⁴¹

7.1 Introduction

The purpose of this Clause 7 is to address semantic interoperability of content to support individual accessibility requirements based on levels of semantic equivalency. These levels of semantic equivalency are derived from and based on the *UN Convention on the rights of persons with disabilities*⁴¹. For the purposes of this 1st edition of ISO/IEC 20016-1, four (primitive) levels of semantic equivalency have been identified.

NOTE It is recognized that: (1) a set of recorded information (SRI) is a modelling construct; and, (2) from an individual requirements perspective can view the existence of semantic equivalencies of a set(s) of recorded information as a human interface equivalent(s) (HIEs). (See further Clause 9 below)

7.2 Summary of UN convention (and related requirements)

The key principle supported in the multipart ISO/IEC 20016 standard is that the context and (intended) use of a set(s) of recorded information (SRIs) created by a content provider “triggers” and requires the provision of human interface equivalents (HIE) by that content provider at the appropriate level of semantic unambiguity as required by individual accessibility (and applicable other relevant public policy requirements) of the jurisdictional domain it was created and/or is intended to be used.

The Clauses in the *UN Convention on the rights of persons with disabilities* view persons with disabilities as individuals with rights who are capable of claiming those rights and making decisions for their lives based on their free and informed consent as well as being active member of society as able to make commitments, i.e., based on the provision of HIEs at the level of semantic equivalency required.

This means that, independent of the form and/or format of “communication” and “language” as preferred or required by the individual, the contents of any set of recorded information are communicated and made available in compliance with individual accessibility requirements at the appropriate level of semantic equivalency.

It is recognized that a SRI created by a content provider for one purpose may well be used for another purpose in a LET context and as such a different (higher) level of semantic equivalency may apply⁴².

⁴¹ This Clause 7 is based on Annex B (normative). Users of this document are advised to familiarize themselves with the text of Annex B.

The *UN Convention of Rights of Persons with Disabilities* is the primary normative reference for this ISO/IEC 20016 multipart standard. In summary, the *UN Convention* requires that any individual should be provided with the semantics of the contents for any set of recorded information (SRI) be provided at a level of unambiguity to any individual to be:

- 1) fully and equally informed;
- 2) at a level of unambiguity to be able to make a decision;
- 3) at a level of unambiguity for the individual to be able to make a commitment.

The key objective of Clause 7 is to address the context and purpose of semantic interoperability from a semantic equivalency perspective, i.e., is one which:

- 1) supports the implementation of the *UN Convention on the Rights of Persons with Disabilities* and its (level) requirements for semantic interoperability.
- 2) supports other UN level requirements of an “external constraints” nature applicable to UN members;
- 3) does so in a manner which, maximizes use of existing international and ISO, IEC and/or ITU standards; and,
- 4) doing so in a manner which supports an efficient, cost-effective and IT-enabled approach.

7.3 Levels of semantic equivalence

The four most primitive levels of semantic equivalency (based on intended use of a SRI) are provided here as follows:

0 at the **zero level** – Not applicable

- this pertains to the provision of any set of recorded information (SRIs) by any (type of) Person for which the SRI provided is not intended to serve as a basis for Level 1, 2, or 3 aspects. Examples here include a book, a blog, a published article, a Website, etc., which does not or is not intended to impact or be of direct relevance to any individual.

Many sets of recorded information (SRIs) are of a “one way” nature only. They do not require or are intended to be responded to by an individual per se, (e.g., a publication, a broadcast, a speech, etc.). It is of the nature of a “one-to-many”. These are not intended to support semantic interoperability.

These in turn are either of an internal constraint nature or may be subject to external constraints.

A one-way communication may nevertheless be made for the purpose of a conversation, a discourse and even as the introduction to a negotiation leading to a commitment.

1 at the **first level**⁴³ – “provision of information”

- that the content (and context) of the semantics being communicated is made understandable and comprehensible in the accessibility language of the individual. This

⁴² For example, the SRI of Shakespeare’s “Hamlet” if made a mandatory SRI as part of a secondary school English curriculum, by a public administration or private school, in a jurisdictional domain, where individual accessibility requirements apply, will need to ensure providing HIEs of the same, (e.g., in Braille, audio, etc., equivalents of “Hamlet”).

⁴³ This model is under development. There is also a “0 Level” for individual accessibility to address situations where such requirements do not apply.

includes that the HIEs in the preferred (needed) accessibility language are at a level of semantic unambiguity appropriate to the goal and intent of the information being provided.

The next step after a one-to-many is that of identification of the parties concerned to each other either on a one-to-one basis (dialogue), a many-to-many basis (as a multiparty “multilogue”). The end purpose here may be a conversation, the back-and-forth between or among the parties to ensure that the semantics being conveyed are understood but **without** the need for an individual to make a decision or eventual commitment.

2 at the **second level** – “informed consent and decision-taking”

- that the contents (and contexts) of the semantics being communicated is at a level of unambiguity and provided in an accessibility language to the individual in order for the individual to be able to provide informed consent and make decisions.

If the purpose of the HIE SRI is to serve in the making of a decision or even a commitment, then the next phase of establishing unambiguity is that of “negotiation” and then the actual making of a commitment which is then actualized.

is includes such interchanges of the semantics of the SRIs with an individual in order to ensure that the individual is and remains fully informed in a decision-taking process.

3 at the **third level** - “commitment-making”

- that in addition to “second level” requirements being met, a higher level of precision and certainty, i.e., unambiguity, is required in the semantics being communicated and interchanged with an individual. This higher/highest level of unambiguity is required in the semantics to ensure that an individual is fully informed and able to negotiate the terms and conditions with respect to the making or accepting of a right, an obligation, a liability or responsibility including transactions involving the buying or selling of goods, services and/or rights.

Once a commitment is actualized there may well be associated “post-actualization” requirements forming part of the commitment made by an individual with an organization or public administration, (e.g., warranties, a 5-10 year period to “cancel” the commitment, etc.). Examples here include the obligation of Persons as “organization” or “public administration” to provide a “competency record” of an individual having achieved the same at that organization and/or public administration, (e.g., as a certified record of a high school diploma, a college or university degree, or professional certificate, etc.).

These primitive levels of semantic unambiguity for semantic interoperability support the *UN Convention on the Rights of Persons with Disabilities*. They are presented below in Table 1.

Table 1 — Codes representing levels of semantic unambiguity in support of semantic interoperability equivalency requirements

IT interface			Semantic interoperability equivalency level (SIEL)	
Coded Domain D	Table ID	ID Code	ISO English	Other HIEs ⁴⁴
ISO/IEC 20016-1	01	0	Not applicable	
ISO/IEC 20016-1	01	1	Informational – External constraints apply	

⁴⁴ “Other” represents the facility to add HIE in languages other than ISO English.

IT interface			Semantic interoperability equivalency level (SIEL)	
ISO/IEC 20016-1	01	2	Decision-taking – External constraints apply	
ISO/IEC 20016-1	01	3	Commitment-making – External constraints apply	

8 Public policy requirements of jurisdictional domains

8.1 Introduction

The purpose and focus of Clause 8 is to place “individual accessibility” in the context of public policy requirements, i.e., the overall legal and regulatory requirements which apply to an “individual,” as a human being generally and therefore also in the fields of e-learning, education and training (LET) as external constraints.

Clause 6.3 in ISO/IEC 15944-5 already contains the overall approach and key rules in support of the common legal and regulatory requirements. They are summarized here and expanded from an individual accessibility perspective in a LET environment.

In addition to supporting a very high level of unambiguity in the interchange of sets of recorded information in electronic data interchange in support of commitment making, this standard also addresses levels of unambiguity pertaining to: (1) decision-taking; and, (2) the basic provision of recorded information.

8.2 Jurisdictional domains and public policy requirements

Increasingly jurisdictional domains require those providing a good, service and/or right in making such offers and those executing resulting (electronic) data interchange which involve the making of commitments, to comply with generic horizontal requirements of the nature of rights pertaining to natural persons in their role as individuals.⁴⁵ These requirements apply irrespective of whether the provision of a LET good, service and/or right is provided for free or for-a-fee, on a for-profit or not-for-profit basis, etc.

Public policy requirements are but one category of external constraints which impact and govern the provision of a good, service and/or right including those of a LET nature. {See further below *Annex D (normative) Individual Accessibility Model (IAM): Classes of Constraints*⁴⁶}

This Clause 8 focuses on some of the most basic categories of public policy as minimum external constraints that need to be taken into account in modelling IT-based LET applications which pertain to “individuals” as buyers, consumers, users, etc. Those already identified include:

- individual accessibility
- consumer protection;
- privacy protection; and,

⁴⁵ Note: A natural person, a human being, acting in the role of “seller” including in the role of content provider whether “for a fee” or “for free” is deemed to be an “organization” (as per ISO/IEC 6523 definition and common (legal) practices). Public policy” has already been defined in ISO/IEC 15944-5 (3.113).

⁴⁶ See also in ISO/IEC 15944-1 *Business transaction model: Classes of constraints*, Clause 6.1.6 titled *Business transaction model: Classes of constraints*.

- human rights.

This is illustrated in Figure 4 below.⁴⁷

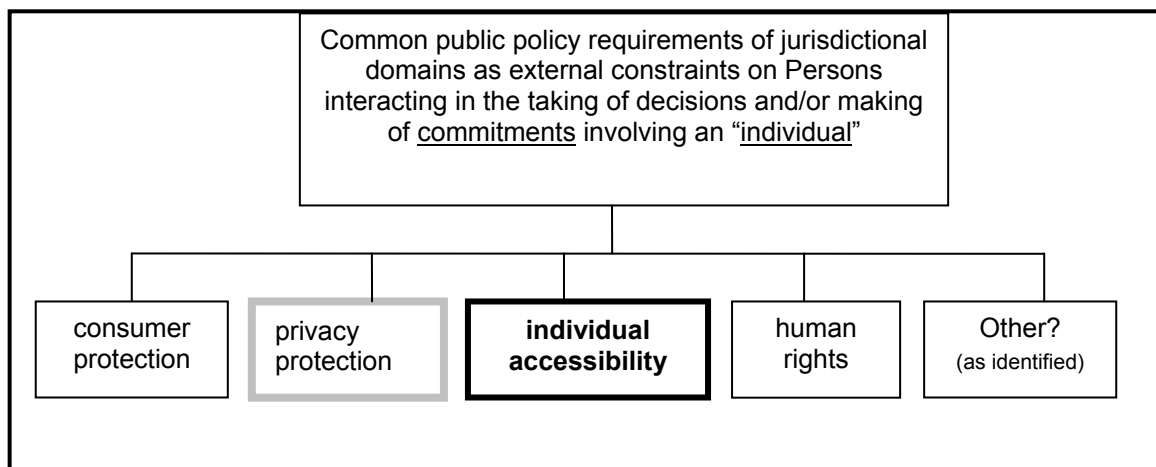


Figure 4 — Key common public policy requirements as external constraints applicable to “individuals”

One key commonality among these sets of public policy requirements is that they require levels of unambiguity in the recorded information provided and interchanged with respect to the:

- 1) provision of information, generally;
- 2) higher level of unambiguity in the semantics required for informed consent and decision-taking; and,
- 3) even higher level of unambiguity in semantics of the SRIs required for the making of commitments.

The four sub-clauses which follow on the minimal external constraints of this nature do so in a primitive limited manner. The sole purpose of this clause is to ensure that when one uses this standard to ensure language accessibility and HIEs one is able to identify under "external constraints" in the template provided in Clause 13 requirements of a "public policy" nature.

8.3 Individual accessibility

8.3.1 Introduction

This Clause 8.3 consists of two key sub-clauses; namely:

- a) *UN Convention on the Rights of Persons with Disabilities* as a key public policy requirement
- b) Individual accessibility

8.3.2 *UN Convention on the Rights of Persons with Disabilities* as a key public policy requirement

A key element of the *UN Convention on the Rights of Persons with Disabilities* is that it requires the provision of recorded information to any individual as part of that individual being able to “fully participating member of society”. This includes assurance that the recorded information made available to any individual, must also

⁴⁷ The use of “Other?” here indicates that there may be additional categories (or sets) of public policy requirements, (e.g., those in the medical, environmental, (workplace) safety, etc., areas or those which are regional in nature such as those of the European Union as a single (supra) jurisdictional domain.

meet individual accessibility requirements and in particular those of semantic interoperability requirements from a language accessibility and HIE requirements perspective.

Annex B (normative) titled *Impacts and requirements of the UN Convention on the Rights of Persons with Disabilities on requirements for semantic interoperability for language accessibility and human interface equivalents (HIEs)* identifies these Clauses in this UN Convention which directly relevant to ISO/IEC 20016-1 “*Framework and Reference Model*” and re all additional (future) Parts of this multipart standard.

The semantic interoperability requirements focus not only on the preferred access mode and display transformation preferred by the individual (as already addressed in the multipart ISO/IEC 24751 standard) but also and especially the assurance of a level of unambiguity as required to support the goal of the data interchanged particularly those which are of the nature of a commitment exchange. {See further below *Annex B (Normative) Impacts and requirements of the UN Convention on the Rights of Persons with Disabilities on requirements for semantic interoperability for language accessibility and human interface equivalents (HIEs)*}

8.3.3 Individual accessibility

An increasingly common minimum external constraint of a public policy nature that needs to be taken into account when developing the content, i.e., recorded information in support of commitment exchange, is individual accessibility requirements. Often these are in the form of either: (1) rights of individuals in their use of information technologies at the human interface; and/or, (2) those providing goods or services, in the provisioning of the same, do not discriminate against or provide for participation by “non-typical” users. That is, individual accessibility includes individuals with an impairment or disability of some kind, who require some form of adaptive semantics and technologies to participate in a commitment exchange. Here “individual accessibility” pertains to ensuring that goods or services being provided in (electronic) LET application that, in the making of the commitments of the parties, that the IT systems used are capable of supporting people with impairments or disabilities.

Jurisdictional domains often specify individual accessibility requirements as being (1) of a generic nature and applicable irrespective of the goals of a commitment exchange and the commitments being entered into among the participating parties, (e.g., as part of basic human rights, as part of its constitution, etc.); and/or (2) as applicable to a particular sector, (e.g., e-government, education, etc.). Particular human accessibility requirements also exist at the UN member state’s sub-division level, (e.g., that of a state, province, länder, etc.), at the regional level, (e.g., the European Union)⁴⁸.

Here disabilities can be of either a functional or cognitive nature.

It is noted that language and cognitive disabilities are very difficult to specify and thus model as human interface requirements⁴⁹, but it is possible to do so. They include mental retardation, lack of short term memory, dyslexia, dyscalculia, dysgraphia, auditory and perceptual disabilities, cognitive disorganization, and visual perceptual disabilities.⁵⁰

⁴⁸ The United Nations has an “*Overview of International Frameworks for Disability Legislation*” available at <<http://www.un.org/esa/socdev/enable/disovlf.htm>> (accessed 2011-12-20)

⁴⁹ Annex A in ISO/IEC 5218, *Codes representing the human sexes* titled *Annex A (Informative) — Codes for the representation of the human sexes supporting (linguistic) cultural adaptability/Annexe A (Informative) — Codes de représentation des sexes humains supportant l’adaptabilité culturelle (linguistique)* provides an example.

⁵⁰ See further the US National Institute of Neurological Disorders and Stroh resources on dyslexia at <<http://www.ninds.nih.gov/healthandmedical/disorders/dyslexiadoc.htm>>. See also the “*IMS Guidelines for Developing Accessible Learning Applications*”, Version 1.0 White Paper, 2002-06-22 (publicly available via <http://www.ims.org>) as well as other IMS documents containing very useful information and IT systems specifications for individual accessibility requirements from an “e-learning” perspective. {<http://imglobal.org/accessibility>}. This IMS work is being progressed as a multipart international standard through JTC1/SC36 as ISO/IEC 24751, *Individualized Adaptability and Accessibility in E-learning, Education and Training*, of which the first three parts are:

Part 1: Framework and Reference Model

Part 2: “AccessForAll” Personal Needs and Preferences for Digital Delivery

Nevertheless, unless a disability(ies) of an individual is of the nature where the jurisdictional domain considers or declares the individual to be "incompetent", i.e., not able to make a commitment as a party to a commitment exchange, from an external constraints perspective, there is a need to be able to support human accessibility requirements. This includes the provision of "alternate formats", i.e., the provision of the semantics of the recorded information in a representation form, which the individual as (prospective) buyer is able to understand in an unambiguous manner in order to be able to decide whether or not to make the commitment(s) associated with the actualization of a business transaction.

It is very important that users and implementers of this multipart ISO/IEC 20016 standard recognize that in the context of ISO/IEC 20016 that individual accessibility pertains to ensuring that the recorded information relevant to a commitment exchange is provided at a level of unambiguity, i.e., semantic interoperability level in (electronic) LET applications. It also involves that the parties providing a good or service ensure that the IT system(s) used are capable of ensuring that people with impairments or disabilities have ready access and use of such recorded information in any human interface equivalent as the individual may require.

In order to ensure a cost-effective and efficient approach in the development of IT systems which are intended to support LET applications, it is important that this be done very early in the design and development of such IT systems.

Rule 006:

A Person preparing a set recorded information (SRI) which is intended to serve as the basis for a commitment exchange which involves an individual, (e.g., as an individual user) in the provision of a LET application, shall ensure that such recorded information (or sets of recorded information) are architected and structurally engineered to facilitate support of individual accessibility requirements including those of a language accessibility and human interface equivalency (HIE) nature.

It is recognized that the level of semantic unambiguity of the recorded information is directly related to the goal of the commitment exchange. {See further Clause 9 below}

Rule 007:

The Person preparing recorded information to be used in a commitment exchange which involves an individual, (e.g., as an individual user) in a LET application shall ensure that such recorded information supports language accessibility and human interface equivalency (HIE) requirements appropriate to the goal of the commitment exchange at the level of semantic unambiguity required to support semantic interoperability.

On the whole an ID code or semantic identifier is "language neutral" in the common everyday sense. On the other hand, the representation of an ID code for a HIE may require a different form of representation, (e.g., in Braille, as a BLISS symbol⁵¹, etc.).

Rule 008:

In the development of Human Interface Equivalents (HIEs) for an ID code or semantic identifier, these must also include those HIEs of a nature to ensure and support individual accessibility⁵².

Part 3: "AccessForAll" Digital Resource Description.

Documentation on this standards development work is available at the JTC1/SC36 site at <<http://www.jtc1sc36.org>>

⁵¹ For an example of the use of BLISS symbols in an ISO standard, see ISO/IEC 5218: (E/F) "Information technology – Codes for the Representation of the Human Sexes"/ «Technologies de l'information – Codes pour la représentation des sexes humains». In its Annex A "Annex A (Informative) – Codes for the representation of Human Sexes with cultural adaptability/ Annexe A (Informative) – Codes pour la représentation des sexes humains avec adaptabilité culturelle", it includes a Table 01 titled "Human interface equivalents (linguistic) for "Codes for the representation of human sexes: ISO and/or UN languages"/Tableau 01 – Équivalents interface humaine (linguistiques) des «Codes pour la représentation des sexes humains: Langue selon l'ISO et/ou L'ONU». This Table 01 includes a column as part of its HIEs, containing the equivalent HIEs for the Bliss symbols. Note: ISO/IEC 5218 is a freely available standard. {See further Annex H of this document}

⁵² Table 1 in Annex A of ISO/IEC 5218 provides an example of an IT-enabled approach to supporting individual accessibility. It has been reproduced in Annex H.3.

8.4 Consumer protection

As a common public policy requirement, “consumer protection” basically applies where the nature of the provision of a commitment exchange:

- a) involves an individual; and,
- b) involves the provision of a good, service, and/or right for a fee.

As such, requirements of a “consumer protection” nature are deemed to apply to any LET activity which involves an individual being requested to provide a fee (or payment) for any LET-related good, services, and/or right (or by the parent or guardian) making such payment on behalf of an individual (as a “minor”). Generically LET activities of this nature are known as business transactions as they involve the payment by an individual user, i.e., as a consumer, engaged in a LET activity being supplied by a content provider, i.e., as a “vendor”⁵³

“Consumer” and “vendor” have already been defined in ISO/IEC 15944-1 and “consumer protection” in ISO/IEC 15944-5⁵⁴.

Rule 009:

Where the buyer is an individual, the seller shall ascertain that the individual has the age qualification required by the jurisdictional domain to be able to be involved in and make commitments pertaining to the good, service and/or right being offered in the proposed business transaction.

Guideline 009G1:

A seller shall take the required precautions to ensure that it does not communicate inappropriate information, engage in monetary transactions or in the making of any commitments with children (without the verifiable consent of their parents or guardians) as may be required by the jurisdictional domain of the buyer.

This rule and guideline captures common consumer protection requirements pertaining to sales in general as well as to particular goods or services to children and minors.

In the LET area, this rule most often applies with respect to any role qualifications which need to be met by an individual user in order to be able to obtain a competence in a skill, trade or profession.

Rule 010:

A seller shall ensure that where it intends to sell a good, service and/or right to a buyer as an individual that consumer protection requirements of the applicable jurisdictional domain of the buyer are supported.

These consumer protection requirements include the provision of “complete” information, the use of language of the individual, terms of contract formation and fulfilment, privacy of the online information, security of the personal information and payment, procedures for redress, stop to unsolicited e-mail, etc..

As such, the application of consumer protection requirements a level of unambiguity in the recorded information being provided.

The provision of a good, service and/or right for a fee to an individual requires documentation of such a business transaction including any which are LET oriented. As such, any commitment exchange, as a business transaction, will result in the creation of a “business transaction identifier (BTI)”. Among other things, the BTI not only serves as the common unique identifier to the commitment exchange made between a consumer and a vendor, it also provides a direct link to the recorded information provided to the individual.

⁵³ The generic terms for the two primary parties in a business transaction are the “buyer” and the “seller”. The introduction or application by a regulator of external constraints of a consumer protection nature makes the buyer a consumer, and the seller a vendor.

⁵⁴ See further Clause 3 above for the ISO definitions of these concepts.

8.5 Privacy protection⁵⁵

The UN Convention on the Rights of Persons with Disabilities includes “Article 22 “Respect for privacy” links individual accessibility rights to privacy protection rights. In modelling an electronic commitment exchange, a common minimum external constraint that needs to be taken into account is that commonly known as “privacy” requirements (or in some jurisdictional domains as “data protection”). In this standard, the term “privacy protection” is used to identify this category of public policy requirements. Privacy protection requirements apply to any business transaction in which an individual is a “buyer”.

The UN Convention on the Rights of Persons with Disabilities includes “Article 22 “Respect for privacy”. This Clause integrates Article 22 of its UN Convention (as well as generic common global requirements of a privacy protection nature).

Rule 011:

A common set of external constraints of a jurisdictional domain on a commitment exchange, where the buyer is an individual, are those of a privacy protection nature.

The focus of this sub-Clause is to specify key rules which apply to any Person in the role of a seller, i.e., as an organization and public administration, who offers or provides a good, service, and/or right to prospective buyers including those which are of a LET nature.

It is noted that from a content provider perspective, privacy protection requirements can be summarized as maintaining recorded information about an identifiable individual which is as timely, accurate, and relevant as possible, is used only for its original purpose and not for any other purpose (unless consented to by the individual concerned). This also means that any such recorded information which does not meet these requirements is expunged, unless there are other external constraints of a jurisdictional domain nature which override such privacy protection requirements, (e.g., law enforcement, national security, etc.). Key privacy principles include (1) accountability, (2) identified purpose, (3) informed consent, (4) limiting collection, (5) limiting use, disclosure and retention, (6) accuracy, (7) safeguards, (8) openness of privacy policy, (9) individual access to their personal information, (10) challenging compliance, (11) transborder data flow controls, and likely others.

Rule 012:

Any Person offering a LET good, service, and/or right as a content provider which can be obtained by an individual as user shall have in place an implementable and auditable privacy policy.

Rule 013:

A content provider shall ascertain, at the identification phase in the process leading to a commitment exchange, whether or not the Person as a user is an individual (versus as organization Person buying on behalf of an organization or public administration)⁵⁶.

⁵⁵ For understanding privacy protection requirements in a generic commitment exchange context, see further ISO/IEC 15944-8:2011 *Information technology — Business Operational View — Part 8: Identification of privacy protection requirements as external constraints on business transactions*. For understanding the application of privacy protection requirements in an ITLET context consult the multipart ISO/IEC 29187-1 standard (also developed through ISO/IEC JTC1/SC36 titled *Information technology — Identification of Privacy Protection Requirements pertaining to Learning, Education and Training (LET)* of which its *Part 1: Framework Model*.

⁵⁶ See further in ISO/IEC 15944-1: (1) Clause 6.2 *Rules governing Person*; (2) Clause 6.3 *Rules governing the process component*; and, (3) Clause 6.4 *Rules governing the data component*. Here one notes that development work on the “process” component was specifically structured to be able to support privacy protection requirements in its five fundamental activities which are:

- planning;
- identification;
- negotiation;
- actualization; and,
- post-actualization.

Guideline 013G1:

Where a jurisdictional domain differentiates in criteria for privacy protection with respect to a natural person in its role as an "individual" or an "organization Person," this needs to be specified.

Guideline 013G2:

Where a jurisdictional domain has privacy protection requirements as a set of external constraints which are applicable to a specific sector (public versus private, per industry sector), or type of business transaction etc., this needs to be specified.

8.6 Human rights (other)

The three primitive public policy requirements identified above have as a common thread that they apply to Persons in their role as an individual engaged as a "buyer" (or "consumer") in a business transaction. There are other public policy requirements which may need to be supported of a "human rights" nature in modelling a business transaction. Here in the context of "cultural adaptability" as the third strategic direction of ISO/IEC JTC1 for its standards development⁵⁷, other public policy requirements which may need to be incorporated into the specification and re-use of HIEs include:

- the UN "Universal Declaration of Human Rights" (1948);
- the UN "Universal Declaration of Rights of Persons belonging to National or Ethnic, Religious and Linguistic Minorities";
- the UN "Universal Declaration of Cultural Diversity" (Paris, November, 2001); and,
- International Covenant on Economic, Social and Cultural Rights 1966, United Nations (UN).

It is noted that many of the requirements of these UN conventions (and others) are already incorporated and integrated in the *UN Convention on the Rights of Persons with Disabilities (2006)*.

8.7 Public policy requirements and localization aspects

In the context of common public policy requirements and the specific context of language accessibility rights of individuals, localization factors need to be taken into account.

Here there are two key views; namely:

- a) those of a LET provider; and,
- b) those of the individual.

Any seller of a good, service and/or right including a LET provider must abide by the laws, regulations, etc., in the jurisdictional domain in which the same is being provided, i.e., comply with localization requirements.

Rule 014:

A LET provider shall ensure that the good, services and/or right it offers in a jurisdictional domain complies with both (1) general requirements; and, (2) especially individual accessibility requirement of that jurisdictional domain including those pertaining to semantic interoperability of language accessibility and HIEs.

Here the examples in the text or in the footnotes for this Clause 8.5 are mostly based on privacy protection requirements. ISO/IEC 15944 Part 1 Annex F (Informative) titled *Business transaction model: process component* takes a similar approach.

⁵⁷ The other two strategic directions of ISO/IEC JTC1 for standards development are "portability" and "interoperability". {See Clause 6.2.10 above}

From an individual accessibility perspective, the key element here is that the recorded information, provided by a LET provider supports language accessibility requirements of the jurisdictional domain of that individual. For referencing a language of this document shall use the name or 3-alpha code in ISO 639-2/T whose use is essential to the understanding and use of this document.

Rule 015:

An individual has the right to be provided with information on any LET good, service and/or right in accordance with localization rights and/or requirements of the jurisdictional domain(s) of which that individual is a part.

Here it is recognized that the electronic address (including email address) may or may not be jurisdictional domain linked of the location of the individual. It is also recognized that an individual may have more than one physical address. The relevancy of the location of the individual in a commitment exchange is dependent on a number of intersecting factors including:

- a) the (number) of jurisdictional domains within which an individual may have rights, (e.g., as a citizen, a resident, a property owner, an IP holder, etc.);
- b) which public policy requirements and rights an individual has in a specified jurisdictional domain.

8.8 Use of “AfA agents” and third parties in decision-taking and commitment-making

It is a recognized practice that a party to a commitment exchange may use an agent to complete a specified (sub) role on its behalf in a commitment exchange. Similarly, the parties to a commitment exchange can use a third party to undertake a specified role or undertaking mutually agreed to by them⁵⁸. It is not an uncommon occurrence in a LET context and in support of individual accessibility requirements that an individual (learner) is provided with the services of another individual to assist in a LET process, i.e., acts as an agent on behalf of that individual, or both the individual and the content provider may agree to use a common third party.

Similarly, a third party may be required to provide communication support, (e.g., use of sign language) when an individual who is mute is taking an exam. This is an example of an “interpreter” acting in a neutral manner vis-à-vis both the individual user and a LET provider.

Rule 016:

Where an individual user requires the use of an agent acting on its behalf in a LET activity, the role of the agent shall be specified.

Rule 017:

Where, with respect to a LET activity, an individual user and a LET provider mutually agree to the use of a third party, the role of the third party shall be specified.

It is noted that at times, external constraints, may require the use of an “agent” or a “third party” in a certain LET activities including those of a decision-taking or commitment-making nature.

9 Semantic collaboration space and levels of semantic unambiguity

9.1 Introduction

Traditionally, one has viewed standards involving commitment exchange and Persons as a binary or “between” relationship. A key factor here is that this facilitated (simplified) modelling relationships, i.e., “between” instead of “among”. Thus, one has “accounts receivable” <-> “accounts payable”; “individual user needs and preferences” <-> “educational digital resource description”; “individual user requirements” <-> “LET provider offerings”, etc.

⁵⁸ The concepts of “agent” and “third party” are defined in Clause 3 above, and so used in this multipart standard. See also further Clause 6.2.5 *Person and delegation to “agent” and/or third party* in ISO/IEC 15944-1.

The ISO/IEC 14662 *Open-edi Reference Model* introduced and modelled the concept of “among” multiple parties each with their roles based related to the making of commitments⁵⁹.

While the traditional “binary model” has and continues to have value, there is a need to take an “among” approach and focus on the space where the interactions take place, i.e., as a “collaboration space”.⁶⁰

A “collaboration space” is a methodology and tool which provides an independent view of the Persons involved as role players in support of decision-taking and commitment-making. It recognizes and supports the fact that there often are more than two Persons as primary parties to a decision-taking or commitment exchange, (e.g., those involving external constraints and applicable rules imposed by an applicable regulator(s).)

In e-business, the most primitive two roles of a Person in a collaboration space are a “buyer” and a “seller”. However, at times where external constraints apply, there would be a third role, that of a “regulator”. Often, there are several different mandated “regulatory” roles of a jurisdictional domain which apply to a primary party in an eBusiness transaction as “buyer” to an individual.

Traditionally, the making of a commitment among autonomous parties, i.e., as Persons, is viewed as a “business transaction”. While the ISO/IEC definition of the concept of “business transaction” makes it clear that it involves the making of a commitment among the parties concerned, whether or not it is undertaken on a not-for-profit or for-profit, for a fee or for free, etc., basis, some members in the ITLET community have reservations of the use of the concept/term “business transaction”. Therefore, the concept of “commitment exchange” was developed as a higher level primitive for use in this multipart standard.

The introduction of “commitment exchange” is directly related to the *UN Convention on the Rights of Persons with Disabilities* which marks a paradigm shift “towards viewing persons with disabilities as “*subjects*” with rights, who are capable of claiming those rights and making decisions for their lives based on their free and informed consent as well as being active members of society”⁶¹.

In a LET context, there are various levels of semantic unambiguity. {See further below} These are required to support this UN Convention which serves as the primary set of external constraints which the multipart ISO/IEC 20016 standard is designed to support.

The concept of “collaboration space” focuses on dialogue, conversation, documents, etc., i.e., sets of recorded information as provided or used, in the context of some objective, or purpose, i.e., as the “goal” of the semantic exchange, as agreed to by the participating parties. Within a LET context it is a primary assumption that any LET activity, by its very nature, does have a defined objective, i.e., a “goal”. At the elementary and secondary school levels, the goal is that of progressing from one level (or “Grade”) to the next. At the post-secondary level the goal is that of obtaining a “degree” in a specified field, etc. Other LET activities are aimed at obtaining a certificate, a licence (in a profession), a competency of a specific nature, etc. All these are examples of the LET activities being directed towards the individual user achieving an agreed upon goal.

⁵⁹ The 1st edition of ISO/IEC 14662 was developed in the 1990s by ISO/IEC JTC1/SC32 and coincided with the introduction of object-oriented modelling techniques as formal description techniques (FDTs). A key feature of object-oriented (OO) modelling is that it supports multiple inheritance and multi-directional dependencies. The ISO/IEC 192501 multipart “Unified Modelling Language (UML)” standard supports an “OO” approach. Also the multipart ISO/IEC 15909 “Petri Nets” standard supports an “OO” approach. The E/F 3rd edition of ISO/IEC 14662 provides examples of use of both the UML and Petri Nets to model early aspects of “collaboration space”. ISO/IEC 14662 is an ISO freely available standards.

⁶⁰ The concept of “collaboration space” was introduced and accepted by ISO/IEC JTC1 in the development of ISO/IEC 15944-4 (E) *Information technology — Business Operational View — Part 4: Business Transactions and Scenarios — Accounting and Economic Ontology*. ISO/IEC 15944-4 is a freely available standard.

⁶¹ See further below Annex B (Normative) *Impacts and requirements of the UN Convention on the Rights of Persons with Disabilities on requirements for semantic interoperability for language accessibility and human interface equivalents (HIEs)*.

When one addresses external constraints of a “consumer protection” nature to the role of “seller” and “buyer”, i.e., where the buyer is an individual, they become a “vendor” and a “consumer” and also involve a “regulator”. {On public policy requirements of a “consumer protection” nature, see further above Clause 8.4}

When there are external constraints of “individual accessibility” which apply these are either non-content or content-related. For those which are “content-related” there are LET providers of content, i.e., “content providers” and individuals as users, i.e., “individual users”.

This approach can be summarized in the following Figure 5 matrix.

Collaboration Space	Three primitive roles of Person		
eBusiness	seller	buyer	regulator
consumer protection	vendor	consumer	regulator
individual accessibility ⁶²	content provider (<i>LET provider</i>)	individual user (<i>individual user</i>)	regulator

Figure 5 — (Primitive) Roles of a Person in a collaboration space subject to external constraints of a jurisdictional domain(s)

Here the roles of a Person in:

- 1) an “eBusiness collaboration space” are based on ISO/IEC 15944 standards development work (and in particular that of ISO/IEC 15944-4 and ISO/IEC 15944-5);
- 2) a “consumer protection space” are based on COPOLCO and ISO/IEC 15944 standards;
- 3) a “privacy protection” space, one based on the ISO/IEC 15944-8 and the incoming ITLET focused ISO/IEC 29187-1 “privacy protection” multipart standard; and,
- 4) an “individual accessibility” context are based on development work of SC36/WG7 (which integrates ISO/IEC 24751 standards as well as HIE development work).

9.2 (HIE) Semantic Collaboration Space

The concept of semantic collaboration space (SCS) focuses on the “space” where the semantics of the sets of recorded information (SRIs) are interchanged among (1) a content provider(s) and (2) individual user(s) (or individual user(s)) in the context of the parties involved having a common (LET-based) goal.

Figure 6 below provides an illustrative view.

⁶² Note: In an “individual accessibility” context the two primary roles are “content provider” and “individual user”. In a privacy protection context, these map to “LET provider” and “individual learner”. (On privacy protection in a LET context, see further ISO/IEC 29187-1 titled *Information technology — Identification of Privacy Protection Requirements pertaining to Learning, Education and Training (LET) — Part 1: Framework Model*.

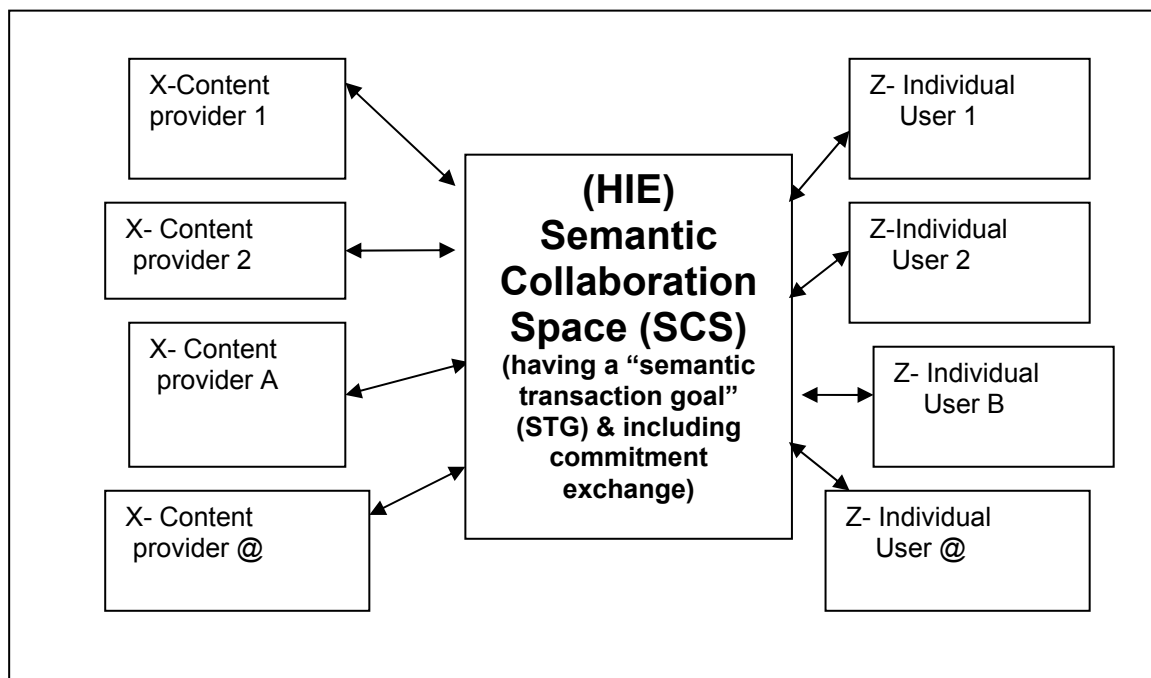


Figure 6 — (HIE) Semantic Collaboration Space (SCS)

X = LET providers provisioning the sets of recorded information (SRIs) with a semantic transaction goal (STG)⁶³ made available in the applicable localization contexts as HIEs⁶⁴.

Z = sets of user content preferences, i.e., as HIEs, for the provision of sets of recorded information (SRIs) meeting the semantic transaction goal (STG) localization context of the user, i.e., an individual.

The concept of “semantic transaction goal” pertains to where:

- 1) external constraints apply;
- 2) the level of semantic unambiguity is either “2 = Decision-taking” or “3 = Commitment making” (and most likely “1 – Inform” when external constraints apply; and,
- 3) thus also the five (5) phases of the process model apply.

The approach is that the goal in a semantic collaboration space must be specified prior to or mutually agreed to as part of a semantic collaboration.

The concept and use of semantic collaboration space (SCS) is linked directly to: (1) the two classes of constraints (internal or external); and, (2) the four (most primitive) levels of semantic unambiguity arising from

⁶³ The approach here is that the goal of a semantic collaboration space must be specified prior to or as mutually agreed to during the semantic collaboration.

The concept of “semantic transaction goal” is linked to the “UN Convention on the Rights of Persons with Disabilities” and the “Levels of semantic unambiguity” (based on the UN Convention). {See further below Annex B}

Here one needs to know the goal, i.e., intended purpose, of the provision of a set of recorded information by a “content provider” as well as the specification of Levels 1, 2, or 3 of “semantic unambiguity”.

⁶⁴ On how to specify localization contexts, see further Annex E below.

the requirements of the *UN Convention on the Rights of Persons with Disabilities*. The intersect of these two components is illustrated in the following matrix, i.e., Figure 7.

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

Figure 7 —Semantic Collaboration Space, constraints, and levels of semantic unambiguity

9.3 Two perspectives of a Semantic Collaboration Space (SCS): Semantic Operational View (SOV) AND Functional Services Support View (FSSV)

From “content” and semantic equivalent needs perspective, i.e., as Human Interface Equivalents (HIEs), there are two different (but complementary) views of User Interface (UI) components. Basically, any semantic collaboration space among Persons can be viewed as consisting of two complementary and interworking perspectives.

These are:

1) the semantic operational view (SOV)

Here the semantic operational view focuses on the contents of the recorded information (or sets of recorded information) being interchanged among two or more Persons. The objective here is to do so from a semantic interoperability perspective with respect to the “contents” interchanged among the Persons concerned.

Standards development in support of the “SOV” is a primary objective of the multipart ISO/IEC 20016 multipart standard on language accessibility and human interface equivalents (HIEs) in support of semantic interoperability.

2) the functional support services view (FSSV)

Here the focus is on technical support services and “non-content” related transforms, (e.g., the use of Braille based representations of the content). These include the identification and matching of individual user needs and preferences related to client devices, IT environments, etc. with the appropriate user interface tools for accessing and using digital (and non-digital) learning resources.⁶⁵

Figure 8 below provides an illustration of these two views and their interworking.⁶⁶ One should note that the semantic operational view is “content” focused” and that the Functional Services View is “not-content focused”.

⁶⁵ The text here for FSSV is a summary based on the Clause 0 Introduction and Clause 11 Statement of Scope found in ISO/IEC 24751-1 (E/F). Figure 8 is one essential component of the *ISO/IEC 20016-1 Framework and Reference Model*. A key purpose of Figure 8 is to serve as the basis and model for how the *ISO/IEC 24751 “User Preferences”* multipart standard and the *ISO/IEC 20016 “Language Accessibility and HIE”* multipart standard work together to support individual accessibility.

⁶⁶ Figure 8 is based on the very successful “ISO/IEC 14662 *Information technology — Open-edi Reference Model* (a freely available standard. This ISO/IEC 14662 *Open-edi Reference Model* standard is the only standard ever adopted by the ISO, IEC, ITU international standards organizations (and others such as UN/ECE, OASIS, etc.) as the basis for a common “Memorandum of Understanding (MOU) on standards development in the field of Open-edi including e-business, e-commerce, e-government, e-learning, e-health, e-logistics, etc..

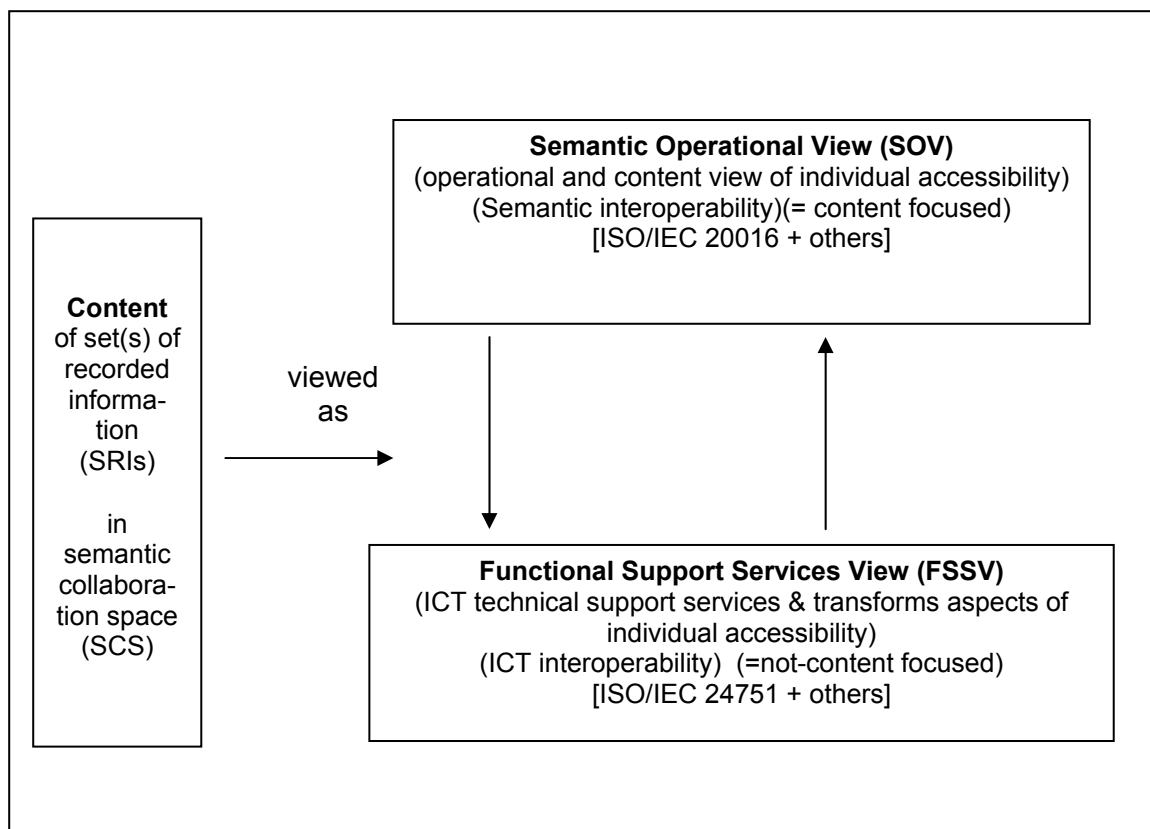


Figure 8 — Two perspectives of Semantic Collaboration Space (SCS)

10 Rules governing use of language and language accessibility

10.1 Introduction

The concept of “language” and related concepts as well as the definitions of these concepts is one which is important and varied and thus has been addressed through many international ISO standards. This multipart ISO/IEC 20016 standard builds on these standards and maximizes use of relevant aspects, doing so in support of Principle #9. {See further above Clause 6.2.9 and Annex B}

Rule 018:

The existing ISO definitions for “language”, “natural language”, and “special language” are applicable to all parts of ISO/IEC 20016; and, users of this standard are requested to familiarize themselves with these definitions. ISO 639-2/T shall be referenced and used.

Clause 10 focuses on the generic, i.e., primitive, aspects of rules governing use of language and do so from a “language accessibility” perspective. It does so from two perspectives on the choice of language; namely:

- of the individual without any context of external constraints; and,
- with external constraints.

A primary objective of this multipart ISO/IEC 20016-1 standard is to support the implementation of the *UN Convention on the Rights of Persons with Disabilities*. Clause 6.2 provides this linkage. Clause 10.5 below focuses on “legally recognized languages (LRLs), i.e., as languages of instruction (LOI).

10.2 Choice of language – internal constraints perspective

Many sectors have, through custom and usage developed a special language. This is also true for the sector(s) of learning, education and training. Use of such a special language minimizes ambiguity in the semantics of the recorded information used among the parties concerned. A hallmark of a special language is that it has a recognized and distinct *controlled vocabulary*⁶⁷ (or special dictionary) which identifies the concepts used through their “definitions” and assignment of unique labels, a.k.a., “terms”, thereby specifying their meaning⁶⁸.

Examples of “special languages” recognized and used world-wide are the controlled vocabularies of the UN “specialized agencies” of the UN system (as jurisdictional domains) which have developed and used special language(s). Each involved the development of controlled vocabularies in order to ensure required unambiguity in the semantics from a world-wide perspective and context, (e.g., the ILO, IMO, WCO, UNESCO, WHO, etc.). Each of the controlled vocabularies has a source authority (SA) and these controlled vocabularies often have multilingual equivalents, (e.g., as HIEs).

Rule 019:

Persons, whether as “individuals” or as “organizations” or as “organization Persons” (on whose behalf they are qualified and authorized to act in a specified role), must agree to the language(s) to be used in support of a particular LET context and object (as well as for their communications in general).

Guideline 019G1:

Where the language chosen has more than one writing system, the parties should specify the writing system to be used, unless all writing systems can be used.

Choice of use of language is very important in order to maximize unambiguity in the recorded information exchanged among the parties involved.

Rule 020:

Choice of language(s) is governed by three primary factors; namely: (1) the user, i.e., in a LET context an individual (as learner, student, trainee, etc.); (2) the LET provider, i.e., in a LET context any party supplying a LET-oriented good, service and/or right; and, (3) the regulator, i.e., requirements of a jurisdictional domain generally as well as those specific to institutions which provide LET of either a mandatory nature⁶⁹ or directed at users obtaining/achieving a particular qualification (in that jurisdictional domain).

Rule 021:

Within an internal constraints context only, parties are free to negotiate, choose and decide among themselves the language(s) to be used for the recorded information pertaining to a LET activity in which they participate.

Examples here include not only an individual user deciding to learn a new language but also engaging in a LET activity, (e.g., a course, a program, a certificate, a degree, etc.), being offered by a LET provider in a natural language which is other than the native/mother language of the individual user.

Rule 022:

The choice of language is determined by (1) the individual user, (2) the content provider, and, (3) the regulator.

- 1) individual user (user choice)

⁶⁷ See further Clause 3.038 above for the definition of “controlled vocabulary”.

⁶⁸ Within ISO, the set of terms and definitions of each standard is a (mini) controlled vocabulary.

⁶⁹ Key examples here include those of a jurisdictional domain pertaining to mandatory participation of individuals in primary and secondary schools, language(s) of instruction, etc.

Individual users are free to decide which languages to use in obtaining a good, service and/or right whether in one or more languages. Here choice of language of an individual is generally restricted to those languages in which the user is capable of using in a LET activity (and the making of associated commitments).

2) content provider (LET provider choice)

It is up to a content provider in providing a LET good, service and/or right, to decide which natural language(s) (and at times special language(s)), they wish to use in the provision of the same. Here the choice of language of a LET provider is driven by the primary market(s) they wish to serve⁷⁰.

As such, from an internal constraints perspective, content providers are free to decide the use of language(s) in which they wish to offer their goods, services and/or rights. From a content provider perspective, decision on choice of language use is driven by the nature of the market(s) to which such offerings are targeted.

It is a common practice for a content provider to offer a LET good, service and/or right in multiple languages⁷¹.

It is noted from a LET perspective, that one needs to differentiate between: (1) the language(s) used for the description of the good, service and/or right being offered; and, (2) the actual language(s) used in the provision of the LET product itself. That is, the semantics of (1) the description of the good, service and/or right, (e.g., the language(s) used to provide information for product labelling, terms and condition of use, warranties, etc., in one or more languages). Here the semantics essentially remain the same, only the language(s) in which they are expressed from a human interface perspective change, i.e., as Human Interface Equivalents (HIEs).

Here combinations of content provider choice and individual user demands can be modelled and specified as internal constraints with respect to choice of language(s) which can be predefined or be left as negotiable.

Rule 023:

In modelling a LET activity or referencing any LET-based good, service and/or right, it is advisable that the parties concerned use the 3-alpha language code(s) as stated in ISO 639-2/T code set for the identification of the language(s) to be used and/or supported.

3) regulator, i.e., requirements of a jurisdictional domain

Depending on the nature of the LET good, service and/or right being offered, requirements of a jurisdictional domain can specify the language(s) to be used. The jurisdictional domain governing the location of where the LET activity takes place,⁷² or is deemed to take place, may also specify the language(s) to be used.

Rule 024:

⁷⁰ For reasons why it is to the benefit of a supplier to take a multilingual approach from the outset is good business, see Knoppers, J.V.Th. Global electronic commerce through localization and multilingualism. *Computer Standards and Interface*. 20(1996):101-109.

⁷¹ From an internal constraints perspective only, choice of language here is considered a “private” contractual decision among the parties to a LET activity. **“LET activity” refers to any activity or process which involves (or whose purpose is) learning, education and/or training. “e-Learning activity” refers to any LET activity which involves the use of ICT.**

⁷² The phrase “deemed to take place” covers LET activities of the nature where the user (as a buyer) is located in one jurisdictional domain and the LET provider (as a seller) is located in another jurisdictional domain. From an internal constraint only perspective, together they decide to conduct/enact the LET activity in either of their jurisdictional domains or in another, i.e. third, jurisdictional domain. As e-learning becomes more widespread such scenarios will become more common. For example, the provider of a LET activity is located in country “a”, the user can be located in any country in the world, and the actual provisioning of the LET activity itself is located in country “y”, (e.g., for location of the Internet server, billing and invoicing purposes, etc.). In Canada, Athabasca University provides a practical example of scenarios of this kind. The majority are not “located” in Canada.

In dealing with the modelling and/or implementation of this standard which involves internal constraints only, the parties, i.e., individuals, concerned are free to choose any language they mutually agree to use.

Guideline 024G1:

It is recommended that in any implementation of this standard one uses a language which is registered and consequently assigned a unique identifier, i.e., code, in the multipart ISO 639 standard for “Codes for the representation of names of languages”.

Rule 025:

In order to support portability, interoperability and cultural adaptability objectives of this standard, any implementation of this standard is required to use a valid ISO 639-2/T 3-alpha language code.
[Codes for the representation of names of languages — Part 2: Alpha-3 code]

The Clauses which follow focus on choice of language(s) and use of language(s) as governed by external constraints. The primary source of external constraints is jurisdictional domains.

10.3 Choice of language – external constraints perspective

10.3.1 Introduction

The modelling of a LET activity through scenarios, etc., can focus on those involving internal constraints only. However, most LET activities are subject to one or more external constraints. The most common ones here are those which pertain to choice of jurisdictional domain and choice of language(s) as governed by external constraints.

The rules and definitions in this Clause address one or more of the following real world requirements that:

- 1) any LET activity involves the use of a language by the participants;
- 2) any jurisdictional domain, at whatever level, has an “official language(s)” and if not a “de facto language”;
- 3) the official (or de facto) language(s) of a jurisdictional domain govern the language(s) to be used in the provisioning of a LET activity;
- 4) with respect to official or de facto language(s) (as a generic jurisdictional domain requirement) there may be particular (additional) language(s) which have legal status in a LET context, i.e., as a legally recognized language (LRL);
- 5) external constraints of an “individual accessibility” nature also pertain to the use of language by individuals, i.e., as an accessibility language.

10.3.2 Official (or “de facto”) language

Internal constraints are self-imposed rules, i.e., those which parties to a LET activity negotiate and agree to among themselves. This includes choice of language(s) for the LET activity and associated commitments made. As such, one can identify, register, and re-use scenarios of a LET activity, in whatever language is chosen.

However, any combination of:

- user, i.e., user choice and right accorded to the user by a jurisdictional domain; and,
- LET provider, i.e., LET provider choice and requirements of the jurisdictional domain in which the LET good, service and/or right is being provided⁷³

⁷³ See further above Clause 8 *Public policy requirements of jurisdictional domains*.

requires the incorporation and ability to support the demands of external constraints (of the applicable jurisdictional domains). A primary and most common external constraint here is that pertaining to the (mandated) use of a language(s) in a jurisdictional domain.

Rule 026:

A jurisdictional domain has either an official language(s) or, if it has none, it has a de facto language.⁷⁴

Rule 027:

It is up to each jurisdictional domain, at whatever level or of whatever nature, to decide whether or not it has an official language. If not, it will have a de facto language.

Guideline 027G1:

Each sub-level, (e.g., in ISO 3166 terminology, an administrative sub-division) in a jurisdictional domain which is a UN member state may have additional language(s) in addition to those of the jurisdictional domain of which it is a component part.

Rule 028:

Any LET good, service and/or right which involves compliance with external constraints shall specify the official language(s) supported based on the requirements of the jurisdictional domain(s) in which the LET product is to be used.

Guideline 028G1:

It is recommended that support for multiple languages in a LET product be modelled or designed at the architectural (as well as lowest structural level)⁷⁵.

Key concepts, constructs, methodologies in this standard (and other parts of this multipart standard) already support such an approach through use of “identifiers”, ID codes, semantic identifiers, etc., to identify and represent the relevant sets of recorded information (SRIs), and then make provisions for multiple Human Interface Equivalents (HIEs). {See further Clause 9 below}

It is noted that where a jurisdictional domain is a UN member state, i.e., of a geopolitical nature, it often has “administrative sub-divisions”. These are known as “provinces, cantons, states, länder, territories, etc. From a LET perspective, it is recognized that it is these administrative sub-divisions of a jurisdictional domain which often do have the primary competency of an external constraint nature in that jurisdictional domain in the LET domain. A prime example is that such administrative sub-divisions have a (primary) legal mandate and responsibility for “education” at the primary and secondary school level⁷⁶, and in many cases for post-secondary education, (e.g., colleges and universities as well). And it is at this administrative sub-division level that official languages for educational purposes are specified⁷⁷.

Rule 029:

Where a jurisdictional domain has no official language(s), it has a de facto language.

⁷⁴ For the official and de facto languages of UN member states, see further Annex E in ISO/IEC 15944-5, a freely available standard.

⁷⁵ This guideline is based on the fact that if one designs a LET activity as an IT-system or application to be able to function in one language only, i.e., at its basic architectural and structural design levels, then it will be very resource intensive and costly to re-design, retrofit, etc., the IT-system or application to be able to function in two or more languages. It is much less costly and robust to design an IT-system or application to be able to support multilingual capability at the outset, i.e., via multiple Human Interface Equivalents (HIEs).

⁷⁶ At the primary and secondary levels, it is usually the individual school boards or administrations, who administer the rules (in accordance with the jurisdictional domains of which they are part). However, some schools and school boards are designed for special purposes including support of individual accessibility. This also includes private schools which can have any language.

⁷⁷ Note that most languages with the exception of English have authorities for the source of the words, (e.g., L'Academie Française, Office de la langue française (Quebec), etc.); English is the only exception (because it is in a position of power and influence) and thus uses the dictionary approach which is a private enterprise. Other languages often have “official” dictionaries sanctioned by an authority in a jurisdictional domain.

For example, the United States of America (USA) as a jurisdictional domain has no official language as such, but has (American) English as its de facto language.⁷⁸

10.3.3 Legally Recognized Language (LRL)

An official language(s) or a “de facto” language of a jurisdictional domain, (e.g., a UN member state or one of its administrative sub-divisions) serves as a common source of external constraints on the modelling and instantiation of a LET activity within that jurisdictional domain as a whole. However, within a jurisdictional domain, there may exist acts, regulations, legal instruments, etc., for a specified area of application and use, which contain requirements or rights of a linguistic nature, i.e., for a language(s) other than those already identified as official language(s) or a de facto language in that jurisdictional domain. These are languages which have legal recognition in a specific context, for a specific purpose, for a specific territory, for a particular people, and/or any combination of the same, within a jurisdictional domain.

A key factor here is the increasing trend by jurisdictional domains to “legally” recognize the fact that peoples or “nations” within their jurisdictional domain do have linguistic rights, i.e., the right to use their language generally within a specified context for a specified purpose⁷⁹. This is especially so in the LET area.

A “legally recognized language (LRL)” is defined as:

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:

- the identification of a language by the name utilized; or,
- the identification of a people and thus their language(s).

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

Examples of legally recognized languages can be found in countries which have peoples of an indigenous, aboriginal, native, etc., nature whose rights have not been extinguished (including those of a linguistic nature) and are increasingly being recognized in the geopolitical jurisdictional domains of which they are now part⁸⁰.

Examples of LRL include education or school Acts⁸¹, heritage or culture Acts, self-government agreements, language for use at the municipal level, etc.

⁷⁸ Here the Webster's Dictionary and/or Random House Dictionary serve as the repositories of the meaning(s) and uses of “words” in (American) English, which is different from those of (English) English as captured in the Oxford Dictionary.

⁷⁹ It is also not an uncommon occurrence that such peoples and their language(s) encompass the geopolitical boundaries of two or more jurisdictional domains. However, whether or not one or more or even all of the jurisdictional domains where such a people live declare the language of a people to be a legally recognized language is outside the scope of this standard.

⁸⁰ These include present day UN member states which formerly were “colonies”, (e.g., Australia, Canada, New Zealand, etc.), or those who have addressed or are addressing “minority rights” of peoples within their jurisdictional domains. For a detailed case study, see M.J. Pereira and J.V.Th. Knoppers “Initial Draft Strategy for Support of Linguistic Requirements of Canada's First Nations and Aboriginal Peoples in International Standards and e-Learning”. E-Learning Marketplace Strategy (ELMS), Industry Canada, October, 2004.

⁸¹ As a matter of fact, the concept of “legally recognized language” and its definition arose from an analysis of “LET” type legislation in a number of Canadian jurisdictional domains. Three examples from Canadian legislation include: (1) (Nova Scotia) *Mikmaq Education Act* (1998) Clauses 5 and 6; (Saskatchewan) *The Métis Act* (SS2001 M-14.01, Clause 2(c) importance of the language including Michif); (3) (Yukon) *Education Act* (RSY Ch. 61 Clauses 50, 51, and 52). Aboriginal

10.4 Individual accessibility language

The purpose and focus of this sub-clause is to integrate the applicable requirements of the *UN Convention on the Rights of Persons with Disabilities* with respect to “communication” and “language” in particular and do so in the overall context of semantic interoperability requirements.

The title of this Clause 10.4 integrates two key concepts and their definitions namely:

- 1) individual accessibility; and,
- 2) language (accessibility).

The concept and definition of “communication (accessibility)” is also very relevant (as a legal right of an individual).

In support of this multipart ISO/IEC 20016 supporting the *UN Convention on the Rights of Persons with Disabilities* two new concepts and their definitions are introduced; namely:

communication (in accessibility)⁸²

*transfer of meaning among **individuals** by means of transmission of signals in a manner which supports **accessibility***

NOTE 1 From a content perspective, communication includes languages, display of text, Braille, tactile communication, large print, accessible multimedia as well as written, audio, plain-language, human-reader and augmentative and alternative modes.

NOTE 2 From an ICT perspective, communication includes the means and formats of communication, such as accessible information and communication technology.

language (in accessibility) ⁸³

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

NOTE 1 In this standard, language refers to natural languages or special languages, but not "programming languages" or "artificial languages".

NOTE 2 In this standard, language includes spoken and signed languages and other forms of non-spoken languages.

10.5 Gender, and official, de facto, or LRL languages

Rule 030:

In order to be able to specify the gender of a noun or term used as may be required based on the official (de facto or LRL) language used, the set of "Codes Representing Gender in Natural Languages" shall be used in the modelling of a HIE as well as its real world instantiations.

Rule 031:

Where the official language, (de facto or LRL language) of a jurisdictional domain has no gender this shall be stated.

languages of the Yukon Territory include Gwich'in, Hän, Upper Tanana, Northern Tutchone, Southern Tutchone, Tlingit, Kasha, and Tagish.

⁸² On the rationale for the formulation of the definition of this concept and choice of term, see further document SC36/WG7 N0128 “*Concept/Definition – Communication in an “accessibility” requirements context*”. (2008-05-15).

⁸³ On the rationale for the formulation of the definition of this concept and choice of term, see further document SC36/WG7 N0130 “*Concept/Definition – Language in an “accessibility” requirements context*”. (2008-05-15).

Many natural languages have "gender" as part of their grammar while others do not. English, for example, does not. Knowing the gender of nouns as words, terms, "names", etc., is often needed to ensure unambiguity in the interoperability of semantics among different languages from both IT interface and human interface perspectives. At times, also, specification of gender of the term or noun is important to ensure unambiguity in the semantics.

Further, in those natural languages where gender is an essential component of its grammar, the gender of the noun governs not only the meaning but also the representation of the associated/relevant words in the noun phrase.⁸⁴ In addition, the gender of the noun may also impact the representation of the associated verb phrases. Therefore, knowing the gender of the noun is important in the use of official languages. {See further Annex D for some examples of how the semantics change for the same "noun" depending on its gender}

Further, it is a fact that standards both: (1) use existing natural language words in different contexts and thus with different meanings, i.e., semantics; and, (2) in standards development work new terms are often coined/invented and may thus not be readily found in standard dictionaries. Consequently, it is important to be able to specify the gender of each term (noun), label, etc., where gender is a crucial element in the use of a natural language especially where such a natural language(s) is used as an "official language" in specifying external constraints and/or the formulation and establishment of a coded domain.

With respect to grammatical gender, the three (most) common found in natural languages are: neuter, masculine, or feminine. Since these have different "names" in various languages, ID codes are used to represent them.

Gender is also language specific, i.e., a noun in one natural language may have one gender code, and the equivalent noun in another language may have a different gender code.

It is deemed important to note the gender of nouns at the human interface because (1) gender determines the use of "linkage words"/«mots liens», and (2) the correct representation and thus understanding and meaning, i.e., semantics, of such nouns or noun phrases in their daily use.

The coding scheme presented here incorporates present international conventions and is presented below as "Coded Domain 01" of ISO/IEC 20016-1 and is titled "Codes Representing Gender in Natural Languages"⁸⁵.

Table 2 — ISO/IEC 20016-1:02 Codes Representing Grammatical Gender in Natural Languages⁸⁶

IT Interface			Human Interface Equivalent: Linguistic –Written Form		
Coded Domain ID	Table ID	ID Code	ISO English	ISO French	ISO Spanish
20016-1	02	00	unknown	inconnu	desconocido
20016-1	02	01	masculine	masculin	masculino
20016-1	02	02	feminine	féminin	feminino
20016-1	02	03	neuter	neutre	neutro
20016-1	02	99	not applicable	sans objet	no aplica

⁸⁴ In French, the words used to state gender of a noun such as "le", "la", "un, une", etc., are known as "mots liens", literally "binding words" – used to bind/connect the semantic or meaning of the word used to represent the semantic to which they are attached. The binding word or «mot lien» serves to designate the gender and changes the semantic of the word change. {See further Annex I}.

⁸⁵ This "Coded Domain 01" has been used and applied in Annex A to the English and French terms of all the definitions in the matrix in Annex A.6. Since English grammar rules do not have gender, the ID code used for English is "99" = "Not Applicable".

⁸⁶ This Coded Domain 01 in ISO/IEC 20016-1 is based on, and harmonized with, Coded Domain 01 in ISO/IEC 15944-5. The approach allows for the addition of codes for other grammatical gender codes as and when required.

NOTE It is likely that official, de facto, or legally recognized languages do have other gender codes in addition to those specified in this coded domain. If and when these are required, these other gender codes can be added either as a Technical Corrigenda to this standard or in its next edition.

10.6 Declared Semantic Equivalent (DSE)

Jurisdictional domains exist at various levels and are of different categories⁸⁷. When a jurisdictional domain has more than one official language, it is often the case, that sets of recorded information (SRIs) are issued in parallel in two or more official languages, (e.g., as documents, websites, databases, etc.).

Where these SRIs are of a formal, i.e., official, nature, these are deemed to be “declared semantic equivalents”, having been so declared by the issuing jurisdictional domain.

This is especially important to note in a LET context where it is often the case that localization requirements apply at the “sub-administrative”⁸⁸ level, (e.g., those of provinces, states, länder, cantons, etc.).

In addition, a legally recognized language (LRL) may have application either dependent or independent of the jurisdictional domain but will nevertheless often apply in a LET context.

Rule 032:

It is up to the jurisdictional domain to decide whether or not the HIEs of the SRI which it issues are declared to be “declared semantic equivalents” (DSE) or not.

Rule 033:

Where in a LET context, there exist legally recognized languages in a jurisdictional domain, i.e., in addition to the official language(s) or de facto language of that jurisdictional domain, it is up to those responsible for the implementation of LRL requirements, to decide whether or not the HIEs for a SRI in support of LRL requirements are of the nature of a declared semantic equivalent (DSE).

11 Levels and degrees of linguistic equivalence

11.1 Introduction

This Clause is included to serve as a bridge between:

- a) the world of language equivalences;
- b) the need to establish and deal with equivalencies which comes from both translation theory and indexing (and thesauri construction).

The purpose and focus of the multipart ISO/IEC 20016 is to support: (1) language accessibility as a key aspect in supporting both the legal requirements of jurisdictional domains in this area; and, (2) the user, i.e., individual, needs, client-centred approach.

It does so through the concept/construct of Human Interface Equivalents (HIEs),

The focus is on communicating the semantics (meaning) of the recorded information being interchanged among the content providers and individual users and facilitating the use of information communications technology (ICT) systems in support of the same.

⁸⁷ See further Clause 7 *Rules governing the formation and identification of jurisdictional domains*, and Annex H (Informative) *Levels of regulatory regimes* in ISO/IEC 15944-5.

⁸⁸ The UN uses the term “sub-administrative level” to indicate a jurisdictional domain which is a part of a UN member state. Many UN member states are not “unitary” in nature, i.e., are “federations” of some kind with constitutions stating that “education” is the responsibility of its “sub-administrative” jurisdictional domains.

11.2 Levels of lexical (quantitative) equivalency⁸⁹

At the essence the discussion of language equivalency is the objective of ensuring that the meaning and semantics is not lost, misunderstood or misrepresented among languages. At the lexical level, translation theory indicates six (6) states of lexical equivalency as follows.

Table 3 — Levels of lexical (quantitative) equivalency

Levels of Lexical (Quantitative) Equivalency	Definition
1	total equivalence (or one-to-one equivalence)
2	optional equivalence
3	one-to-many equivalence
4	approximate equivalence
5	one-to-part-of-one equivalence
6	zero equivalence (or nil equivalence)

11.3 Degrees Of Linguistic Equivalences (DLE)⁹⁰

Aspects related to linguistic equivalences have been addressed in the international ISO 5964 standard. These five (5) degrees of linguistic equivalence are⁹¹ summarized below in matrix form. Users of this document can reference ISO 5964 and ISO 2788 (both now withdrawn) for understanding and use of this document.

Table 4 — Matrix of the Five Degrees of Linguistic Equivalence (DLE) as taken from ISO 5964

Degree Code	English	French
1	Exact equivalence	Équivalence exacte
2	Inexact equivalence	Équivalence inexacte
3	Partial equivalence	Équivalence partielle
4	Single-to-multiple equivalence	Équivalence d'un terme à plusieurs termes
5	Non-equivalence	Non-équivalence

11.4 Use of ISO 5964 in ISO/IEC 20016

In the context of the requirements of the *UN Convention of Rights of Persons with Disabilities* and its four levels of semantic equivalency, the following mapping exists between the four (4) levels of semantic equivalency and the five (5) levels of linguistic equivalency of ISO 5964.

⁸⁹ For more detailed text on this issue, see further below, Annex G (*Informative*) *Summary on issues of language equivalencies*.

⁹⁰ For more detailed text on this issue, see further below Annex C (*Normative*) *Degrees of linguistic equivalences based on ISO 5964*.

⁹¹ Note: ISO 5964 itself did not define the concept of “linguistic equivalency”. However, it did identify five (5) degrees of linguistic equivalence.

Table 5 — Mapping of ISO/IEC 20016-1 “Levels of Semantic Equivalency” to ISO 5964 “Degrees of Linguistic Equivalency”

Level of Semantic Equivalency	Degrees of Linguistic Equivalency (DLE)
0 – Not applicable	All five degrees apply
1 – Provision of information	Degrees 1 and 4 apply. Degree 2 and 3 may apply. Degree 5 does not apply.
2 – Informed consent and decision-taking	Only Degrees 1 and 4 apply
3 – Commitment-making	Only Degree 1 applies. Degree 4 may apply

12 Human Interface Equivalency Model (HIEM)

12.1 Introduction

This 1st edition includes a high level, simplified approach to Human Interface Equivalency Model (HIEM). Many of the key concepts and constraints underlying the development of the HIEM already exist in other relevant international standards.

This is demonstrated in:

- Clause 2 in this document where these ISO standards are identified as either “Normative References” or “Referenced Specifications”;
- Clause 3 (and Annex A.5) in this document which contains the concepts and definitions, the majority of which are taken from existing international standards and so referenced; and,
- a number of Annexes already included in this document which are also extracted or based on existing ISO standards and/or “Referenced Specifications”

12.2 Approach and key requirements

The approach to the development of the HIEM includes:

- supporting the implementation of the *UN Convention on the Rights of Persons with Disabilities*;
- supporting the ability to have 100% unambiguity in semantic interoperability of multiple HIEs in whatever language as being required by external constraints of applicable jurisdictional domains (at all levels);
- doing so also in support of inclusive design principles and language accessibility requirements (as well as other principles listed in Clause 6 above);
- facilitating the use of ICT in a most cost-effective and efficient manner possible yet fully adaptable at the human interface level (HIE);
- recognizing that the provision and maintenance of human interface equivalents (HIEs) of semantics being communicated or used to make commitments by individuals may not be possible at the same granular level among jurisdictional domains in the form of an individual making a commitment, i.e., as a commitment exchange.

One area of standardization in information technology which requires the highest degree of certainty⁹² in the semantics of the recorded information being communicated, i.e., “unambiguousness”, is that where the semantics form the basis of the making of (binding) commitments among Persons, i.e., as individuals, organizations or public administrations. This is because a commitment involves the making or accepting of a right, obligation, liability or responsibility by a Person that is capable of enforcement.

Therefore semantic interoperability requirements including levels of semantic unambiguity {see Clause n above} in support of commitment exchange need to be able to be identified and supported in this ISO/IEC 20016-1 standard.

The HIEM model presented below (in Clause 12.3) is based on two primary assumptions; namely:

- 1) the content of a set of recorded information (SRI) to be communicated and interchanged is either predefined (most often by a Source Authority at whatever level or in a specified context) or it is not predefined. The level of certainty or unambiguity of the semantics of the contents of the set of recorded information from predefined to undefined should be viewed as a range or continuum.
- 2) a set of recorded information is either structured or unstructured. The degree or level to which a set of recorded information is “structured” is known as “granularity”.

Here there may or may not be a Source Authority which decides on the level of granularity of a data element from a semantic perspective and in the context in which it is intended to be used, (e.g., as a HIE semantic unit or component).

12.3 The Human Interface Equivalency Model (HIEM) itself

At the most primitive level, there are two axes which serve as the basis for the Human Interface Equivalents (HIEs); namely:

- Axis 1 pertaining to Predefined <-> Undefined contents for a set of recorded information (SRI⁹³); and,
- Axis 2 pertaining to Structured <-> Unstructured contents with respect to the organization and management of the set of recorded information (SRI).

This approach to the HIEM supports and recognizes the fact that:

- the meaning of what is being communicated, is context-dependent and goal/purpose dependent;
- depending on the importance and use of the recorded information being communicated, it is directly related to the unambiguousness of the semantics of what is being communicated. This includes taking into account the required level of semantic unambiguity; and,
- the greater the degree of granularity, i.e., “structuring level”, and the greater the level of “predefined-ness” of the content and recognition of the Source Authority of “predefined content”, the higher the level of: (1) ensuring “complete” multiple HIEs of the semantics of the recorded information; and, (2) supporting IT-enablement, computational integrity, etc.

This approach and assumptions are presented below in the form of:

⁹² Excluded here are programming languages, database languages, computer programs, software, etc., which by their very nature need to be unambiguous in their statements, instructions, etc., to be able to be executed in an ICT environment. They are considered to be HIE independent.

⁹³ This links directly to the degree and level of “negotiation” of an (intended) semantic. Such negotiations can take place among the members of a Source Authority, among Source Authorities, among or within jurisdictional domains, etc. Negotiation often of the semantics is part of the communication(s) itself among the parties concerned. The aim here is to ensure that where the negotiation on the semantics can be done “upfront” that this be encouraged since such an approach supports HIEs and accessibility language.

- a Figure 9 “Human Interface Equivalents’ Model (HIEM)”;
- an associated Table 6 “Matrix of the Four Quadrants of the Human Interface Equivalents Model (HIEM)”.

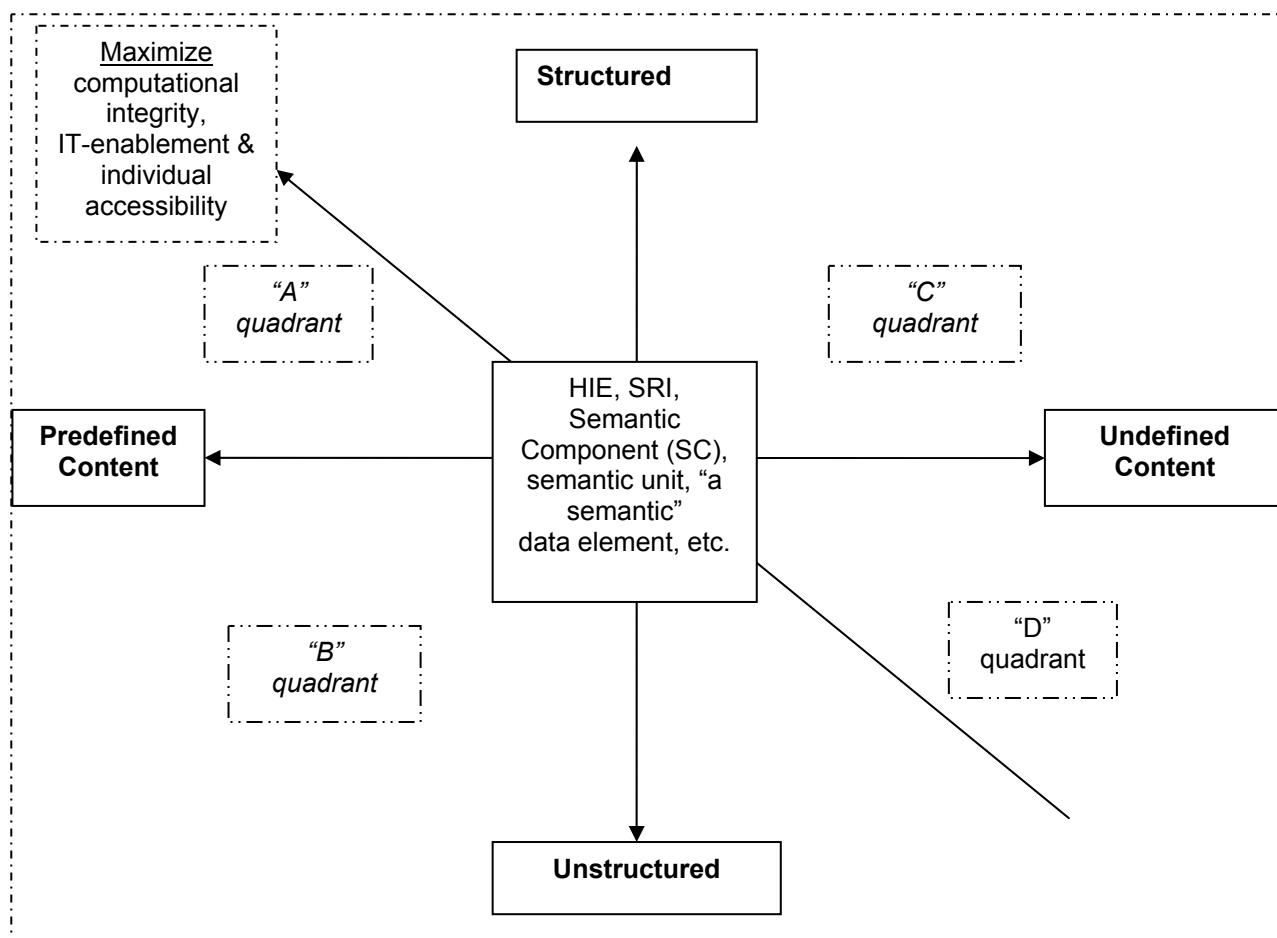


Figure 9 — “Human Interface Equivalency Model (HIEM)”

Table 6 — Matrix of The Four Quadrant of the Human Interface Equivalency Model “(HIEM)”

<u>Rules and Criteria Governing</u>	Content	
	Predefined Content	Undefined Content
Structured	“A” Quadrant	“C” Quadrant
Unstructured	“B” Quadrant	“D” Quadrant

A key purpose of the HIEM is to facilitate an approach which maximizes IT-enablement in support of individual accessibility and does so in an as cost-effective and efficient manner as possible. This is especially true for HIEs of the nature of HIEM - “Quadrant A”.

Annex H, I and J below provide examples of HIEs of a HIEM – Quadrant A nature. In addition, many of the tables presented in matrix form, also provide examples of a Quadrant A nature. One reason here is that they are structured to support multilingual HIEs including support of language accessibility requirements.

12.4 Role of a HIE identifier

The concept of a set of recorded information (SRI) covers the range of a simple “data element” (which in its context of organization of data is considered to be “individual”), to a book of several hundred pages (or a similar document), to a Website consisting of many megabytes+, etc.

Nevertheless, any SRI of some importance in a commitment exchange context usually has some unique identifier. Any LET good or service provided by a LET provider to an individual user which includes a payment will have a business transaction identifier (BTI) both on internal and external constraints, the latter being of a consumer protection and/or privacy protection nature. Therefore, in order to be able to support the implementation of the HIEM, every HIE needs to be able to be identified and be able to be referenced in a unique and unambiguous manner.

There are two basic elements to the formation of any HIE identifier (as a “composite identifier”). Therefore, the formation of any HIE Identifier (HIE-ID) D needs to:

- a) conform to “generic” rules governing the formation of a composite identifier including the concept being refined and referenced in an ISO, IEC and/or ITU international standard;
- b) needs to maximize use of existing international ISO standards;
- c) be able to contain localization requirements in support of the implementation of references to the requirements of applicable jurisdictional domains. {See further the default convention in support of the same as found in Annexes B and E}.

In response to these and other requirements of ISO/IEC 20016-1, the definition of a HIE identifier (HIE-ID) is as follows:

HIE identifier (HIE-ID)

composite identifier assigned to the **human interface equivalents (HIEs)** of the **semantic component**, in whatever presentation format, which is capable of being used by any **individual**, from a **semantic interoperability** perspective, in support of being able to exercise his/her rights with respect to (1) the provision of **recorded information**; (2) decision-taking; and/or, (3) decision-taking in compliance of the rights of that **individual** in compliance with the requirements of the *UN Convention on the Rights of Persons with Disabilities*.

13 Template for specifying individual accessibility requirements applicable to any HIE as a SRI

13.1 Introduction to and purpose of template

This (primitive) template is based on the initial set of requirements already identified in the 1st edition of this standard.

This template serves to identify the mandatory attributes to be specified with respect to any set of recorded information (SRI) from a language accessibility and human interface equivalency perspective. It does so in support of semantic interoperability requirements in compliance with the *UN Convention on the Rights of Persons with Disabilities*.

This template also does so in an IT-enabled, systematic and explicit manner, i.e., as a coded domain, the attributes required for the scoping and specification of any SRI from an individual accessibility requirements perspective.

In order to be able to support “individual accessibility” requirements a matrix, i.e., table, based, approach is used. It has been structured:

- a) to be able to expand to support both individual accessibility and multilingual expandability requirements from a global perspective; and,
- b) to facilitate computer processability search-ability, reference and retrieve-ability, etc.

IMPORTANT NOTE:

This Clause is presented only from an ISO/IEC 20016-1 *Framework and Reference Model* requirements perspective and therefore contains only the most primitive aspects. It is anticipated that a “Part n” of this multipart standard will contain a more detailed template, rules, attributes to be used for implementation and use purposes.

13.2 Template structure and content

The individual accessibility template for any set of recorded information (SRI) is structured in a matrix form and consists of distinct components which support both the requirements of the *UN Convention on the Rights of Persons with Disabilities* and the multipart ISO/IEC 20016 standard. These include a very clear description, of a metadata nature, describing the purpose, goal and use etc., of the SRI from a semantic interoperability perspective in support of public policy “individual accessibility” perspective (as well as consumer protection and privacy protection requirements as may be applicable).

The “individual accessibility” template is structured in matrix form and consists of two distinct parts; namely:

- 1) those focused on an IT-interface perspective; and,
- 2) those focused on the human interface equivalent perspective.

The order and grouping of the attributes reflects those which need to be stated first since the values and existence of subsequent attributes is dependent on them.

13.2.1 IT-interface needs perspective

From an IT-interface needs perspective all that is required is a unique, linguistically neutral and unambiguous identifier for each attribute. In order to facilitate use and management of the template a block-numeric numbering scheme⁹⁴ is used to assign these identifiers as follows:

Identifier of SRI	0100-0199
Purpose of SRI	0200-0299
Required level of semantic equivalency	1000-1999
Official and/or legally recognized language equivalency requirements	2000-2999
Language accessibility equivalency	3000-3999

The assignment of the columns comprising the IT-interface is already identified as follows:

⁹⁴ The use of a block-numeric numbering scheme based on “nnnn” does not indicate the need for many attributes. Rather it supports the need for users to be able to work at different levels of granularity.

Table 7 — Identification of IT-Interface aspects of an ISO/IEC 20016 conformant template

Col. ID	Col. ID name	Purpose and use
01	Source ID	The source ID here is ISO/IEC 20016-1 <i>[Note: When this “template” and related text rules and attributes becomes a specific Part of ISO/IEC 20016, then that Part will serve as the Source ID]</i>
02	ID code	The unique ID code for each attribute in this template
03	Decision code	When this template is used the requirement for each attribute shall be specified as “applicable” or “not applicable”. These two conditions are to be coded as” 1 = Yes 2 = No ⁹⁵
04 ⁹⁶		

13.2.2 Human interface needs perspective

Human interface needs perspective is on the whole linguistic in nature. On the whole, the default here is to use natural languages to provide HIEs.

However, in the context of the purpose and scope of this multipart ISO/IEC 20016 standard from a UN Convention and language accessibility requirements perspective, it is necessary to be able to provide HIEs as transforms, (e.g., Braille), in the form of sign language, BLISS symbols, audio (in whatever language of communication of the individual user, pictorial/image equivalents, etc.)

The structure of the HIE part of the template reflects these (primitive) requirements.

Since human beings, as individual users, (1) may require the use of more than one language; and, (2) may have language accessibility requirements. This template with respect to column in support of HIEs has been structured as follows:

Table 8 — ID for ISO language and/or ID for an accessibility language

Col. ID	Name (ISO language)
10, 20+	It is anticipated that there may be 1+ columns from a HIE perspective required to support “name”, “definition”, “Notes”, “Examples”, etc., for each HIE. Here provision is made for up to nine (9) sub-columns as added attributes in each ISO 639-2/T language referenced. Also, provision is made for this ISO template to be able to support under column Name (other) 1000 any HIE equivalent from a language accessibility perspective (in support of the UN Convention).
1000	Reserved for HIEs which are in “languages” not listed in ISO 639-2/T and/or require language accessibility HIE equivalents in support of the UN Convention, (e.g., audio, visual/image, Bliss symbols, “transforms (e.g., Braille), etc. [Note that ISO 639-2 does not include sign languages. ISO 639-3 currently has about 134 sign languages and their 3-alpha codes listed]

⁹⁵ When a template is being developed for a SRI, a code “3” may be used to indicate a condition of “Not yet known”.

⁹⁶ Note: Column IDs 4-9 are left open for additional ID interface requirements.

13.3 General rules governing use of template

Rule 034:

Each HIE attribute for each specified SRI shall be specified as (a) applicable; or (2) non-applicable. These two conditions are to be specified as decision codes with “1” or “2”.

Rule 035:

Any use of a human interface equivalent (HIE) identifier must have an ISO English and ISO French equivalent as a minimum.

13.4 Specific rules governing entries in the template

Rule 036:

Specific rules governing entries (and their interworking) shall be specified in the applicable Part of ISO/IEC 20016.

13.5 Template

Table 9 below provides a sample matrix template.

Table 9 — ISO/IEC 20016 Template structure for HIEs

IT-interface			Human Interface Equivalents (HIEs) components			
Identification			Name			
Source ID	ID Code	Decision Code	ISO English	ISO French	Other	spare
01	02	03	10	20	1000	nnnn

14 Rules governing the structure, management and addition of new parts of this multipart standard

14.1 Introduction

This Part of ISO/IEC 20016 *Framework and Reference Model* of the multipart ISO/IEC 20016 standard also presents a general template for the structuring of each of the Clauses of Parts 2+.

At the same time, it is recognized that the start of a new Part may well lead to an addenda or corrigendum to Clause 14 of ISO/IEC 20016-1 (and when there are more Parts for ISO/IEC).

It is important that all Parts of ISO/IEC 20016 not only contain an integrated approach but also present their contents in a similar manner.

Finally, the target audiences of this multipart standard are organizations and public administrations in jurisdictional domains, (e.g., UN member states) who are signatories to the *UN Convention on the Rights of Persons with Disabilities*. As such, having a “standard” similarly structured approach for all Parts 2+ of ISO/IEC 20016 facilitates their development and user.

14.2 Default template for “table of contents” of parts of ISO/IEC 20016

The rules and default template presented below apply to all Parts “n” of ISO/IEC 20016 except ISO/IEC 20016-10 “Consolidated vocabulary”.

Rule 037:

All Parts 2+ of ISO/IEC 20016 (except ISO/IEC 20016-10⁹⁷) shall use the following “Table of Contents” template as stated in Table 10 below.

Guideline 037G1:

Annex “K” (informative) “Notes on standard Table of Contents” Template for Parts of ISO/IEC 20016 should be used as a guide.

Table 10 — “Table of Contents” Template for Parts 2+ of ISO/IEC 20016”

Clause No.	Title
	Foreword
0	Introduction
0.1	Purpose and overview
0.2	Use of “Person” etc.
0.3	Importance and role of definitions and associated terms
0.4	Standards based on rules and guidelines
0.n	<<OPEN>>
0.n+1	Organization and description of the document
1	Scope
1.1	Scope of the ISO/IEC 20016 multipart standard
1.2	Scope of Part “N”
1.3	Exclusions
1.4	Aspects not currently addressed
2	Normative references
2.1	ISO, IEC and ITU
2.2	Referenced specifications
3	Definitions
4	Symbols and abbreviations
5	Fundamental principles and assumptions
5.1	Introduction
5.2	Application of ISO/IEC 20016-1 principles
5.3	Additional principles and assumptions applicable to Part “N”
6	Clause 6 [to be used as required in Part N]
7+	Clause 7 [to be used as required in Part N]
8+	Clause 8 [to be used as required in Part N]
n	Conformance
n.1	Introduction
n.2	Conformance to ISO/IEC 20016-1: Framework and Reference Model
n.3	Conformance to this Part n
Annexes	
A	(Normative) Consolidated list of terms and definitions with cultural adaptability: ISO English and ISO French language equivalency
B+	Added Normative or Informative Annex to be used as required in Part “N”
	Bibliography

⁹⁷ This is because Part 10 is reserved for a “consolidated Vocabulary”. {See further below Clause 14.3}

14.3 Reserve ISO/IEC 20016-10 for a consolidated vocabulary

It is also essential that all the concepts and their definitions in the multipart ISO/IEC 20016 standard are harmonized and form an integrated whole. This is independent from the fact that the source of any ISO/IEC 20016 concept and its definition is (a) introduced for the first time in a Part of ISO/IEC 20016 itself; (b) an existing ISO, IEC, or ITU international standard concept and its definition used “as is” (or in adapted form”) which has been identified and used as a Clause 2 “Normative Reference”; or (c) an existing concept and its definition as stated as a normative reference under Clause 2.2. “Referenced Specifications” used “as is” (or in adapted form”).

It is recommended that ISO/IEC 20016-10 be reserved for use as a Consolidated Vocabulary of all the concepts and definitions used in the existing Parts of ISO/IEC 20016.⁹⁸

⁹⁸ ISO/IEC 15944-7 “...eBusiness Vocabulary” serves as a model that can be adapted. Alternatively, JTC1/SC36/WG7 could create a “freely available” standing document as a consolidated vocabulary.

Annex A

(normative)

Consolidated list of terms and definitions with cultural adaptability: ISO English and ISO French language equivalency

A.1 Introduction

Users of this ISO/IEC 20016-1 standard may not have ready access to all standards referenced in either the ISO English language version or the ISO French language equivalent, where available.

This standard maximizes the use of existing standards where and whenever possible including relevant and applicable existing terms and definitions. This Annex A contains the consolidated list of the ISO English and ISO French language paired terms and definitions used in this standard including those terms and definitions introduced in this standard. The source is Clause 3 Definitions.

A.2 ISO English and ISO French

This standard recognizes that the use of English and French as natural languages is not uniform or harmonized globally. (Other examples include use of Arabic, German, Portuguese, Russian, Spanish, etc., as natural languages in various jurisdictional domains).

Consequently, the terms "ISO English" and "ISO French" are used here to indicate the ISO's specialized use of English and French as natural languages in the specific context of international standardization, i.e., as a "special language".

A.3 Cultural adaptability and quality control

ISO/IEC JTC1 has "cultural adaptability" as the third strategic direction which all standards development work should support. The two other existing strategic directions are "portability" and "interoperability". Not all ISO/IEC JTC1 standards are being provided in more than one language, i.e., in addition to "ISO English," in part due to resource constraints.

Terms and definitions are an essential part of a standard. This Annex serves to support the "cultural adaptability" aspects of standards as required by ISO/IEC JTC1. Its purpose is to ensure that if, for whatever reason, an ISO/IEC JTC1 standard is developed in one ISO/IEC "official" language only, at the minimum the terms and definitions are made available in more than one language.⁹⁹

A key benefit of translating terms and definitions is that such work in providing bilingual/multilingual equivalency:

- should be considered a "quality control check" in that establishing an equivalency in another language ferrets out "hidden" ambiguities in the source language. Often it is only in the translation that ambiguities in the meaning, i.e., semantics, of the term/definition are discovered. Ensuring bilingual/multilingual equivalency of terms/definition should thus be considered akin to a minimum "ISO 9000-like" quality control check; and,

⁹⁹ Other ISO/IEC member bodies are encouraged to provide bilingual/multilingual equivalencies of terms/definitions for the language(s) in use in their countries.

- is considered a key element in the widespread adoption and use of standards world-wide, especially by users of this standard who include those in various industry sectors, within a legal perspective, policy makers and consumer representatives, other standards developers, IT hardware and service providers, etc.

A.4 Organization of ANNEX A - Consolidated list in matrix form

The terms/definitions are organized in matrix form in alphabetical order (English language). The columns in the matrix are as follows:

Col. No.	Use
	IT-Interface – Identification
1	Clause 3 ID (ID definition as per ISO/IEC 20016-1 Clause 3)
2	Source. International standard referenced or that of ISO/IEC 20016-1 itself.
	Human Interface Equivalent (HIE) Components
3	ISO English Language – Term
4	Gender of ISO English Language Term+
5	ISO English Language – Definition
6	ISO French Language - Term *
7	Gender of the ISO French language Term+
8	ISO French Language - Definition

The primary reason for organizing the columns in this order is to facilitate the addition of equivalent terms/definitions in other languages as added sets of paired columns, (e.g., Spanish, Japanese, German, Russian, Chinese, etc).

+ The codes representing gender of terms in natural languages are those found in Clause 9.5 “Gender, and official, de facto, or LRL languages”, and especially its Table 1 – “ISO/IEC 20016-1:01 Codes representing grammatical gender in natural languages”,

- ISO English, in Column 4, the gender code = “99” since the English language does not have gender in its grammar; and,
- ISO French, in Column 7, the gender codes are 01 = masculine, 02 = feminine and 03 = neuter

* The use of [French language equivalent required] in Column (8) means that for these terms and definitions, ISO/IEC 20016-1 itself will be providing the ISO French language equivalent before the FDIS stage.

A.5 Consolidated list of ISO/IEC 20016-1 Terms and definitions

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.001	ISO 1087-1:2000 (3.4.9)	abbreviation	99	designation formed by omitting words or letters from a longer form and designating the same concept	abréviation	02	désignation formée par suppression de mots ou de lettres dans une forme plus longue désignant le même concept
3.002	ISO/IEC 24751-1:2008 (3.1)	access for all (AfA)	99	approach to providing accessibility in a computer mediated environment in which the digital resources and their method of delivery are matched to the needs and preferences of the user NOTE This definition is also found in IMS AccessForAll Meta-data Specification Version 1.	accès pour tous (APT)	01	approche fournissant l'accès à un environnement contrôlé par ordinateur dans laquelle les ressources numériques et leur méthode de prestation correspondent aux besoins et préférences de l'utilisateur NOTE Cette définition est aussi trouvée dans IMS AccessForAll Meta-data Specification Version 1.
3.003	ISO/IEC 24751-1:2008 (3.2)	accessibility	99	usability of a product, service, environment or facility by individuals with the widest range of capabilities NOTE 1 Although "accessibility" typically addresses users who have a disability, the concept is not limited to disability issues. NOTE 2 Adapted from ISO/TS 16071.	accessibilité	02	utilisabilité d'un produit, d'un service, d'un environnement ou d'une installation par des individus ayant le plus grand nombre d'aptitude possibles NOTE 1 Bien que l'«accessibilité» concerne surtout les utilisateurs ayant une incapacité, le concept n'est pas limité aux questions d'incapacité. NOTE 2 Adapté de L'ISO/TS 16071.

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.004	ISO 1087-1:2000 (3.4.10)	acronym	99	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 NOTE Examples of acronyms are: laser, DOS, GATT, UNESCO, UNICEF.	acronyme	01	abréviation formée des première lettres des éléments constituant la forme complète de la désignation ou des premières syllabe de la forme complète, et prononcée de façon syllabique NOTE Exemples d'acronymes laser, DOS, GATT, UNESCO, UNICEF.
3.005	ISO/IEC 24751-1: 2008 (3.4)	adaptability (in e-learning context)	99	ability of a digital resource or delivery system to adjust the presentation, control methods, structure, access mode, and user supports, when delivered	adabtabilité (en l'e-apprentissage)	02	capacité d'une ressource numérique , ou d'un système de prestation pour ajuster la présentation, les méthodes de contrôle, la structure, le mode d'accès, et les soutiens à l'utilisateur, lors de la prestation
3.006	ISO/IEC 24751-1: 2008 (3.5)	adaptation (in e-learning context)	99	digital resource that presents the intellectual content of all or part of another digital resource NOTE Adaptations may also include the adjustment of the presentation, control methods, access mode, structure, and user supports.	adaptation (en l'e-apprentissage)	02	ressource numérique qui présente le contenu intellectuel de la totalité ou d'une partie d'une autre ressource numérique NOTE Les adaptations peuvent aussi inclure l'ajustement de la présentation, les méthodes de contrôle, le mode d'accès, la structure, et les soutiens à l'utilisateur.

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.007	ISO/IEC 20016-1 (3.007)	address	99	<p>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</p> <p>NOTE 1 An address can be specified as either a physical address and/or electronic address.</p> <p>NOTE 2 In the identification, referencing and retrieving of a SRI, it is necessary to state whether the pertinent recorded information is available in both physical and virtual forms.</p> <p>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).</p> <p>NOTE 4 Adapted from ISO/IEC 15944-2.</p>	adresse	02	<p>ensemble d'éléments de données servant à préciser l'emplacement où on peut envoyer ou recevoir un élément d'information enregistrée, un objet d'affaires, un objet matériel et/ou une (ou des) personne(s)</p> <p>NOTE 1 Une adresse peut être spécifiée comme étant physique et/ou électronique.</p> <p>NOTE 2 Dans l'identification, le référencement et l'extraction des SRIs, il est nécessaire d'énoncer si l'information enregistrée pertinente est disponible à la fois sous formes physiques et virtuelles.</p> <p>NOTE 3 Dans le contexte de l'EDI-ouvert, un «article d'information enregistrée» est modélisé et enregistré comme scénario d'EDI-ouvert (OeS), Faisceau d'information (IB) ou Composante sémantique (SC).</p> <p>NOTE 4 Adapté de l'ISO/CEI 15944-2.</p>
3.008	ISO/IEC 24751-1: 2008 (3.6)	AfA agent	99	<p>someone, i.e. a real person, or something, i.e. “automatons”, acting on behalf of an individual in a clearly specified capacity in and access for all (AfA) context</p> <p>NOTE Adapted from definition of “agent” in ISO/IEC 15944-1.</p>	agent d'APT	01	<p>quelqu'un, c.-à.-d., une personne physique, ou quelque chose, c.-à.-d. des «automates», qui agit au nom d'un individu à titre clairement défini dans un contexte d'accès pour tous (APT)</p> <p>NOTE Adapté de la définition de «agent» dans l'ISO/CEI 15944-1.</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.009	ISO/IEC 24751-2: 2008 (3.05)	AfA context	99	particular situation or environment in which a set of AfA accessibility needs and preferences might be used	contexte APT	01	situation ou environnement particulier dans lesquels un ensemble de besoins et de préférences d' accessibilité APT peut exister
3.010	ISO 5127: 2001 (1.1.2.03)	artificial language	99	language whose rules are explicitly established prior to its use	langage artificiel	01	langage dont les règles sont établies explicitement avant son utilisation
3.011	ISO/IEC 11179-3: 2003 (3.1.3)	attribute	99	characteristic of an object or entity	attribut	01	caractéristique d'un objet ou d'une entité
3.012	ISO/IEC 15944-2: 2006 (3.6)	business object	99	unambiguously identified, specified, referenceable, registered and re-useable Open-edl scenario or scenario component of a business transaction NOTE As an "object", a "business object" exists only in the context of a business transaction.	objet d'affaires	01	scénario d'EDI ouvert (ou composante de scénario) d'une transaction d'affaires qui est identifié, spécifié, référençable, enregistré et réutilisable de manière non ambiguë NOTE En tant qu'«objet», un «objet d'affaires» n'existe que dans le contexte d'une transaction d'affaires.
3.013	ISO/IEC 14662:2010 (3.3)	Business Operational View (BOV)	99	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	Vue opérationnelle des affaires (BOV)	02	vue perspective sur les transactions d'affaires , restreinte à ceux des aspects relatifs à la prise par les Personnes de décisions et d' engagements concernant leurs affaires qui sont nécessaires pour décrire une transaction d'affaires .

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.014	ISO/IEC 14662:2010 (3.4)	business transaction	99	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	transaction d'affaires	02	ensemble prédéterminé d'activités et/ou de processus menées par des Personnes et/ou de procédures qu'elles suivent, déclenché par une Personne qui vise à atteindre dans les affaires un but expressément partagé, terminé lorsqu'est observée une des conclusions convenues par toutes les Personnes prenantes, bien que cette observation puisse être partiellement implicite
3.015	ISO/IEC 15944-5: 2008 (3.12)	business transaction identifier (BTI)	99	<p>identifier assigned by a seller or a regulator to an instantiated business transaction among the Persons involved</p> <p>NOTE 1 he identifier assigned by the seller or regulator shall have the properties and behaviours of an "identifier (in a business transaction)".</p> <p>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.</p>	identificateur de transaction d'affaires (BTI)	01	<p>identificateur attribué par un vendeur ou une autorité de réglementation à une transaction d'affaires instanciée entre les Personnes concernées</p> <p>NOTE 1 L'identificateur attribué par le vendeur ou l'autorité de réglementation doit avoir les propriétés et le comportement d'un «identificateur (dans une transaction d'affaires)».</p> <p>NOTE 2 En tant qu'identificateur (dans une transaction d'affaires), un ITA sert d'identificateur commun unique pour toutes les Personnes concernées quant à l'identification, le référencement, l'extraction d'information enregistrée, etc., relatifs aux engagements pris et à l'actualisation (et post-actualisation) résultante de la transaction d'affaires conclue.</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>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.</p> <p>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).</p>			<p>NOTE 3 Un identificateur de transaction d'affaires peut être attribué à n'importe quel moment durant les phases de planification, d'identification ou de négociation, mais doit être attribué au moins avant le début ou durant la phase d'actualisation.</p> <p>NOTE 4 Selon les besoins et le lieu du (des) domaine(s) juridictionnel(s) applicable(s), l'information enregistrée rattachée à l'identificateur de transaction d'affaires (ITA) peut obliger le vendeur d'inclure tous les autres identificateurs (par ex. une taxe sur le produit ou service de valeur ajoutée, etc.) attribués par le(s) domaine(s) juridictionnel(s) applicable(s).</p>
3.016	ISO/IEC 15944-1: 2011 (3.8)	buyer	99	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	acheteur	01	Personne désirant acquérir un bien, service et/ou droit en fournissant une valeur équivalente acceptable, généralement de l'argent, à la Personne qui offre ce bien, service et/ou droit
3.017	ISO/IEC 2382-4: 1999 (04.01.01)	character	99	<p>member of a set of elements that is used for the representation, organization or control of data</p> <p>NOTE Characters may be categorized as follows:</p> <p>TYPES AND EXAMPLES</p> <ul style="list-style-type: none"> • graphic character: (e.g., digit, letter, ideogram, special character) 	caractère	01	<p>élément d'un ensemble employé pour constituer, représenter ou gérer des données</p> <p>NOTE Les caractères peuvent être classés comme suit:</p> <p>TYPES ET EXEMPLES]</p> <ul style="list-style-type: none"> • caractère graphique: (par ex. chiffre, lettre, idéogramme, caractère spécial)

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<ul style="list-style-type: none"> control character: (e.g., transmission control, character, format effector, code extension character, device control character). 			<ul style="list-style-type: none"> caractère de commande: (par ex. caractère de commande de transmission, caractère de mise en page, caractère de changement de code, caractère de service).
3.018	ISO 1087-1:2000 (3.2.4)	characteristic	99	<p>abstraction of a property of an object or of a set of objects</p> <p>NOTE Characteristics are used for describing concepts.</p>	caractère	01	<p>propriété abstraite d'un objet ou d'un ensemble d'objets</p> <p>NOTE Les caractères servent à décrire les concepts.</p>
3.019	ISO/IEC 2382-4: 1999 (04.01.02)	character set	99	<p>finite set of different characters that is complete for a given purpose</p> <p>EXAMPLE The international reference version of the character set of ISO 646-1.</p>	jeu de caractères	01	<p>ensemble fini de différents caractères considéré comme complet à des fins déterminées</p> <p>EXEMPLE La version internationale de référence du jeu de caractères de l'ISO 646-1.</p>
3.020	ISO/IEC 15944-5: 2008 (3.17)	classification system	99	<p>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</p> <p>NOTE 1 The classification code or number often serves as a semantic identifier (SI) for which one or more human interface equivalents exist.</p>	système de classification	01	<p>identification et arrangement systématiques des activités d'affaires et/ou des composantes de scénario en catégories selon des conventions, des méthodes et des règles de procédure structurées logiquement, tel que spécifié dans un schéma de classification</p> <p>NOTE 1 Le code ou numéro de classification sert souvent d'identificateur sémantique (SI) pour lequel existent un ou plusieurs équivalents d'interface humaine.</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				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.			NOTE 2 Les règles d'un schéma de classification régissant l'exploitation d'un système de classification mènent parfois à l'utilisation de codes ID à intelligence intégrée (par ex. dans la structure de l'ID, la manière dont il peut être parsé, etc.) En ce cas, on utilise souvent des schémas de numérotation numérique par bloc comme convention.
3.021	ISO 639-2: 1998 (3.1)	code	99	data representation in different forms according to a pre-established set of rules NOTE In this standard the "pre-established set of rules" are determined and enacted by a Source Authority and must be explicitly stated.	code	01	représentation de données sous différentes formes, selon un jeu de règles préétablies NOTE Dans cette norme, l'«ensemble de règles préétablies» est déterminé et mis en vigueur par une Autorité de source et doit être énoncé explicitement.
3.022	ISO/IEC 15944-2: 2006 (3.13)	coded domain	99	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.	domaine codé	01	domaine pour lequel (1) les limites sont définies et explicitement énoncées comme base de règles de l' Autorité de source d'un domaine codé ; et, (2) chaque entité se qualifiant comme membre de ce domaine est identifiée grâce à l'attribution d'un code ID unique conformément au Schéma d'enregistrement applicable de cette Autorité de source NOTE 1 Les règles régissant l'attribution d'un code aux membres d'un domaine codé résident dans son Autorité de source et font partie du Schéma d'enregistrement du domaine codé de l'Autorité de source.

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>NOTE 2 Source Authorities which are jurisdictional domains are the primary source of coded domains.</p> <p>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.</p> <p>NOTE 4 Associated with a code in a coded domain can be: (a) one and/or more equivalent codes; (b) one and/or more equivalent representations especially those in the form of Human Interface Equivalent (HIE) (linguistic) expressions.</p> <p>NOTE 5 In a coded domain the rules for assignment and structuring of the ID codes must be specified.</p> <p>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.</p> <p>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.</p>			<p>NOTE 2 Les Autorités de source qui sont des domaines juridictionnels sont la source primaire des domaines codés.</p> <p>NOTE 3 Un domaine codé est un ensemble de données pour lequel le contenu des valeurs des éléments de données est prédéterminé et défini conformément à la base de règles de son Autorité de source et, à ce titre, à une sémantique prédéfinie.</p> <p>NOTE 4 Peuvent être associés à un code dans un domaine codé : un ou plusieurs codes équivalents: (a) un et/ou plusieurs codes équivalents; et/ou, (b) une ou plusieurs représentations équivalentes, surtout celles qui sont sous forme d'expressions d'Équivalents d'interface humaine (EIH) (linguistique).</p> <p>NOTE 5 Dans un domaine codé, les règles d'attribution et de structuration des codes d'identité doivent être spécifiées.</p> <p>NOTE 6 Lorsqu'on permet à une identité à titre de membre d'un domaine codé d'avoir, c.-à-d. de se voir attribué, plus d'un code d'identité, c.-à-d. des codes d'identité équivalents (pouvant inclure des noms), l'un de ces codes doit être spécifié à titre de code d'identité pivot.</p> <p>NOTE 7 Un domaine codé peut à son tour se composer de plusieurs domaines codés grâce à l'application du principe d'héritage des classes d'objet.</p>

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>NOTE 8 A coded domain may contain ID codes which pertain to predefined conditions other than qualification of membership of entities in the coded domain. Further, the rules governing a coded domain may or may not provide for user extensions.</p> <p>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".</p> <p>NOTE 9 In object methodology, entities which are members of a coded domain are referred to as instances of a class.</p> <p>EXAMPLE In UML modelling notation, an ID code is viewed as an instance of an object class.</p>			<p>NOTE 8 Un domaine codé peut contenir un code d'identité relatif à des conditions prédéfinies autres que la qualification d'appartenance des entités du domaine codé. De plus, les règles régissant un domaine codé peuvent ou non contenir des extensions utilisateur.</p> <p>EXEMPLE Exemples courants: (1) l'utilisation du code d'identité «0» (ou «00», etc.) pour «Autres», (2) l'utilisation du code d'identité «9» (ou «99», etc.) pour «Sans objet»; (3) l'utilisation du code d'identité «8» (ou « 98 ») pour «Inconnu»; et/ou, si nécessaire, (4) la pré-réservation d'une série de codes d'identité pour l'«utilisation d'extensions utilisateur».</p> <p>NOTE 9 Dans la méthodologie objet, les entités membres d'un domaine codé s'appellent «instances d'une classe».</p> <p>EXEMPLE Dans la notation modélisée UML, un code d'identité est considéré comme une instance de classe d'objet.</p>
3.023	ISO/IEC 15944-5: 2006 (3.21)	coded domain Registration Schema (cdRS)	99	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	Schéma d'enregistrement du domaine codé (cdRS)	01	définition formelle à la fois des (1) champs de données contenus dans l' identification et la spécification d'une entité faisant partie des membres d'un domaine codé (y compris les contenus permis de ces champs) ; et (2) règles d'attribution des identificateurs

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.024	ISO/IEC 15944-2: 2006 (3.14)	coded domain Source Authority (cdSA)	99	<p>Person, usually an organization, as a Source Authority which sets the rules governing a coded domain</p> <p>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.</p> <p>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.</p> <p>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.</p>	Autorité de source du domaine codé (cdSA)	02	<p>Personne, habituellement une organisation, qui établit les règles régissant un domaine codé en tant qu'Autorité de source</p> <p>NOTE 1 L'Autorité de source est un rôle d'une Personne et, pour les domaines codés largement utilisés, l'Autorité de source du domaine codé est souvent un domaine juridictionnel.</p> <p>NOTE 2 Des secteurs spécifiques (par ex. le domaine bancaire, les transports, la géomatique, l'agriculture, etc.) peuvent avoir une (des) Autorité(s) de source du domaine codé dont les domaines codés sont utilisés dans d'autres secteurs.</p> <p>NOTE 3 Une Autorité de source du domaine codé fonctionne aussi habituellement comme Autorité d'enregistrement, mais peut utiliser un agent, c.-à.-d. une autre Personne, pour exécuter la fonction d'enregistrement à sa place.</p>
3.025	ISO/IEC 15944-5: 2008 (3:19)	code (in coded domain)	99	<p>identifiant, 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</p>	code (dans un domaine code)	01	<p>identificateur, c.-à.-d. code ID, attribué à une entité en tant que membre d'un domaine codé conformément à l'ensemble de règles régissant ce domaine codé</p>

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Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.026	ISO 5964:1985 (3.1)	coined term	99	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	terme inventé	01	néologisme créé spécialement dans une langue cible pour exprimer un concept désigné par un terme existant et reconnu dans une langue source, mais qui n'a pas été exprimé préalablement dans la langue cible
3.027	ISO/IEC 15944-4: 2007 (3.12)	collaboration space	99	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.	espace de collaboration	01	espace d'activité d'affaires dans lequel un échange économique de ressources valorisées est considéré indépendamment et non du point de vue de tout partenaire d'affaires NOTE Dans l'espace de collaboration, la perspective qu'un partenaire individuel a d'un phénomène économique est désaccentuée. Ainsi, les termes d'affaires et de comptabilité communément utilisés tels que achat, vente, reçu de caisse, décaissement, matières premières, produits finis, etc. ne sont pas autorisés à être utilisés car ils considèrent les flux de ressources du point de vue d'un participant.
3.028	ISO/IEC 14662:2010 (3.5)	commitment	99	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	engagement	01	création ou acceptation d'un droit, d'une obligation, d'une dette ou d'une responsabilité par une Personne qui est apte à appliquer le domaine juridictionnel conformément à laquelle l' engagement est pris

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.029	ISO/IEC 20016-1 (3.029)	commitment exchange	99	<p>establishment of a commitment among two or more Persons to accomplish an explicitly shared and agreed to goal which is terminated upon one recognition of one of the agreed conclusions by all the involved Persons, although some recognition may be implicit</p> <p>NOTE 1 A LET transaction is a type of commitment exchange.</p> <p>NOTE 2 It is important that the appropriate semantic interoperability equivalency level (SIEL) in support of semantic interoperability requirements be established and agreed to no later than the end of the negotiation phase in the establishment of commitment exchange.</p>	échange d'engagement	01	<p>établissement d'un engagement entre au moins deux Personnes dans un but explicitement partagé et convenu mutuellement qui se termine à la reconnaissance d'une des conclusions convenues par toutes les Personnes concernées, bien qu'une partie de cette reconnaissance puisse être implicite</p> <p>NOTE 1 Une transaction AEF est un type d'échange d'engagement.</p> <p>NOTE 2 Il est important que le niveau d'équivalence d'interopérabilité sémantique (SIEL) à l'appui des exigences en interopérabilité sémantique soit établi et convenu avant la fin de la phase de négociation lors de l'établissement de l'échange d'engagement.</p>
3.030	ISO 5127: 2001 (1.1.3.01)	communication	99	transfer of meaning by means of transmission of signals	communication	02	transfert de signification au moyen de la transmission de signaux
3.031	ISO/IEC 20016-1 (3.031)	communication (in accessibility)	99	<p>transfer of meaning among individuals by means of transmission of signals in a manner which supports accessibility</p> <p>NOTE 1 From a content perspective, communication includes languages, display of text, Braille, tactile communication, large print, accessible multimedia as well as written, audio, plain-language, human-reader and augmentative and alternative modes.</p>	communication (en contexte d'accessibilité)	02	<p>transfert de signification entre individus au moyen de la transmission de signaux d'une façon qui soutient l'accessibilité</p> <p>NOTE 1 D'un point de vue du contenu, la communication inclut les langues et les langages, l'affichage de texte, le Braille, la communication tactile, les gros caractères, le multimédia accessible, ainsi que les modes alternatifs et augmentatifs écrits, audio, en langage clair et de lecture sans aide.</p>

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Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				NOTE 2 From an ICT perspective, communication includes the means and formats of communication, such as accessible information and communication technology.			NOTE 2 D'un point de vue des TIC, la communication inclut les moyens et formats de communication tels que l'information accessible et la technologie des communications.
3.032	ISO/IEC 15944-2: 2006 (3.16)	composite identifier	99	<p>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</p> <p>NOTE 1 Identifiers (in business transactions) are for the most part composite identifiers.</p> <p>NOTE 2 The rules governing the structure and working of a composite identifier should be specified.</p> <p>NOTE 3 Most widely used composite identifiers consist of the combinations of:</p> <p>(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;</p> <p>(2) the ID of the issuing organization (often based on a block numeric numbering schema); and,</p>	identificateur composite	01	<p>identificateur (dans une transaction d'affaires) fonctionnant comme identificateur simple et unique comprenant un ou plusieurs identificateurs et/ou un ou plusieurs éléments de données, dont les interconnexions sont basées sur des règles</p> <p>NOTE 1 Les identificateurs (dans les transactions d'affaires) sont pour la plupart des identificateurs composites.</p> <p>NOTE 2 Les règles régissant la structure et le fonctionnement d'un identificateur composite doivent être spécifiées.</p> <p>NOTE 3 Les identificateurs composites les plus communément utilisés se composent de combinaisons:</p> <p>(1) de l'identité du schéma d'identification/numérotation global, (par ex. ISO/IEC 6532, ISO/CIE 7812, ISO/CIE 7506, UPC/EAN, ITU-T E.164, etc.), qui est souvent assumé;</p> <p>(2) de l'identité de l'organisation émettrice (souvent basé sur un schéma de numérotation numérique par blocs); et,</p>

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Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				(3) the ID of the entities forming part of members of the coded domain of each issuing organization.			(3) l'identité des entités faisant partie de membres du domaine codé de chaque organisation émettrice.
3.033	ISO 1087-1:2000 (3.2.1)	concept	99	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.	concept	01	unité de connaissance créée par une combinaison unique de caractères NOTE Les concepts ne sont pas nécessairement liés aux langues particulières. Ils sont cependant soumis à l'influence du contexte socioculturel qui conduit souvent à des catégorisations différentes.
3.034	ISO/IEC 15944-1:2011 (3.11)	constraint	99	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".	contrainte	02	règle , énoncée explicitement, qui prescrit, limite, régit ou spécifie tout aspect d'une transaction d'affaires NOTE 1 Les contraintes sont spécifiées comme des règles faisant partie de composantes de scénarios d'EDI-ouvert, c.-à-d. d'attributs de scénarios, de rôles, et/ou de faisceaux d'information. NOTE 2 Les contraintes doivent avoir des identificateurs uniques et non-ambigus afin d'être enregistrées pour application dans l'EDI-ouvert. NOTE 3 Une contrainte peut faire l'objet d'un accord entre des parties (clause du contrat), et est par conséquent considérée comme «contrainte interne». Ou une contrainte peut être imposée à des parties, (par ex. des lois, des règlements, etc.), et est

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
							par conséquent considérée comme une «contrainte externe».
3.035	ISO/IEC 15944-1: 2011 (3.12)	consumer	99	<p>a buyer who is an individual to whom consumer protection requirements are applied as a set of external constraints on a business transaction</p> <p>NOTE 1 Consumer protection is a set of explicitly defined rights and obligations applicable as external constraints on a business transaction.</p> <p>NOTE 2 The assumption is that a consumer protection applies only where a buyer in a business transaction is an individual. If this is not the case in a particular jurisdiction, such external constraints should be specified as part of scenario components as applicable.</p> <p>NOTE 3 It is recognized that external constraints on a buyer of the nature of consumer protection may be peculiar to a specified jurisdiction.</p>	consommateur	01	<p>acheteur, en tant qu'individu, auquel s'appliquent des exigences de protection des consommateurs comme ensemble de contraintes externes sur une transaction d'affaires</p> <p>NOTE 1 La protection des consommateurs est un ensemble de droits et d'obligations définis explicitement et qui s'appliquent à titre de contraintes externes à une transaction d'affaires.</p> <p>NOTE 2 Le postulat est que la protection des consommateurs s'applique uniquement lorsqu'un acheteur dans une transaction d'affaires est un individu. Si ce n'est pas le cas dans une juridiction particulière, il faut spécifier ces contraintes externes comme faisant partie de composantes de scénarios selon le cas.</p> <p>NOTE 3 On reconnaît que les contraintes externes de protection des consommateurs exercées sur un acheteur peuvent relever d'une juridiction particulière.</p>
3.036	ISO/IEC 15944-5: 2008 (3.33)	consumer protection	99	<p>set of external constraints of a jurisdictional domain as rights of a consumer and thus as obligations (and possible liabilities) of a vendor in a business transaction which apply to the good,</p>	protection du consommateur	02	<p>ensemble de contraintes externes d'un domaine juridictionnel comme droits d'un consommateur et ainsi comme obligations (et responsabilités éventuelles) d'un fournisseur dans une</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>service and/or right forming the object of the business transaction (including associated information management and interchange requirements including applicable (sets of) recorded information)</p> <p>NOTE 1 Jurisdictional domains may restrict the application of their consumer protection requirements as applicable only to individuals engaged in a business transaction of a commercial activity undertaken for personal, family or household purposes, i.e., they do not apply to natural persons in their role as "organization" or "organization Person".</p> <p>NOTE 2 Jurisdictional domains may have particular consumer protection requirements which apply specifically to individuals who are considered to be a "child" or a "minor", (e.g., those individuals who have not reached their thirteenth (13th) birthday).</p> <p>NOTE 3 Some jurisdictional domains may have consumer protection requirements which are particular to the nature of the good, service and/or right being part of the goal of a business transaction.</p>			<p>transaction d'affaires qui s'applique au bien, au service et/ou droit faisant l'objet de la transaction d'affaires (y compris les exigences en matière de gestion et l'échange de l'information qui s'y rattachent, dont l'(ou l'ensemble des) information enregistrée applicable</p> <p>NOTE 1 Des domaines juridictionnels peuvent restreindre l'application de leurs exigences en matière de protection du consommateur comme applicables uniquement aux individus participant à une transaction d'affaires de nature commerciale entreprise à des fins personnelles, familiales ou domestiques, c.-à.-d. qu'ils ne s'appliquent pas aux personnes physiques dans leur rôle d'«organisation» ou de «Personne d'organisation».</p> <p>NOTE 2 Des domaines juridictionnels peuvent avoir des exigences particulières en matière de protection du consommateur qui s'appliquent spécifiquement à un individu considérés comme un «enfant» ou un «mineur» (par ex. les individus n'ayant pas encore atteint leur treizième anniversaire de naissance).</p> <p>NOTE 3 Certains domaines juridictionnels peuvent avoir des exigences en matière de protection du consommateur propres à la nature du bien, du service, et/ou du droit faisant l'objet d'une transaction d'affaires.</p>

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.037	ISO/IEC 20016-1 (3.037)	content provider	99	<p>Person who provides the content of the set of recorded information (SRI) which provide the basis for the establishment of the semantics interchanged in the semantic collaboration space and in support of the fulfilment with an individual user of an agreed upon LET activity including those of the nature of a commitment exchange</p> <p>NOTE A content provider shall provide content in support of the goal of a commitment exchange at the level of semantic unambiguity appropriate to the specified goal of the commitment exchange including meeting applicable language accessibility requirements, i.e., as HIEs, of the jurisdictional domain of the individual user.</p>	fournisseur de contenu	01	<p>Personne qui fournit le contenu de l'ensemble d'information enregistrée (EIE) à la base de l'établissement de la sémantique échangée dans l'espace de collaboration sémantique et à l'appui de la satisfaction d'un utilisateur individuel concernant une activité d'AÉF convenue incluant celles de la nature d'un échange d'engagement</p> <p>NOTE Un fournisseur de contenu doit fournir du contenu à l'appui de l'objectif d'un échange d'engagement au niveau de la non-ambiguïté sémantique appropriée au but spécifique de l'échange d'engagement, y compris le respect des exigences en matière d'accessibilité linguistique, c.-à.-d. comme ÉIH du domaine juridictionnel de l'utilisateur individuel.</p>
3.038	ISO/IEC 15944-5: 2008 (3.34)	controlled vocabulary (CV)	99	<p>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</p> <p>NOTE 1 In a controlled vocabulary, there is a one-to-one relationship of definition and term.</p>	vocabulaire contrôlé (CV)	01	<p>vocabulaire dont les entrées, c.-à.-d. les paires de termes et définitions, sont contrôlées par une Autorité de source fondée sur une base de règles et un processus pour ajouter et supprimer des entrées</p> <p>NOTE 1 Dans un vocabulaire contrôlé, une correspondance bi-univoque existe entre le terme et sa définition.</p>

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Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>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.</p> <p>NOTE 2 In a multilingual controlled vocabulary, the definition/term pairs in the languages used are deemed to be equivalent, i.e., with respect to their semantics.</p> <p>NOTE 3 The rule base governing a controlled vocabulary may include a predefined concept system.</p>			<p>EXEMPLE Le contenu des «Définitions de la Clause 3» des normes ISO/CEI sont des exemples de vocabulaires contrôlés dont les entités sont identifiées et référencées grâce à leur code ID, c.-à.-d. leur numéro de clause.</p> <p>NOTE 2 Dans un vocabulaire contrôlé multilingue, les paires de termes/définitions des langues utilisées sont jugées sémantiquement équivalentes.</p> <p>NOTE 3 La base de règles régissant un vocabulaire contrôlé peut inclure un système de concepts prédéfini.</p>
3.039	ISO/IEC 15944-1: 2011 (3.14)	data (in a business transaction)	99	representations of recorded information that are being prepared or have been prepared in a form suitable for use in a computer system	donnée (dans une transaction d'affaires)	02	représentations d' informations enregistrées qui sont préparées ou l'ont été de façon à pouvoir être traitée par un ordinateur
3.040	ISO/IEC 11179-1: 2004 (3.3.8)	data element	99	unit of data for which the definition , identification , representation and permissible values are specified by means of a set of attributes	élément de données	01	unité de données dont la définition , l' identification , la représentation et les valeurs autorisées sont spécifiées au moyen d'un ensemble d' attributs

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.041	ISO/IEC 2382-4: 1999 (04.07.01)	data element (in organization of data)	99	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.	élément de données (en organisation de données)	01	donnée considéré comme indivisible dans un certain contexte EXEMPLE L'élément de données «âge d'une personne» avec des valeurs comprenant toutes les combinaisons de trois chiffres décimaux. NOTE Cette notion est différente de celle de l'article 17.06.02 dans la norme ISO/CEI 2382-17.
3.042	ISO/IEC 15944-2: 2006 (3.26)	date	99	ISO 8601 compliant representation of a date in a YYYY-MM-DD format using the Gregorian calendar	date	01	représentation de la date conforme à l'ISO 8601 sous un format AAAA-MM-JJ utilisant le calendrier grégorien
3.043	ISO/IEC 20016-1 (3.043)	declared semantic equivalent (DSE)	99	set of recorded information (SRI) declared suitable for use as a human interface equivalent (HIE) at the applicable semantic interoperability equivalency level (SIEL) in support of semantic interoperability requirements in accordance with external constraints of the applicable jurisdictional domain and the nature and intended purpose of use of the SRI as provided by a Person to an individual	équivalent sémantique déclaré (DSE)	01	ensemble d'information enregistrée (EIE) déclaré comme convenable pour être utilisé comme équivalent d'interface humaine (ÉIH) au niveau d'équivalence d'interopérabilité sémantique (SIEL) à l'appui des exigences en matière d' interopérabilité sémantique conformes à des contraintes externes du domaine juridictionnel applicable et à la nature et au but visé de l'utilisation de l' EIE fournie par une Personne à un individu

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.044	ISO/IEC 15944-5: 2008 (3.42)	de facto language	99	<p>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</p> <p>NOTE 1 A de facto language of a jurisdictional domain is often established through long term use and custom.</p> <p>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.</p>	langue de facto	02	<p>langage naturel utilise dans un domaine juridictionnel qui a les propriétés et comportement d'une langue officielle dans ce domaine juridictionnel sans avoir été formellement déclaré comme telle par ce domaine juridictionnel</p> <p>NOTE 1 Une langue de facto d'un domaine juridictionnel est souvent établie à travers un usage et des coutumes à long terme.</p> <p>NOTE 2 Sauf énoncé explicite contraire et aux fins de modélisation d'une transaction d'affaires à travers un (ou des) scénario(s), attribut(s) de scénario et/ou composantes de scénario, une langue de facto d'un domaine juridictionnel est suppose avoir les mêmes propriétés et comportements qu'une langue officielle.</p>
3.045	ISO 1087-1:2000 (3.3.1)	definition	99	representation of a concept by a descriptive statement which serves to differentiate it from related concepts	définition	02	représentation d'une concept au moyen d'un énoncé descriptif qui sert à la différencier d'autres concept
3.046	ISO 1087-1:2000 (3.4.1)	designation	99	<p>representation of a concept by a sign which denotes it</p> <p>NOTE In terminology work three types of designations are distinguished: symbols, appellations, (a.k.a. names), and terms.</p>	designation	02	<p>représentation d'un concept par un signe qui le dénomme</p> <p>NOTE Dans le travail terminologique, on distingue trois types de désignation les symboles, les appellations (c-à-d des noms) et les termes.</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.047	ISO 5127:2001 (2.2.1.16)	dictionary	99	list of words or a category of words from a language arranged alphabetically or systematically and explained in that language or translated into one or more other languages	dictionnaire	01	liste ou catégorie de mots d'une langue disposés alphabétiquement ou systématiquement et expliqués dans cette langue ou traduits dans une ou plusieurs langues
3.048	ISO/IEC 24751-1: 2008 (3.11)	digital resource (DR)	99	any type of resource that can be transmitted over and/or accessed via an information technology system (IT system) NOTE A digital resource should be referenceable via an unambiguous and stable identifier in a recognized identification system, (e.g., ISBN, ISAN, UPC/EAN, URI, etc.).	ressource numérique (RN)	02	tout type de ressource qui peut être transmis par (ou auquel on peut accéder au moyen d') un système de technologie de l'information (système TI) NOTE On devrait pouvoir faire référence à une ressource numérique grâce à un identificateur stable et non ambigu dans un système d'identification reconnu, (par ex., l'ISBN, l'ISAM, le CUP/NEA, URI, etc.).
3.049	ISO/IEC 24751-1: 2008 (3.12)	digital resource delivery	99	presentation of a digital resource by a display	prestation de ressource numérique	02	présentation d'une ressource numérique par un affichage
3.050	ISO/IEC 24751-1: 2008 (3.13)	disability (in digital resource delivery)	99	any obstacle to the use of a digital resource experienced due to a mismatch between the needs of a user and the digital resource delivered NOTE 1 Disability in an AfA context is not a personal trait but a consequence of the relationship between the user and their resource system.	incapacité (dans la prestation de ressource numérique)	02	tout obstacle à l'utilisation d'une ressource numérique rencontré pour cause de décalage entre les besoins d'un utilisateur et la ressource numérique faisant l'objet de la prestation NOTE 1 L'incapacité dans le contexte de l'APT n'est pas un trait personnel mais une conséquence du rapport entre l'utilisateur et son système de ressource.

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				NOTE 2 In an e-learning context, disability refers to a mismatch between the needs of a learner and both the educational resource and/or the method of delivery.			NOTE 2 Dans un contexte d'e-apprentissage, l'incapacité fait référence à un décalage entre les besoins d'un apprenant, la ressource didactique, et/ou la méthode de prestation.
3.051	ISO/IEC 24751-1:2008 (3.15)	display	99	rendering or presentation of a user interface and/or digital resource in a range of access modes NOTE Access modes include, but are not limited to, visual, auditory, olfactory, textual and tactile.	affichage	01	rendu ou présentation d'une interface-utilisateur et/ou d'une ressource numérique dans une gamme de mode d'accès NOTE Les modes d'accès comprennent (mais ne sont pas limités à ceux-ci) les modes visuel, auditif, textuel et tactile.
3.052	ISO/IEC 24751-1:2008 (3.16)	display transformability	99	characteristic of a digital resource that supports changes to specific aspects of its display NOTE See further the coded domain in ISO/IEC 24751-3 (Annex B.3).	transformabilité de l'affichage	02	caractéristique d'une ressource numérique qui soutient des changements d'aspects spécifiques de son affichage NOTE Voir plus loin le domaine codé dans l'ISO/CEI 24751-3 (Annexe B.3).
3.053	ISO/IEC 24751-1:2008 (3.17)	display transformation (DT)	99	restyling or reconfiguration of the rendering or presentation of a user interface and/or digital resource	transformation de l'affichage (TA)	02	remodelage ou reconfiguration du rendu ou de la présentation d'une interface-utilisateur et/ou d'une ressource numérique
3.054	ISO/IEC 15944-7:2008 (3.06)	eBusiness	99	business transaction , involving the making of commitments , in a defined collaboration space , among Persons using their IT systems , according to Open-edl standards NOTE 1 eBusiness can be conducted on both a for-profit and not-for-profit basis.	eAffaires	02	transaction d'affaires , impliquant la prise des engagements , dans une espace de collaboration , entre Personnes utilisant leurs systèmes TI , par application des normes d'EDI-ouvert NOTE 1 On peut entreprendre des eAffaires dans un but lucratif ou non.

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>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).</p> <p>NOTE 3 eBusiness includes various application areas such as e-commerce, e-administration, e-logistics, e-government, e-medicine, e-learning, etc.</p> <p>NOTE 4 The equivalent French language term for "eBusiness" is always presented in its plural form.</p>			<p>NOTE 2 Une caractéristique clé des eAffaires est l'implication d'engagement(s) de toute(s) sorte(s) entre les Personnes qui poursuivent un but convenu mutuellement et impliquant leurs systèmes TI, et ce faisant, grâce au recours à l'EDI (en utilisant une variété de réseaux de communication dont l'Internet).</p> <p>NOTE 3 Les eAffaires incluent divers secteurs d'applications tels que le «e-commerce» commerce électronique, «e-administration», «e-logistique», «e-gouvernement», «e-medicine», «e-apprentissage», etc.</p> <p>NOTE 4 Le terme français «eAffaires» s'emploie toujours au pluriel.</p>
3.055	ISO/IEC 24751-1: 2008 (3.18)	e-learning	99	learning facilitated by information and communications technology	e-apprentissage	01	apprentissage facilité par la technologie de l'information et des communications
3.056	ISO/IEC 15944-2: 2006 (3.32)	electronic address	99	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	adresse électronique	02	adresse utilisée dans un système d'adressage électronique reconnu (par ex. le téléphone, le télex, l'IP, etc.) à laquelle un Contact peut envoyer ou recevoir un (ou des) article(s) d' information enregistrée et/ou un (ou des) objet(s) d'affaires

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.057	ISO/IEC 14662:2010 (3.8)	Electronic Data Interchange (EDI)	99	<p>automated exchange of any predefined and structured data for business purposes among information systems of two or more Persons</p> <p>NOTE This definition includes all categories of electronic business transactions.</p>	Échange de Données Informatisé (EDI)	01	<p>échange automatisé de données structurées et prédéfinies pour traiter des affaires entre les systèmes d'information de deux ou plusieurs Personnes.</p> <p>NOTE Cette définition inclut toutes les catégories de transactions d'affaires électroniques.</p>
3.058	ISO/IEC 2382-17:1999 (17.02.05)	entity	99	<p>any concrete or abstract thing that exists, did exist, or might exist, including associations among these things</p> <p>EXAMPLE A person, object, event, idea, process, etc.</p> <p>NOTE An entity exists whether data about it are available or not.</p>	entité	02	<p>tout objet ou association d'objets, concret ou abstrait, existant, ayant existé ou pouvant exister</p> <p>EXEMPLE Personne, événement, idée, processus, etc.</p> <p>NOTE Une entité existe que l'on dispose de données à son sujet ou non.</p>
3.059	ISO/IEC 15944-5:2006 (3.49)	exchange code set	99	<p>a set of ID codes identified in a coded domain as being suitable for information exchange as shareable data</p> <p>EXAMPLE The 3 numeric, 2-alpha and 3-alpha code sets in ISO 3166-1.</p>	ensemble de codes d'échange	01	<p>ensemble de codes ID identifié dans un domaine codé comme convenant à l'échange d'information en tant que données partageables</p> <p>EXEMPLE L'ensemble des 3 codes numériques, alphabétiques à 2 lettres et alphabétiques à 3 lettres, dans l'ISO 3166-1.</p>
3.060	ISO/IEC 15944-1:2011 (3.23)	external constraint	99	<p>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</p>	contrainte externe	02	<p>contrainte qui l'emporte sur les contraintes internes dans une transaction d'affaires, c.-à-d. qui est externe à celles convenues entre les parties dans une transaction d'affaires</p>

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>NOTE 1 Normally external constraints are created by law, regulation, orders, treaties, conventions or similar instruments.</p> <p>NOTE 2 Other sources of external constraints are those of a sectorial nature, those which pertain to a particular jurisdiction or a mutually agreed to common business conventions, (e.g., INCOTERMS, exchanges, etc.).</p> <p>NOTE 3 External constraints can apply to the nature of the good, service and/or right provided in a business transaction.</p> <p>NOTE 4 External constraints can demand that a party to a business transaction meet specific requirements of a particular role.</p> <p>EXAMPLE 1 Only a qualified medical doctor may issue a prescription for a controlled drug.</p> <p>EXAMPLE 2 Only an accredited share dealer may place transactions on the New York Stock Exchange.</p> <p>EXAMPLE 3 Hazardous wastes may only be conveyed by a licensed enterprise.</p> <p>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.</p>			<p>NOTE 1 Normalement, les contraintes externes découlent des lois, règlements, décrets, traités, conventions, ou autres instruments semblables.</p> <p>NOTE 2 D'autres sources de contraintes externes sont de nature sectorielle, qui relèvent d'une juridiction particulière, ou de conventions d'affaires convenues mutuellement, (par ex. INCOTERMS, les échanges, etc.).</p> <p>NOTE 3 Des contraintes externes peuvent s'exercer sur la nature des biens, des services, et/ou au droit accordé dans une transaction d'affaires.</p> <p>NOTE 4 Des contraintes externes peuvent exiger qu'une partie dans une transaction d'affaires réponde aux exigences spécifiques d'un rôle.</p> <p>EXEMPLE 1 Seul un médecin diplômé peut prescrire une ordonnance pour un médicament contrôlé.</p> <p>EXEMPLE 2 Seul un courtier en actions accrédité peut effectuer des transactions à la bourse de New York.</p> <p>EXEMPLE 3 Seule une entreprise attitrée peut transporter des déchets dangereux.</p> <p>NOTE 5 Lorsque les faisceaux d'information, y compris leurs composantes sémantiques, d'une transaction d'affaires constituent l'ensemble d'une transaction d'affaires (par ex. à des fins juridiques ou comptables), toutes les contraintes doivent être enregistrées.</p>

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>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".</p> <p>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".</p>			<p>EXEMPLE Il peut exister une exigence juridique ou comptable de conserver la totalité des documents enregistrés relatifs à une transaction d'affaires, c.-à-d. les faisceaux d'information échangés, comme un «enregistrement».</p> <p>NOTE 6 Une contrainte externe minimum applicable à une transaction d'affaires exige souvent de distinguer si une Personne, c.-à-d. une partie dans une transaction d'affaires, est un «individu», une «organisation» ou une «administration publique». Par ex., les droits de protection de la vie privée ne s'appliquent qu'à une Personne en tant qu'«individu».</p>
3.061	ISO/IEC 14662:2010 (3.9)	Formal Description Technique (FDT)	99	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)	Technique de description formelle (FDT)	02	méthode de spécification fondée sur un langage de spécification faisant appel à des règles rigoureuses et non ambiguës tant pour le développement d'expressions dans le langage (syntaxe formelle) que pour l'interprétation de la signification de ces expressions (sémantique formelle)
3.062	ISO/IEC 14662:2010 (3.10)	Functional Service View (FSV)	99	perspective of business transactions limited to those information technology interoperability aspects of IT systems needed to support the execution of Open-edl transactions	Vue fonctionnelle des services (FSV)	02	vue perspective sur les transactions d'affaires , restreinte à ceux des aspects relatifs au fonctionnement informatique coopératif entre systèmes d'information qui sont nécessaires à l'exécution des transactions d'EDI-ouvert

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.063	ISO/IEC TR 15285:1998 (3.5)	glyph	99	recognizable abstract graphic symbol which is independent of any specific design	glyphe	01	symbole graphique abstrait reconnaissable qui est indépendant de toute conception spécifique
3.064	ISO 12620:2009 (E) (A.2.2.2)	grammatical gender	99	<p>grammatical category that indicates grammatical relationships between words in sentences</p> <p>NOTE The concept of gender varies from language to language and is not a universal feature of all languages.</p> <p>EXAMPLE In French, <i>vie</i> (life) is feminine and is used with feminine articles such as <i>la</i>, the feminine pronoun <i>elle</i>, and feminine adjective endings, (e.g., <i>une vie longue</i>).</p> <p>PERMISSIBLE INSTANCES Types of grammatical gender commonly documented in terminology databases include: (a) masculine, (b) feminine; (c) neuter; (d) other.</p>	genre grammatical	01	<p>catégorie grammaticale indiquant les rapports grammaticaux entre les mots dans les phrases</p> <p>NOTE Le concept de genre varie d'une langue à l'autre et n'est pas une caractéristique universelle de toutes les langues.</p> <p>EXEMPLE En français, «<i>vie</i>» (life) est féminin, est s'emploie avec l'article féminin «<i>la</i>», le pronom féminin «<i>elle</i>» et des terminaisons adjectivales féminines (par ex. <i>une vie longue</i>).</p> <p>EXEMPLES PERMIS Les types de genre grammatical communément documentés dans les bases de données terminologiques comprennent (a) le masculin, (b) le féminin, (c) le neutre, et (d) autre.</p>
3.065	ISO 1087-1:2000 (3.4.25)	homonymy	99	<p>relation between designations and concepts in a given language in which one designation represents two or more unrelated concepts</p> <p>NOTE 1 An example of homonymy is: bark (1) "sound made by a dog"; (2) "outside covering of the stem of woody plants"; (3) "sailing vessel".</p> <p>NOTE 2 The designations in the relation of homonymy are called <i>homonyms</i>.</p>	homonymie	02	<p>relation entre désignation et concept dans une langue donnée dans laquelle une désignation représente deux concepts ou plus sans rapport entre eux</p> <p>NOTE 1 Exemple d'homonymie: pêche (1) fruit; (2) prise de poissons.</p> <p>NOTE 2 Dans une relation d'homonymie, les désignations sont appelées <i>homonymes</i>.</p>

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.066	ISO/IEC 20016-1 (3.065)	HIE identifier (HIE-ID)	99	composite identifier assigned to the human interface equivalents (HIEs) of the semantic component , in whatever presentation format, which is capable of being used by any individual , from a semantic interoperability perspective, in support of being able to exercise his/her rights with respect to (1) the provision of recorded information ; (2) decision-taking; and/or, (3) commitment-making in compliance of the rights of that individual in compliance with the requirements of the <i>UN Convention on the Rights of Persons with Disabilities</i>	identificateur HIE (HIE-ID)	01	identificateur composite attribué aux équivalents d'interface humaine (ÉIH) de la composante sémantique , sous n'importe quel format de présentation, capable d'être utilisé par n'importe quel individu du point de vue de l' interopérabilité sémantique , à l'appui de la capacité de pouvoir exercer ses droits concernant (1) la disposition d' information enregistrée ; (2) la prise de décision et/ou (3) la prise d'engagement conformément aux droits de cet individu stipulés dans la <i>Convention des nations unies relative aux droits des personnes handicapées</i>
3.067	ISO/IEC 15944-2: 2006 (3.35)	Human Interface Equivalent (HIE)	99	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.	Équivalent d'Interface humaine (ÉIH)	01	représentation de la sémantique non-ambigüe et habilitée TI d'un équivalent interface TI (dans une transaction d'affaires), souvent le code ID d'un domaine codé (ou d'un identificateur composite), d'une manière formalisée qui convient à la communication et qui est compréhensible par les humains NOTE 1 Les Équivalents d'Interface humaine peuvent être de nature linguistique ou non, mais leur sémantique reste la même bien que leurs représentations puissent varier.

IT-Interface		Human Interface Equivalent (HIE) Components					
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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>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.</p> <p>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.).</p>			<p>NOTE 2 Dans la plupart des cas, il y aura des représentations d'Équivalents d'Interface humaine multiples selon les besoins pour répondre aux exigences en matière de localisation, c.-à-d. ceux de nature linguistique, juridictionnelle et/ou sectorielle.</p> <p>NOTE 3 Les Équivalents d'Interface humaine comprennent les représentations sous formes et formats différents (par ex. en plus du texte écrit, l'audio, les symboles, les icônes, les glyphes, les images, etc.).</p>
3.068	ISO/IEC 15944-2: 2006 (3.37)	ID Code	99	<p>identifiant assigned by the coded domain Source Authority (cdSA) to a member of a coded domain ID</p> <p>NOTE 1 ID codes must be unique within the Registration Schema of that coded domain.</p> <p>NOTE 2 Associated with an ID code in a coded domain can be: (a) one or more equivalent codes; (b) one or more equivalent representations, especially those in the form of human equivalent (linguistic) expressions.</p> <p>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.</p>	code ID	01	<p>identificateur attribué par l'Autorité de source du domaine codé (cdSA) à un membre d'une ID de domaine codé</p> <p>NOTE 1 Les codes ID doivent être uniques dans le Schéma d'enregistrement de ce domaine codé.</p> <p>NOTE 2 On peut rattacher à un code ID dans un domaine codé : (a) un ou plusieurs codes équivalents, (b) une ou plusieurs représentations équivalentes; en particulier ceux et celles qui sont sous forme d'expressions (linguistiques) équivalentes humaines.</p> <p>NOTE 3 Lorsque l'on permet à une entité en tant que membre d'un domaine codé d'avoir plus d'un code ID, c.-à-d. comme codes équivalents, l'un de ces codes doit être spécifié comme code ID pivot.</p>

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Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>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.</p> <p>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".</p> <p>NOTE 5 In UML modeling notation, an ID codes is viewed as an instance of an object class.</p>			<p>NOTE 4 Un domaine codé peut contenir des codes ID relatifs aux entités qui ne sont pas membres à titre d'entités paires, c.-à-d. ont les mêmes propriétés et comportements, tels que les codes ID relatifs à des conditions prédéfinies autres que celles des entités membres. Dans ce cas, les règles régissant de telles exceptions doivent être prédéfinies et énoncées explicitement.</p> <p>EXEMPLE Comme exemples communs, on trouve: (1) l'utilisation d'un code ID «0» (ou «00», etc.) pour «Autres»; l'utilisation d'un code ID «9» (ou «99») pour «Sans objet»; l'utilisation du «8» (ou «88») pour «non connu»; et/ou, si nécessaire, (4) la pré réservation d'une série ou d'ensemble de codes ID pour usage dans les «extensions utilisateur».</p> <p>NOTE 5 Dans la notation de modélisation UML, un code ID est considéré comme instance de classe d'objet.</p>
3.069	ISO/IEC 15944-1: 2011 (3.26)	identification	99	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	identification	02	processus basé sur des règles , énoncées explicitement, impliquant l'utilisation d'un ou plusieurs attributs , c.-à-d. des éléments de données , dont la valeur (ou une combinaison de valeurs) sert à identifier de façon unique l'occurrence ou l'existence d'une entité spécifiée

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.070	ISO/IEC 15944-1: 2011 (3.27)	identifier (in business transaction)	99	<p>unambiguous, unique and a linguistically neutral value, resulting from the application of a rule-based identification process</p> <p>NOTE 1 Identifiers must be unique within the identification scheme of the issuing authority.</p> <p>NOTE 2 An identifier is a linguistically independent sequence of characters capable of uniquely and permanently identifying that with which it is associated. {See ISO 19135:2005 (4.1.5)}</p>	identificateur (transaction d'affaires)	01	<p>valeur non-ambiguë et linguistiquement neutre, résultant de l'application d'un processus d'identification à base de règles</p> <p>NOTE 1 Les identificateurs doivent être uniques dans le système d'identification de l'autorité émettrice.</p> <p>NOTE 2 Un identificateur est une séquence de caractères linguistiquement indépendante capable d'identifier de façon unique et permanente ce à quoi il est associé. {voir ISO 19135:2005 (4.1.5)}</p>
3.071	ISO/IEC 2382-1: 1993 (01.05.10)	indexing language	99	artificial language established to characterize the content or form of a document	langage d'indexation	01	langage artificiel établi pour caractériser le contenu ou la forme d'un document
3.072	ISO/IEC 15944-1: 2011 (3.28)	individual	99	Person who is a human being, i.e., a natural person, who acts as a distinct indivisible entity or is considered as such	individu	01	Personne qui est un être humain, c.-à-d. une personne physique, qui agit à titre d' entité indivisible distincte ou qui est considérée comme telle
3.073	ISO/IEC 15944-5: 2008 (3.60)	individual accessibility	99	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	accessibilité individuelle	02	ensemble de contraintes externes d'un domaine juridictionnel comme droits d'un individu atteint de déficience d'être capable d'utiliser des systèmes TI au niveau de l'interface humaine, c.-à-d. utilisateur, et l'obligation concomitante d'un vendeur d'offrir ce type de technologies adaptatives

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>NOTE Although “accessibility” typically addresses users who have a disability, the concept is not limited to disability issues.</p> <p>EXAMPLE Examples of disabilities in the form of functional and cognitive limitations include:</p> <ul style="list-style-type: none"> - people who are blind; - people with low vision; - people with colour blindness; - people who are hard of hearing or deaf, i.e., are hearing impaired; - people with physical disabilities; - people with language or cognitive disabilities. 			<p>NOTE Bien que l’«accessibilité» s’adresse typiquement aux utilisateurs qui ont une déficience, le concept ne se limite pas aux questions de déficience.</p> <p>EXEMPLE Comme exemples de déficiences sous formes de limitations fonctionnelles et cognitives, on trouve:</p> <ul style="list-style-type: none"> - les personnes aveugles; - les personnes à basse vision; - les personnes atteintes d’achromatopsie; - les personnes sourdes ou ayant une déficience auditive; - les personnes atteintes de déficience physique; - les personnes atteintes de déficience linguistique ou cognitive.
3.074	ISO/IEC 24751-1: 2008 (3.21)	individualized accessibility (in e-learning)	99	<p>facility of an IT system based learning environment to address the needs of an individual as learner (through adaptation, re-aggregation and substitution)</p> <p>NOTE Accessibility is determined by the flexibility of the education environment (with respect to presentation, control methods, structure, access mode, and learner supports) and the availability of equivalent content deemed to be adequate alternatives.</p>	accessibilité individualisée (en l’e-apprentissage)	02	<p>facilité qu’a un environnement d’apprentissage, basé sur un système TI, de répondre aux besoins d’un individu à titre d’apprenant grâce à l’adaptation, la ré-agrégation et la substitution</p> <p>NOTE L’accessibilité est déterminée par la souplesse de l’environnement didactique (en ce qui concerne la présentation, les méthodes de contrôle, la structure, le mode d’accès et les soutiens de l’apprenant) et la disponibilité du contenu équivalent jugés comme étant des substituts adéquats.</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.075	ISO/IEC 20016-1 (3.075)	individual user	99	individual who has the right to require that the contents of any information exchange with a content provider , i.e., as a set(s) of recorded information (SRIs) be provided unambiguously at the appropriate level of unambiguity in the preferred HIE to be made available	utilisateur individuel	01	individu qui a le droit d'exiger que le contenu de tout échange d'information avec un fournisseur de contenu , c.-à.-d comme ensemble(s) d'information enregistrée (EIE) , soit offert sans ambiguïté au niveau approprié de non-ambiguïté de l' ÉIH préféré qui est rendu disponible
3.076	ISO/IEC 15944-8: 2012 (3.62)	information law	99	any law, regulation, policy, or code (or any part thereof) that requires the creation, receipt, collection, description or listing, production, retrieval, submission, retention, storage, preservation or destruction of recorded information , and/or that places conditions on the access and use, confidentiality, privacy, integrity, accountabilities, continuity and availability of processing, reproduction, distribution, transmission, sale, sharing or other handling of recorded information	droit de l'information	01	toute loi, règlement, politique ou code (ou partie de ceux-ci) qui exige la création, la réception, la collecte, la description ou le listage, la production, l'extraction, la soumission, la rétention, le stockage, la préservation ou la destruction de l'information enregistrée , et/ou qui impose des conditions à l'accès, à l'utilisation, à la confidentialité, à la protection de la vie privée, à l'intégrité, aux responsabilités, à la continuité et à la disponibilité du traitement, de la reproduction, de la distribution, de la transmission, de la vente, du partage ou tout autre manipulation de l'information enregistrée

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.077	ISO/IEC 14662:2010 (3.13)	Information Technology System (IT System)	99	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	système d'information (IT System)	01	ensemble constitué d'un ou de plusieurs ordinateurs, avec leurs logiciels associés, de périphériques, de terminaux, d'opérateurs humains, de processus physiques et de moyens de transfert d'information, formant un tout autonome capable de traiter l'information et/ou de la transmettre
3.078	ISO/IEC 24751-1: 2008 (3.23)	intellectual content	99	recorded information of a digital resource independent of its representation and/or access mode	contenu intellectuel	01	Information enregistrée d'une ressource numérique indépendante de sa représentation et/ou de son mode d'accès
3.079	ISO/IEC 15944-1: 2011 (3.33)	internal constraint	99	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.	contrainte interne	02	contrainte qui fait partie de l' engagement convenu mutuellement entre les parties d'une transaction d'affaires NOTE Les contraintes internes sont volontaires. Elles présentent une vue simplifiée de modélisation et de réutilisation des composantes de scénario d'une transaction d'affaires sans contraintes ou restrictions externes quant à la conduite d'une transaction d'affaires autres que celles convenues mutuellement entre l'acheteur et le vendeur.
3.080	ISO/IEC TR 14252: 1996 (2.2.2.21)	interoperability	99	ability of two or more IT systems to exchange information and to make mutual use of the information that has been exchanged	interopérabilité	02	capacité d'au moins deux systèmes TI à échanger de l'information et à utiliser mutuellement l'information échangée

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.081	ISO/IEC 15944-5: 2008 (3.65)	IT-enablement	99	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	habilitation TI	02	transformation des normes actuelles utilisées dans le transaction d'affaires (par exemple, les domaines codés) de mode manuel en mode informatique, afin de pouvoir assurer un échange d' engagements et une intégrité informatique
3.082	ISO/IEC 15944-2: 2006 (3.48)	IT interface equivalent	99	<p>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</p> <p>NOTE 1 IT interface equivalents have the properties of identifiers (in business transaction) and are used to support semantic interoperability in commitment exchange.</p> <p>NOTE 2 The value of an IT interface equivalent at times is a composite identifier.</p> <p>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.</p> <p>NOTE 4 An IT interface equivalent is at times used as a semantic identifier.</p>	équivalent d'interface TI	02	<p>identification informatisable des sémantiques non-ambigües d'un scénario, d'un attribut de scénario et/ou de composante(s) de scénario concernant un échange d'engagements dans une transaction d'affaires qui soutient l'intégrité computationnelle</p> <p>NOTE 1 Les équivalents d'interface IT ont les propriétés d'identificateurs (dans une transaction d'affaires) et sont utilisés pour soutenir l'interopérabilité sémantique dans l'échange d'engagements.</p> <p>NOTE 2 La valeur d'un équivalent d'interface IT est parfois un identificateur composite.</p> <p>NOTE 3 Un équivalent d'interface IT en tant qu'identificateur composite peut se composer de l'identificateur d'un domaine codé plus un code ID de ce domaine codé.</p> <p>NOTE 4 Un équivalent d'interface IT est parfois utilisé comme identificateur sémantique.</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>NOTE 5 An IT interface equivalent may have associated with it one or more Human Interface Equivalents (HIEs).</p> <p>NOTE 6 The value of an IT Interface is independent of its encoding in programming languages or APIs.</p>			<p>NOTE 5 Un équivalent d'interface IT peut être rattaché à un ou plusieurs Équivalents d'interface humaine (HIE).</p> <p>NOTE 6 La valeur d'un équivalent d'interface IT est indépendante de son codage dans les langages de programmation ou des API.</p>
3.083	ISO/IEC 15944-5: 2008 (3.67)	jurisdictional domain	99	<p>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</p> <p>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.</p> <p>NOTE 2 Jurisdictional domains can combine to form new jurisdictional domains, (e.g., through bilateral, multilateral and/or international treaties).</p>	domaine juridictionnel	01	<p>jurisdiction, reconnue par la loi comme cadre juridique distinct et/ou de réglementation, qui est une source de contraintes externes pour les Personnes, leur comportement et la prise d'engagements entre les Personnes, y compris tout aspect d'une transaction d'affaires</p> <p>NOTE 1 Le domaine juridictionnel pivot est un état membre reconnu par les Nations unies (ONU). Dans une perspective juridique et de souveraineté, tous les états sont considérés comme des entités «paires». Chaque état membre de l'ONU (alias pays) peut avoir des subdivisions administratives comme domaines juridictionnels reconnus (par ex. provinces, territoires, cantons, länder, etc.), tel que décidé par cet état membre de l'ONU.</p> <p>NOTE 2 Des domaines juridictionnels peuvent être combinés pour former de nouveaux domaines juridictionnels (par ex., grâce à des traités bilatéraux, multilatéraux et/ou internationaux).</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>EXAMPLES Included here, for example, are the European Union (EU), NAFTA, WTO, WCO, ICAO, WHO, Red Cross, the ISO, the IEC, the ITU, etc.</p> <p>NOTE 3 Several levels and categories of jurisdictional domains may exist within a jurisdictional domain.</p> <p>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 includes monetary values.</p> <p>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.</p>			<p>EXEMPLES l'Union européenne (UE), l'ALENA, l'OMC, l'OMD, l'OACI, l'OMS, la Croix-Rouge, l'ISO, la CEI, l'UIT, etc.</p> <p>NOTE 3 Plusieurs niveaux et catégories de domaines juridictionnels peuvent exister à l'intérieur d'un domaine juridictionnel.</p> <p>NOTE 4 Un domaine juridictionnel peut avoir des répercussions sur des aspects des engagements pris dans le cadre de transactions d'affaires, y compris celles qui ont trait à la fabrication, la dispensation, la vente et le transfert de biens, de services et/ou de droits (et des responsabilités qui en résultent), et l'information connexe. Ceci indépendamment du fait que de tels échanges d'engagements peuvent s'effectuer dans un (ou sans) but lucratif et/ou inclure des valeurs monétaires.</p> <p>NOTE 5 Les lois, règlements, directives, etc., promulgués par un domaine juridictionnel sont considérés comme faisant partie de ce domaine juridictionnel et sont les sources principales de contraintes externes exercées sur les transactions d'affaires.</p>
3.084	ISO/IEC 15944-2: 2008 (3.47)	jurisdictional domain identifier	99	ID code of a jurisdictional domain as recognized for use by peer jurisdictional domains within a system of mutual recognition	identificateur de domaine juridictionnel	01	code ID d'un domaine juridictionnel reconnu pour utilisation par des domaines juridictionnels pairs dans un système de reconnaissance mutuelle

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.085	ISO 5127:2001 (1.1.2.01)	language	99	<p>system of signs for communication, usually consisting of a vocabulary and rules</p> <p>NOTE In this standard, language refers to natural languages or special languages, but not "programming languages" or "artificial languages".</p>	langue	02	<p>système de signes de communication compose habituellement d'un vocabulaire et de règles</p> <p>NOTE Dans la présente norme, la langue se réfère aux langues naturelles ou aux langues de spécialité, mais pas aux « langages de programmation » ou « langages artificiels ».</p>
3.086	ISO/IEC 20016-1 (3.086)	language (in accessibility)	99	<p>system of signs for communication, usually consisting of a vocabulary and rules</p> <p>NOTE 1 In this standard, language refers to natural languages or special languages, but not "programming languages" or "artificial languages".</p> <p>NOTE 2 In this standard, language includes spoken and signed languages and other forms of non-spoken languages.</p> <p>NOTE 3 Adapted from ISO 5127-1.</p>	langue (en contexte d'accessibilité)	02	<p>système de signes pour la communication, généralement constitué d'un vocabulaire et de règles</p> <p>NOTE 1 Dans la présente norme, la langue se réfère aux langues naturelles ou de spécialité, mais pas aux « langages de programmation » ou aux « langages artificiels ».</p> <p>NOTE 2 Dans la présente norme, la langue inclut les langues parlées, les langages par signe et les autres formes de langage non parlés.</p> <p>NOTE 3 Adapté de l'ISO 5127-1.</p>
3.087	ISO 639-2:1998 (3.2)	language code	99	<p>combination of characters used to represent a language or languages</p> <p>NOTE In this multipart ISO/IEC 24751 standard, the ISO 639-2/T (terminology) three alpha-code, shall be used.</p>	codet de langue	01	<p>combinaison de caractères utilisées pour représenter une langue ou des langues</p> <p>NOTE Dans la présente norme multiparties ISO/IEC 24751, le code alpha trois de l'ISO 639-2/T (terminologie) doit être utilisé.</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.088	ISO/IEC 15944-5: 2008 (3.71)	legally recognized language (LRL)	99	<p>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)</p> <p>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).</p> <p>EXAMPLE In addition to acts and regulations, legal instruments include self-government agreements, land claim settlements, court decisions, jurisprudence, etc.</p>	langue reconnue légalement (LRL)	01	<p>langage naturel ayant le statut (autre que celui de langue officielle ou de langue de facto) dans un domaine juridictionnel tel qu'énoncé dans une loi, un règlement ou tout autre instrument légal, qui accorde à une communauté de personnes (ou à ses individus) le droit d'utiliser ce langage naturel dans le contexte stipulé par l'(ou les) instrument(s) léga(ux)</p> <p>NOTE La langue reconnue légalement peut être spécifiée (a) soit par l'identification d'une langue par son nom utilisé; ou, (b) soit par l'identification d'un peuple et ainsi de sa (ou ses) langue(s).</p> <p>EXEMPLE En plus des lois et règlements, les instruments légaux comprennent les ententes d'autonomie gouvernementale, les règlements en matière de revendication territoriale, les décisions de tribunal, la jurisprudence, etc.</p>
3.089	ISO/IEC 20016-1 (3.089)	LET language (LET-L)	99	<p>legally recognized language (LRL) in LET context as the language of instruction (LOI) in a LET context</p> <p>NOTE A LET-L may exist at any level of a jurisdictional domain. This can be at the level of (1) an international regulatory regime; {See Annex H (informative) in ISO/IEC 15944-5:2009}; (2) a UN</p>	langue d'AÉF (LET-L)	02	<p>langue reconnue légalement (LRL) en contexte d'AÉF comme langue d'instruction (LOI) en contexte d'AÉF</p> <p>NOTE Une LET-L peut exister à n'importe quel niveau d'un domaine juridictionnel: au niveau (1) d'un régime de réglementation internationale {Voir Annexe H (informative) dans</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>member state {See Annex E (informative) Codes representing UN member states and their official or de facto} languages; (3) an administrative unit of a UN member state (as identified in ISO 3166-2); (4) any additional sub-level of any administrative unit of a UN member state functional as a jurisdictional domain.</p> <p>EXAMPLE Examples here include local school boards, LET providers, use of LOI in support of treaty obligations (similar types of agreements) with aboriginal peoples with respect to use of one or more of their languages as a language of instruction which has LRL status.</p>			<p>l'ISO/CEI 15944-5:2009}; (2) un état membre de l'ONU {Voir Annexe E (informative) Codes représentant les états membres de l'ONU et leur langue(s) officielle(s) ou de facto }; (3) une unité administrative d'un état membre de l'ONU (tel qu'identifié dans l'ISO 3166-2); (4) tout sous-niveau supplémentaire de n'importe quelle unité administrative d'un état membre de l'ONU comme domaine juridictionnel.</p> <p>EXEMPLE Commissions scolaires locales, fournisseurs d'AÉF, fournisseurs de LOI à l'appui d'obligations de traités (ou de types d'accord semblables) avec les peuples autochtones concernant l'utilisation d'une ou plusieurs de leurs langues comme langue d'instruction qui ont le statut de LRL.</p>
3.090	ISO/IEC 2382-4: 1999 (04.08.01)	list	99	ordered set of data elements	liste	02	ensemble d'éléments de donnée dont l'ordre est défini
3.091	ISO/IEC 15944-5: 2008 (3.75)	localization	99	<p>pertaining to or concerned with anything that is not global and is bound through specified sets of constraints of:</p> <p>(a) a linguistic nature including natural and special languages and associated multilingual requirements;</p> <p>(b) jurisdictional nature, i.e., legal, regulatory, geopolitical, etc.;</p>	localisation	02	<p>se rapportant à ou concernant tout ce qui n'est pas mondial et est lié par une série de contraintes particuliers:</p> <p>(a) une nature linguistique comprenant les langues naturelles et spéciales ainsi que les exigences multilingues connexes;</p> <p>(b) une nature juridique, par exemple légale, de réglementation, géopolitique, etc.;</p>

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>(c) a sectorial nature, i.e., industry sector, scientific, professional, etc.;</p> <p>(d) a human rights nature, i.e., privacy, disabled/handicapped persons, etc.;</p> <p>(e) consumer behaviour requirements; and/or</p> <p>(f) safety or health requirements.</p> <p>Within and among "locales", interoperability and harmonization objectives also apply</p>			<p>(c) une nature sectorielle, par exemple, par exemple le secteur industriel, scientifique, professionnel, etc.;</p> <p>(d) une nature des droits de la personne, par exemple le respect de la vie privée, les handicapés, etc.;</p> <p>(e) les exigences en matière de comportement des consommateurs; et/ou;</p> <p>(f) les exigences en matière de sécurité et de santé.</p> <p>Des objectifs d'interopérabilité et d'harmonisation s'appliquent également à la localisation</p>
3.092	ISO/IEC 15944-2: 2006 (3.50)	location	99	place, either physical or electronic, that can be defined as an address	emplacement	01	lieu, physique ou électronique, pouvant être défini par une adresse
3.093	ISO/IEC 15944-1: 2011 (3.34)	medium	99	physical material which serves as a functional unit, in or on which information or data is normally recorded, in which information or data can be retained and carried, from which information or data can be retrieved, and which is non-volatile in nature	support	01	matériel physique qui sert d'unité fonctionnelle, et dans lequel ou sur lequel l'information ou les données sont normalement stockées, dans lequel de l'information ou des données peuvent être retenues et transportées, à partir duquel de l'information ou des données peuvent être extraites, et qui est non-volatile par nature

IT-Interface		Human Interface Equivalent (HIE) Components					
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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>NOTE 1 This definition is independent of the material nature on which the information is recorded and/or technology used to record the information, (e.g., paper, photographic, (chemical), magnetic, optical, ICs (integrated circuits), as well as other categories no longer in common use such as vellum, parchment (and other animal skins), plastics, (e.g., bakelite or vinyl), textiles, (e.g., linen, canvas), metals, etc.).</p> <p>NOTE 2 The inclusion of the "non-volatile in nature" attribute is to cover latency and records retention requirements.</p> <p>NOTE 3 This definition of "medium" is independent of: i) form or format of recorded information; ii) physical dimension and/or size; and, iii) any container or housing that is physically separate from material being housed and without which the medium can remain a functional unit.</p> <p>NOTE 4 This definition of "medium" also captures and integrates the following key properties: i) the property of medium as a material in or on which information or data can be recorded and retrieved; ii) the property of storage; iii) the property of physical carrier; iv) the property of physical manifestation, i.e., material; v) the property of a functional unit; and, vi) the property of (some degree of) stability of the material in or on which the information or data is recorded.</p>			<p>NOTE 1 Cette définition est indépendante de la nature matérielle sur laquelle l'information est enregistrée et/ou de la technologie utilisée pour enregistrer l'information (par exemple du papier, des supports photographiques (chimiques), magnétiques, optiques, des circuits imprimés, ainsi que d'autres catégories qui ne sont plus utilisées de façon courante telles que le vélin, le parchemin (et autres peaux animales), les plastiques (par exemple la bakélite ou le vinyl), les textiles (par exemple le lin et la toile), les métaux, etc.</p> <p>NOTE 2 L'inclusion de l'attribut «nature non-volatile» couvre les exigences en matière de latence et de rétention des dossiers.</p> <p>NOTE 3 La définition de «support» est indépendante des éléments suivants: i) la forme ou le format de l'information enregistrée; ii) la dimension physique et/ou la taille; et, iii) tout conteneur ou boîtier qui est séparé physiquement du matériel logé et sans lequel le support peut demeurer une unité fonctionnelle.</p> <p>NOTE 4 La définition de «support» reflète et intègre aussi les propriétés clés suivantes: i) propriété du support comme matériel dans ou sur lequel de l'information ou des données peuvent être stockées et extraites; ii) la propriété du stockage; iii) la propriété du porteur physique; iv) la propriété de la manifestation physique, par exemple le matériel; v) la propriété d'une unité</p>

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
							fonctionnelle; et, vi) la propriété (jusqu'à un certain degré) de la stabilité du matériel dans ou sur lequel l'information ou les données sont stockées.
3.094	ISO/IEC 2382-17:1999 (17.06.05)	metadata	99	data about data elements , including their data descriptions, and data about data ownership, access paths, access rights and data volatility	métadonnée	02	donnée au sujet d' élément de données , y compris leurs descriptions de données , ou donnée au sujet de la propriété des données , des chemins d'accès, des droits d'accès et de la volatilité des données
3.095	ISO 19115:2003 (4.9)	model	99	abstraction of some aspect of reality	modèle	01	abstraction de certains aspects de la réalité
3.096	ISO/IEC 15944-5:2008 (3.82)	multilingualism	99	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	multilinguisme	01	capacité de supporter non seulement les jeux de caractères particuliers à une langue naturelle (ou une famille de langues ainsi que les règles connexes, mais aussi les exigences en matière de localisation , par ex. l'utilisation d'une langue dans une perspective de domaine juridique , sectorielle et/ou de marché du consommateur
3.097	ISO 5127:2001 (1.1.2.13)	name	99	designation of an object by a linguistic expression	nom	01	désignation d'un objet par une unité linguistique
3.098	ISO 5127:2001 (1.1.2.02)	natural language	99	language which is or was in active use in a community of people, and the rules of which are mainly deduced from the usage	langage naturel	01	langage qui est ou était pratiqué dans une communauté de personnes et règles qui sont essentiellement déduites de son usage

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.099	ISO 1087-1:2000 (3.1.1)	object	99	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).	objet	01	tout ce qui peut être perçu ou conçu NOTE Les objets peuvent être matériels (par exemple un moteur, une feuille de papier, un diamant), immatériels (par exemple un rapport de conversion, un plan de projet) ou imaginaires (par exemple une licorne).
3.100	ISO/IEC 11179-1:2004 (3.3.22)	object class	99	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	classe d'objets	02	ensemble d'idées, d'abstractions ou de choses du monde réel qui peuvent être identifiées avec des limites et une signification explicites et dont les propriétés et le comportement suivent les mêmes règles
3.101	ISO/IEC 15944-5:2006 (3.87)	official language	99	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	langue officielle	02	contrainte externe sous forme de langage naturel spécifié par un domaine juridictionnel pour usage officiel par des Personnes faisant partie ou sujettes de ce domaine juridictionnel dans la (ou les) ommunication(s) soit (1) à l'intérieur de ce domaine juridictionnel , soit (2) entre ces Personnes , lorsque ces communications sont une information enregistrée impliquant un (ou des) engagement(s) NOTE 1 Sauf exigence contraire concernant une langue officielle, les Personnes sont libres de choisir leur langage naturel mutuellement acceptable

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>special language for communications as well as exchange of commitments.</p> <p>NOTE 2 A jurisdictional domain decides whether or not it has an official language. If not, it will have a de facto language.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>EXAMPLE 1 The spoken language of use of an official language may at times have more than one writing system. For example, three writing</p>			<p>et/ou leur langue de spécialité dans les communications et l'échange d'engagements.</p> <p>NOTE 2 Un domaine juridictionnel décide s'il dispose d'une langue officielle. Dans le cas contraire, il disposera d'une langue de facto.</p> <p>NOTE 3 Une (ou des) langue(s) officielle(s) peut (ou peuvent) être exigée(s) dans les communications officielles et la disposition de biens et de services aux Personnes sujettes de ce domaine juridictionnel et dans le(s) système(s) juridique(s) et autre(s) système(s) de résolution de conflit de ce domaine juridictionnel, etc.</p> <p>NOTE 4 S'il y a lieu, l'utilisation d'une langue officielle peut être exigée dans l'exercice de droits et d'obligations des individus de ce domaine juridictionnel.</p> <p>NOTE 5 Lorsqu'une langue officielle d'un domaine juridictionnel dispose d'un vocabulaire contrôlé de la nature d'une terminologie, elle peut très bien avoir les caractéristiques d'une langue de spécialité. Dans de tels cas, la terminologie à utiliser doit être spécifiée.</p> <p>NOTE 6 En ce qui concerne une langue officielle, le(s) système(s) d'écriture à utiliser doit(doivent) être spécifié(s) lorsque l'usage parlé d'un langage naturel a plus d'un système d'écriture.</p> <p>EXEMPLE 1 La langue parlée d'une langue</p>

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>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.</p> <p>EXAMPLE 2 Another example is that of Norway which has two official writing systems, both Latin-1 based, namely, Bokmål (Dano-Norwegian) and Nynorsk (New Norwegian).</p> <p>NOTE 7 A jurisdictional domain may have more than one official language but these may or may not have equal status.</p> <p>EXAMPLE Canada has two official languages, Switzerland has three, while the Union of South Africa has eleven official languages.</p> <p>NOTE 8 The BOV requirement of the use of a specified language will place that requirement on any FSV supporting service.</p> <p>EXAMPLE A BOV requirement of Arabic, Chinese, Russian, Japanese, Korean, etc., as an official language requires the FSV support service to be able to handle the associated character sets.</p>			<p>officielle peut parfois avoir plus d'un système d'écriture. L'Inuktitut, par ex., a trois systèmes d'écriture. Le Canada utilise deux de ces systèmes d'écriture, notamment l'alphabet latin-1 (romain) et l'alphabet syllabique. Le troisième est utilisé en Russie et est basé sur des caractères cyrilliques.</p> <p>EXEMPLE 2 Un autre exemple est celui de la Norvège qui a deux systèmes d'écriture officiels, tous les deux basés sur l'alphabet latin-1 : le Bokmål (Dano-Norvégien) et le Nynorsk (Nouveau Norvégien).</p> <p>NOTE 7 Un domaine juridictionnel peut avoir plusieurs langues officielles</p> <p>EXEMPLE le Canada a deux langues officielles, la Suisse trois et l'Afrique du Sud onze.</p> <p>NOTE 8 L'exigence BOV concernant l'usage d'une langue spécifique s'applique également à tout service de soutien FSV.</p> <p>EXEMPLE Une exigence BOV pour l'arabe, le chinois, le russe, le japonais, le coréen, etc. comme langue officielle exige que le service de soutien FSV soit capable de soutenir les jeux de caractères associés.</p>
3.102	ISO/IEC 14662:2010 (3.14)	Open-edi	99	electronic data interchange among multiple autonomous Persons to accomplish an explicitly shared business goal according to Open-edi standards	EDI-ouvert	01	échange de données informatisé par application des normes d'EDI-ouvert entre plusieurs Personnes autonomes visant un objectif d'affaires explicitement partagé

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.103	ISO/IEC 6523-1: 1998 (3.1)	organization	99	<p>unique framework of authority within which a person or persons act, or are designated to act, towards some purpose</p> <p>NOTE The kinds of organizations covered by this International Standard include the following examples:</p> <p>EXAMPLE 1 An organization incorporated under law.</p> <p>EXAMPLE 2 An unincorporated organization or activity providing goods and/or services including:</p> <p>1) partnerships;</p> <p>2) social or other non-profit organizations or similar bodies in which ownership or control is vested in a group of individuals;</p> <p>3) sole proprietorships</p> <p>4) governmental bodies.</p> <p>EXAMPLE 3 Groupings of the above types of organizations where there is a need to identify these in information interchange.</p>	organisation	02	<p>cadre unique d'autorité dans lequel une ou plusieurs personnes agissent ou sont désignées pour agir afin d'atteindre un certain but</p> <p>NOTE Les types d'organisations couverts par la présente partie de l'ISO/CEI 6523 comprennent par exemple les éléments suivants:</p> <p>EXEMPLE 1 Organisations constituées suivant des formes juridiques prévues par la loi.</p> <p>EXEMPLE 2 Autres organisations ou activités fournissant des biens et/ou des services, tels que:</p> <p>1) sociétés en participation;</p> <p>2) organismes sociaux ou autres à but non lucratif dans lesquels le droit de propriété ou le contrôle est dévolu à un groupe de personnes;</p> <p>3) entreprises individuelles;</p> <p>4) administrations et organismes de l'état.</p> <p>EXEMPLE 3 Regroupements des organisations des types ci-dessus, lorsqu'il est nécessaire de les identifier pour l'échange d'informations.</p>
3.104	ISO/IEC 24751-3: 2008 (3.25)	original access mode	99	<p>access mode through which the intellectual content of the digital resource was originally designed to be communicated</p>	mode d'accès original	01	<p>mode d'accès par lequel le contenu de l'apprentissage de la ressource numérique a été originellement conçu pour être communiqué</p>

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.105	ISO/IEC 14662:2010 (3.24)	Person	99	<p>entity, i.e., a natural or legal person, recognized by law as having legal rights and duties, able to make commitment(s), assume and fulfil resulting obligation(s), and able of being held accountable for its action(s)</p> <p>NOTE 1 Synonyms for "legal person" include "artificial person", "body corporate", etc., depending on the terminology used in competent jurisdictions.</p> <p>NOTE 2 "Person" is capitalized to indicate that it is being used as formally defined in the standards and to differentiate it from its day-to-day use.</p> <p>NOTE 3 Minimum and common external constraints applicable to a business transaction often require one to differentiate among three common subtypes of Person, namely "individual", "organization", and "public administration".</p>	Personne	02	<p>entité, c-à-d. une personne physique ou morale, reconnue par la loi comme ayant des droits et des devoirs, capable de faire des engagements, d'assumer et de remplir les obligations résultantes, et capable d'être tenue responsable de ses actions</p> <p>NOTE 1 Parmi les synonymes de «personne morale», on trouve «personne juridique», «personne fictive», «corporation», etc., selon la terminologie utilisée par les juridictions compétentes.</p> <p>NOTE 2 «Personne» prend la majuscule pour indiquer que ce terme est utilisé tel que défini officiellement dans les normes et pur le différencier de son usage ordinaire.</p> <p>NOTE 3 Les exigences minima et communes applicables aux transactions d'affaires obligent souvent à faire une différence entre les trois sous-catégories communes de «Personne», notamment «individu», «organisation», «administration publique».</p>
3.106	ISO/IEC 15944-1: 2011 (3.48)	persona	99	set of data elements and their values by which a Person wishes to be known and thus identified in a business transaction	persona	02	série d' éléments de données et leurs valeurs selon lesquelles une Personne désire être connue et ainsi identifiée dans une transaction d'affaires

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.107	ISO/IEC 15944-5: 2008 (3.103)	personal information	99	any information about an identifiable individual that is recorded in any form, including electronically or on paper NOTE Some examples would be record information about a person's religion, age, financial transactions, medical history, address, or blood type.	renseignements personnels	01	tout renseignement au sujet d'un individu identifiable, qui est enregistré sous une forme quelconque, y compris électroniquement ou sur papier NOTE Cela comprend, par exemple, les information enregistrée à propos de la religion, de l'âge, des opérations financières, du passé médical, de l'adresse ou du groupe sanguin de quelqu'un.
3.108	ISO/IEC 15944-2: 2006 (3.80)	physical address	99	address that is used/recognized by a postal authority and/or courier service to deliver information item(s), material object(s) , or business object(s) to a Contact at either an actual address or a pick-up point address , (e.g., P.O. Box, rural route, etc.)	adresse physique	02	adresse qui est utilisée/reconnue par une autorité postale et/ou un service de messagerie pour livraison d'article(s) d'information, d' objet(s) matériel(s), ou d' objet(s) d'affaires à un Contact, soit à une adresse réelle, soit à une adresse de point de ramassage, (par ex. une boîte postale, une route rurale, etc.)
3.109	ISO/IEC 15944-5: 2008 (3.104)	pivot code set	99	set of ID codes in a coded domain which is made publicly known and available, the most stable, representing the defined semantics (most often it is the same as the ID code) NOTE 1 The use of the pivot code set (as per Part 5) as distinguished from the ID code supports the requirement of a Source Authority to maintain internally and on	ensemble de codes pivots	01	ensemble de codes ID dans un domaine codé qui est rendu public et disponible, le plus stable représentant la sémantique définie (le plus souvent, c'est le même que le code ID) NOTE 1 L'utilisation de l'ensemble de codes pivots différent du code ID appuie les exigences d'une Autorité de source pour conserver à l'interne et confidentiellement le code

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>a confidential basis the ID code of its members.</p> <p>NOTE 2 At times a coded domain has more than one valid code set, (e.g., ISO 639, ISO 3166, etc.)</p> <p>EXAMPLE In ISO 3166-1 the 3-digit numeric code is the pivot. The 2-alpha and 3-alpha code sets can change when the name of the entity referenced is changed by that entity.</p>			<p>ID de ses membres.</p> <p>NOTE 2 Parfois, un domaine codé a plus d'un ensemble de codes valides (par ex. l'ISO 639, l'ISO 3166, etc.)</p> <p>EXEMPLE Dans l'ISO 3166-1, le code numérique à 3 chiffres est le code pivot. L'ensemble des codes alphabétique à 2 lettres et alphabétique à 3 lettres peut changer lorsque le nom de l'entité référencée est changé par cette entité.</p>
3.110	ISO/IEC 15944-5: 2008 (3.105)	pivot ID code	99	<p>most stable ID code assigned to identify a member of a coded domain where more than one ID code may be assigned and/or associated with a member of that coded domain</p> <p>EXAMPLE ISO 3166-1:1997 (E/F) "Codes for the representation of names of countries and their subdivisions - Part 1: Country codes/Codes pour la représentations des noms de pays et de leur subdivisions - Partie 1: Codes pays" contains three code sets:</p> <ul style="list-style-type: none"> - a three digit numeric code; - a two alpha code - a three alpha code. <p>Here, the three digit numeric code serves as the pivot code. It is the most stable, remains the same even though the two alpha and/or three alpha codes may and do change.</p>	code ID pivot	01	<p>code ID le plus stable attribué pour identifier un membre d'un domaine codé lorsque plusieurs codes ID peuvent être attribués et/ou rattachés à un membre de ce domaine codé</p> <p>EXEMPLE L'ISO 3166-1:1997 (E/F) «Codes for the representation of names of countries and their subdivisions - Part 1: Country codes/Codes pour la représentations des noms de pays et de leur subdivisions - Partie 1: Codes pays» contient trois ensembles de codes:</p> <ul style="list-style-type: none"> - un code numérique à trois chiffres; - un code alphabétique à deux lettres; et, - un code alphabétique à trois lettres. <p>Dans ce cas, le code numérique à trois chiffres sert de code pivot. C'est le plus stable, il reste le même, même si les codes alphabétiques à deux et trois lettres peuvent changer (comme cela se produit).</p>

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.111	ISO 1087-1: 2000 (3.4.24)	polysemy	99	<p>relation between designations and concepts in a given language in which one designation represents two or more concepts sharing certain characteristics</p> <p>NOTE 1 An example of polysemy is: bridge (1) “structure to carry traffic over a gap”; (2) “part of a string instrument”; (3) “dental plate”.</p> <p>NOTE 2 The designations in the relation of polysemy are called <i>polysems</i>.</p>	polysémie	02	<p>relation entre désignation et concept dans une langue donnée dans laquelle une désignation représente deux concepts ou plus ayant certains caractères en commun</p> <p>NOTE 1 Exemple de polysémie: fer (1) métal; (2) objet en fer</p> <p>NOTE 2 Dans une relation de polysémie, les désignations sont appelées <i>polysèmes</i>.</p>
3.112	ISO/IEC 2382-1: 1998	portability	99	<p>capability of a program to be executed on various types of data processing systems often involving recompiling, with little or no manual modification</p>	portabilité	02	<p>capacité d'un programme à être exécuté par différents types de systèmes de traitement de données impliquant souvent la recompilation, avec peu ou sans modification manuelle</p>
3.113	ISO/IEC 15944-2: 2006 (3.81)	principle	99	<p>fundamental, primary assumption and quality which constitutes a source of action determining particular objectives or results</p> <p>NOTE 1 A principle is usually enforced by rules that affect its boundaries.</p> <p>NOTE 2 A principle is usually supported through one or more rules.</p> <p>NOTE 3 A principle is usually part of a set of principles which together form a unified whole.</p>	principe	01	<p>hypothèse fondamentale et primaire, et qualité qui constitue une source d'action pour déterminer des objectifs ou des résultats particuliers</p> <p>NOTE 1 Un principe est habituellement mis en vigueur par des règles qui touchent ses limites.</p> <p>NOTE 2 Un principe est habituellement soutenu par une ou plusieurs règles.</p> <p>NOTE 3 Un principe fait habituellement partie d'un ensemble de principes qui ensemble forment un tout unifié.</p>

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				EXAMPLE Within a jurisdictional domain, examples of a set of principles include a charter, a constitution, etc.			EXEMPLE Dans un domaine juridique, une charte, une constitution, etc., sont des exemples d'un ensemble de principes.
3.114	ISO/IEC 15944-5: 2008 (3.109)	privacy protection	99	<p>set of external constraints of a jurisdictional domain pertaining to recorded information on or about an identifiable individual, i.e., personal information, with respect to the creation, collection, management, retention, access and use and/or distribution of such recorded information about that individual including its accuracy, timeliness, and relevancy</p> <p>NOTE 1 Recorded information collected or created for a specific purpose on an identifiable individual, i.e., the explicitly shared goal of the business transaction involving an individual shall not be used for another purpose without the explicit and informed consent of the individual to whom the recorded information pertains.</p> <p>NOTE 2 Privacy requirements include the right of an individual to be able to view the recorded information about him/her and to request corrections to the same in order to ensure that such recorded information is accurate and up-to-date.</p>	protection de la vie privée	02	<p>ensemble de contraintes externes exercées sur un domaine juridictionnel relatives à l'information enregistrée ou à propos d'un individu identifiable, c.-à.-d. de l'information personnelle, en ce qui concerne la création, la collecte, la gestion, la rétention, l'accès et l'utilisation et/ou la distribution d'une telle information enregistrée relative à cet individu, y compris son exactitude, son opportunité et sa pertinence</p> <p>NOTE 1 L'information enregistrée recueillie ou créée dans un but spécifique concernant un individu identifiable (c.-à.-d. le but partagé et explicite de la transaction d'affaires concernant un individu) ne peut être utilisée dans un autre but sans le consentement explicite et informé de l'individu auquel l'information enregistrée se rapporte.</p> <p>NOTE 2 Les exigences en matière de vie privée incluent le droit d'un individu de pouvoir examiner l'information enregistrée le (ou la) concernant, et de demander d'y apporter des corrections afin de s'assurer que l'information enregistrée est exacte et à jour.</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				NOTE 3 Where jurisdictional domains have legal requirements which override privacy protection requirements these must be specified, (e.g., national security, investigations by law enforcement agencies, etc.).			NOTE 3 Lorsque des domaines juridictionnels ont des exigences légales qui ont préséance sur les exigences en matière de protection de la vie privée (par ex. la sécurité nationale, les enquêtes policières, etc.), ils doivent être spécifiés.
3.115	ISO/IEC 15944-1: 2011 (3.53)	process	99	series of actions or events taking place in a defined manner leading to the accomplishment of an expected result	processus	01	série d'actions ou d'événements qui se produisent d'une manière définie et qui aboutissent à un résultat attendu
3.116	ISO/IEC 2382- 1: 2007 (01.05.10)	programming language	99	artificial language for expressing programs	langage de programmation	01	langage artificiel permettent d'exprimer des programmes.
3.117	ISO/IEC 11179-1: 2004 (3.3.29)	property	99	peculiarity common to all members of an object class	propriété	02	particularité commune à tous les membres d'une classe d'objets
3.118	ISO/IEC 15944-1: 2011 (3.54)	public administration	99	entity , i.e., a Person , which is an organization and has the added attribute of being authorized to act on behalf of a regulator	administration publique	02	entité , c.-à-d. une Personne , qui est une organisation et a l' attribut supplémentaire d'être autorisé à agir au nom d'une autorité de réglementation
3.119	ISO/IEC 15944-5: 2008 (3.113)	public policy	99	category of external constraints of a jurisdictional domain specified in the form of a right of an individual or a requirement of an organization and/or public administration with respect to an individual pertaining to any exchange of commitments among the parties concerned involving a good, service and/or right	politique publique	02	catégorie de contraintes externes d'un domaine juridictionnel spécifié sous la forme d'un droit d'un individu ou d'une exigence exercée sur une organisation et/ou une administration publique en ce qui concerne un individu relatif à tout échange d' engagements entre les parties concernées à propos d'un bien, d'un service et/ou d'un droit, y

IT-Interface		Human Interface Equivalent (HIE) Components					
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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>including information management and interchange requirements</p> <p>NOTE 1 Public policy requirements may apply to any one, all or combinations of the fundamental activities comprising a business transaction, i.e., planning, identification, negotiation, actualization and post-actualization. {See further Clause 6.3 "Rules governing the process component" in ISO/IEC 15944-1:2011}</p> <p>NOTE 2 It is up to each jurisdictional domain to determine whether or not the age of an individual qualifies a public policy requirement, (e.g., those which specifically apply to an individual under the age of thirteen (13) as a "child", those which require an individual to have attained the age of adulthood, (e.g., 18 years or 21 years of age) of an individual to be able to make commitments of a certain nature.</p> <p>NOTE 3 Jurisdictional domains may have consumer protection or privacy requirements which apply specifically to individuals who are considered to be "children", "minors, etc., (e.g., those who have not reached their 18th or 21st birthday according to the rules of the applicable jurisdictional domain).</p>			<p>compris les exigences en matière de gestion de l'information et d'échange</p> <p>NOTE 1 Des exigences en matière de politique publique peuvent s'appliquer à l'une ou à toutes les combinaisons des activités fondamentales touchant une transaction d'affaires, c.-à.-d. la planification, l'identification, la négociation, l'actualisation et la post-actualisation. {Voir plus loin la Clause 6.3 «Règles régissant la composante de processus» dans l'ISO/IEC 15944-1:2011}</p> <p>NOTE 2 Il appartient à chaque domaine juridictionnel de déterminer si l'âge d'un individu qualifie une exigence en matière de politique publique (par ex. celles qui s'appliquent spécifiquement à un individu de moins de treize (13) ans en tant qu'«enfant», celles qui exigent qu'un individu ait atteint l'âge adulte, (par ex. 18 ou 21 ans), pour qu'un individu soit en mesure de prendre un engagement d'une certaine nature.</p> <p>NOTE 3 Des domaines juridictionnels peuvent avoir des exigences en matière de protection du consommateur ou de la vie privée qui s'appliquent spécifiquement à des individus qui sont considérés comme des «enfants» ou des «mineurs», etc. (c.-à.-d. ceux qui n'ont pas encore atteint leur 18^e ou 21^e anniversaire de naissance conformément aux règles du domaine juridictionnel applicable).</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.120	ISO/IEC 15944-1: 2011 (3.56)	recorded information	99	<p>any information that is recorded on or in a medium irrespective of form, recording medium or technology used, and in a manner allowing for storage and retrieval</p> <p>NOTE 1 This is a generic definition and is independent of any ontology, (e.g., those of "facts" versus "data" versus "information" versus "intelligence" versus "knowledge", etc.).</p> <p>NOTE 2 Through the use of the term "information," all attributes of this term are inherited in this definition.</p> <p>NOTE 3 This definition covers: (i) any form of recorded information, means of recording, and any medium on which information can be recorded; and, (ii) all types of recorded information including all data types, instructions or software, databases, etc.</p>	information enregistrée	02	<p>toute information enregistrée sur ou dans un support quelle que soit sa forme, le support de stockage ou la technologie utilisés, et de façon à permettre son stockage et son extraction</p> <p>NOTE 1 Cette définition est générique et indépendante de toute ontologie, (par exemple le point de vue des «faits» par rapport aux «données», à «l'information», aux «renseignements», à la «connaissance», etc.).</p> <p>NOTE 2 Dans l'utilisation du terme «information», tous les attributs de ce terme sont hérités dans cette définition.</p> <p>NOTE 3 Cette définition couvre les éléments suivants: (i) toute forme d'information enregistrée, tout moyen d'enregistrement, et tout support sur lequel l'information peut être enregistrée; et, (ii) tous types d'information enregistrée, y compris tous les types de données, instructions ou logiciels, bases de données, etc.</p>
3.121	ISO/IEC 11179-1: 2004 (3.3.32)	Registration Authority identifier (RAI)	99	identifiant assigned to a Registration Authority (RA)	Identificateur d'Autorité d'enregistrement (RAI)	01	identificateur attribué à une autorité d'enregistrement (RA)

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.122	ISO/IEC 15944-1:2011 (3.59)	regulator	99	Person who has authority to prescribe external constraints which serve as principles , policies or rules governing or prescribing the behaviour of Persons involved in a business transaction as well as the provisioning of goods, services, and/or rights interchanged	autorité de réglementation	02	Personne autorisée à prescrire des contraintes externes qui servent de principes , de politiques ou de règles régissant ou prescrivant le comportement des Personnes concernées par une transaction d'affaire , ainsi que la fourniture des biens, services et/ou droits échangés
3.123	ISO/IEC 14662:2010 (3.25)	role	99	specification which models an external intended behaviour (as allowed within a scenario) of an Open-edi Party	rôle	01	spécification qui modélise le comportement externe attendu d'un partenaire d'EDI-ouvert dans le cadre permis par un scénario
3.124	ISO 5127:2001 (1.1.2.24)	romanization	99	representation of non-Latin writing systems in the Latin alphabet by means of transliteration transcription or both	romanisation	02	représentation de systèmes d'écriture non latins dans l'alphabet latin au moyen d'une translittération, d'une transcription, ou des deux
3.125	ISO 12620:2009 (E) (A.2.1.12)	romanized form	99	form of a term resulting from an operation whereby non-Latin writing systems are converted to the Latin alphabet NOTE Romanization is a specific form of transcription EXAMPLES See example in A.2.1.10 and A.2.1.11 in ISO12620:2009.	forme romanisée	02	forme d'un terme résultant d'une opération au cours de laquelle des systèmes d'écriture non latins sont convertis en alphabet latin NOTE La romanisation est une forme spécifique de la transcription. EXEMPLES Voir l'exemple à A.2.1.10 et A.2.1.11 dans l'ISO 12620:2009.

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Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.126	ISO/IEC 15944-2: 2006 (3.101)	rule	99	<p>statement governing conduct, procedure, conditions and relations</p> <p>NOTE 1 Rules specify conditions that must be complied with. These may include relations among objects and their attributes.</p> <p>NOTE 2 Rules are of a mandatory or conditional nature.</p> <p>NOTE 3 In Open-edl, rules formally specify the commitment(s) and role(s) of the parties involved, and the expected behaviour(s) of the parties involved as seen by other parties involved in (electronic) business transactions. Such rules are applied to: -content of the information flows in the form of precise and computer-processable meaning, i.e. the semantics of data; and, - the order and behaviour of the information flows themselves.</p> <p>NOTE 4 Rules must be clear and explicit enough to be understood by all parties to a business transaction. Rules also must be capable of being able to be specified using a using a Formal Description Technique(s) (FDTs).</p> <p>EXAMPLE A current and widely used FDT is "Unified Modelling Language (UML)".</p>	règle	02	<p>énoncé régissant une conduite, une procédure, des conditions ou des rapports</p> <p>NOTE 1 Les règles spécifient les rapports entre les objets et leurs attributs.</p> <p>NOTE 2 Les règles sont de nature obligatoire ou conditionnelle.</p> <p>NOTE 3 Les règles spécifient formellement les engagements et le(s) rôle(s) des parties concernées, et le(s) comportement(s) prévu(s) des parties concernées tels que perçus par d'autres parties concernées par des transactions (électroniques) d'affaires. Ces règles s'appliquent aux éléments suivants: -contenu des flux d'information sous forme de signification précise et traitable par ordinateur, c-à-d. la sémantique des données; et, -l'ordre et le comportement des flux d'information eux-mêmes.</p> <p>NOTE 4 Les règles doivent être suffisamment claires et explicites pour être comprises par toutes les parties d'une transaction d'affaires. En même temps, les règles doivent pouvoir être spécifiées en utilisant une ou des technique(s) de description formelle(s) (FDT).</p> <p>EXEMPLE L'une des techniques de description formelles actuellement et couramment utilisées est l'UML (Langage de modélisation unifié ou Unified Modelling Language).</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				NOTE 5 Specification of rules in an Open-edi business transaction should be compliant with the requirements of ISO/IEC 15944-3 "Open-edi Description Techniques (OeDT)".			NOTE 5 Les spécifications des règles dans une transaction d'affaires EDI-ouvert doivent être conformes aux exigences de l'ISO/IEC 15944-3 «Techniques de description de l'EDI-ouvert (OeDT)».
3.127	ISO/IEC 15944-2: 2006 (3.102)	rulebase	99	pre-established set of rules which interwork and which together form an autonomous whole NOTE One considers a rulebase to be to rules as database is to data.	base de règles	02	ensemble préétabli de règles qui s'appliquent en concordance et qui ensemble forment un tout autonome NOTE On considère qu'une base de règles est aux règles ce qu'une base de données est aux données.
3.128	ISO/IEC 15944-1: 2011 (3.62)	seller	99	Person who aims to hand over voluntarily or in response to a demand, a good, service and/or right to another Person and in return receives an acceptable equivalent value, usually in money, for the good, service and/or right provided	vendeur	01	Personne qui vise à fournir, volontairement ou suite à une demande, un bien, un service et/ou un droit à une autre Personne , et qui reçoit en retour une valeur équivalente acceptable, habituellement en argent
3.129	ISO/IEC 20016-1 (3.129)	semantic collaboration space (SCS)	99	collaboration space where the semantics of the set(s) of recorded information (SRIs) required to achieve a commitment exchange between an individual as the primary Person and all other Persons , i.e., as participating parties, is viewed independently of any party to that commitment exchange	espace de collaboration sémantique (SCS)	01	espace de collaboration dans lequel la sémantique de (ou des) ensemble(s) d'information enregistrée (SRI) exigé pour réaliser un échange d'engagement entre un individu comme Personne primaire et toutes les autres Personnes , c.-à.-d. comme parties participantes, est considérée indépendamment de toute partie prenante de cet échange d'engagement

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Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.130	ISO/IEC 14662:2010 (3.27)	Semantic Component (SC)	99	unit of recorded information unambiguously defined in the context of the business goal of the business transaction NOTE A SC may be atomic or composed of other SCs.	Composante sémantique (SC)	02	unité d' information enregistrée définie de manière non ambiguë dans le contexte de l'objectif d'affaires d'une transaction d'affaires NOTE Un SC peut être atomique ou composé d'autres SC.
3.131	ISO/IEC 15944-5:2008 (3.136)	semantic identifier (SI)	99	IT-interface identifiant for a semantic component or other semantic for which (1) the associated context, applicable rules and/or possible uses as a semantic are predefined and structured and the Source Authority for the applicable rulebase is identified (as per Part 5); and (2) for which more than one or more Human Interface Equivalents (HIEs) exist NOTE The identifier for a Semantic Component (SC), an Information Bundle (IB) and/or an ID Code for which one or more Human Interface Equivalents (HIEs) exist are considered to have the properties or behaviours of semantic identifiers.	identificateur sémantique (SI)	01	identificateur d'interface TI d'une composante sémantique ou d'une autre sémantique pour lequel (1) le contexte qui s'y rattache, les règles applicables et/ou les utilisations possibles comme sémantique sont prédéfinies et structurées, et l' Autorité de source de la base de règles applicable est identifiée, et (2) existe un ou plusieurs Équivalents d'Interface humaine (HIEs) NOTE L'identificateur d'une Composante sémantique (SC), d'un Faisceau d'informations (IB) et/ou d'un Code ID pour lequel un ou plusieurs Équivalents d'Interface humaine (HIEs) sont considérés comme ayant les propriétés ou les comportements d'identificateurs sémantiques.
3.132	ISO/IEC 20016-1 (3.132)	semantic interoperability	99	assurance of the development and existence of required semantic interoperability equivalency level (SIEL) of the human interface equivalent(s)	interopérabilité sémantique	02	assurance de l'élaboration et de l'existence du niveau d'équivalence d'interopérabilité sémantique (SIEL) de (ou des) équivalent(s) d'interface humaine

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>(HIEs) of the semantics of any set of recorded information (SRI) intended for use by an individual, in support of language accessibility and communication accessibility requirements of the <i>UN Convention on Rights of Persons with Disabilities</i></p> <p>NOTE 1 A set of recorded information (SRI) can be as “small” as a simple (atomic) data element or as “large” as a “book”, the contents of an entire Web site, etc.</p> <p>NOTE 2 Depending on the context and purpose of use, a SRI can be “atomic” or be composed of several SRIs which are “bundled” into a (new) distinct SRI. The approach here to bundling of SRIs is dynamic in nature and placed in commitment exchange context which determines the SIEL.</p>			<p>(ÉIH) de n'importe quel ensemble d'information enregistrée (SRI) prévu comme utilisation par un individu, à l'appui de l'accessibilité linguistique et des exigences en matière d'accessibilité de la communication de la <i>Convention des nations unies sur les droits des personnes handicapées</i></p> <p>NOTE 1 Un ensemble d'information enregistrée (SRI) peut être aussi «petit» qu'un élément de donnée simple (atomique) ou aussi «grand» qu'un livre, le contenu de tout un site Web, etc.</p> <p>NOTE 2 Selon le contexte et le but d'utilisation, un SRI peut être «atomique» ou composé de plusieurs SRI «groupés» en un nouveau SRI distinct. Cette approche de groupement est dynamique et se situe dans un contexte d'échange d'engagement qui détermine le SIEL.</p>
3.133	ISO/IEC 20016-1 (3.133)	semantic interoperability equivalency level (SIEL)	99	<p>assurance that the semantics of any set of recorded information (SRI) is being provided to an individual in order for that individual to be (1) fully informed; (2) able to take decisions; and/or, (3) able to make a commitment, based on the SRI(s) provided</p> <p>NOTE 1 Based on the <i>UN Convention on the Rights of Persons with</i></p>	niveau d'équivalence d'interopérabilité sémantique (SIEL)	01	<p>assurance que la sémantique de n'importe quel ensemble d'information enregistrée (SRI) est fournie à un individu afin que celui-ci soit (1) pleinement informé; (2) capable de prendre des décisions; et/ou (3) capable de prendre un engagement basé sur le(s) SRI fournis</p> <p>NOTE 1 En se basant sur la <i>Convention des nations unies sur les droits des</i></p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p><i>Disabilities</i>, the four most primitive levels of semantic equivalency are: (a) Level 0 - Not applicable; (b) Level 1 – Provision of information; (c) Level 2 – Informed consent and decision-taking; and, (d) Level 3 – Informed consent at (*higher) level of unambiguity required to support Commitment-making.</p> <p>NOTE 2 The semantic interoperability equivalency level (SIEL) applicable is determined by the goal and purpose of the (intended) use of a SRI in support of semantic interoperability requirements.</p>			<p><i>personnes handicapées</i>, les quatre niveaux d'équivalence sémantique les plus primaires sont: (a) Niveau 0 – Sans objet; (b) Niveau 1 – Disposition d'information; (c) Niveau 2 – Consentement informé et prise de décision; et, (d) Niveau 3 – consentement informé à un niveau (*plus élevé) de non-ambiguïté exigé pour appuyer la prise d'engagement.</p> <p>NOTE 2 Le niveau d'équivalence d'interopérabilité sémantique (SIEL) applicable est déterminé par le but et l'objectif de l'utilisation prévue d'un SRI à l'appui d'exigences en matière d'interopérabilité sémantique.</p>
3.134	ISO/IEC 15944-5: 2008 (3.137)	set of recorded information (SRI)	99	<p>recorded information of an organization or public administration, which is under the control of the same and which is treated as a unit in its information life cycle</p> <p>NOTE 1 A SRI can be a physical or digital document, a record, a file, etc., that can be read, perceived or heard by a person or computer system or similar device.</p> <p>NOTE 2 A SRI is a unit of recorded information that is unambiguously defined in the context of the business goals of the organization, i.e., a semantic component.</p>	ensemble d'information enregistrée (EIE)	01	<p>informations enregistrées relatives à une organisation ou à une administration publique qui en assure le contrôle et qui sont traitées comme une unité pour ce qui a trait au cycle de vie</p> <p>NOTE 1 Un EIE peut être un enregistrement ou un document physique ou numérique, un dossier, un fichier, etc., qui peut être lu, perçu ou entendu par une personne, un système informatique ou un dispositif semblable.</p> <p>NOTE 2 Un EIE est une unité d'information enregistrée qui est définie sans ambiguïté dans le contexte des objectifs d'affaires de l'organisation,</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				NOTE 3 A SRI can be self-standing (atomic), or a SRI can consist of a bundling of two or more SRIs into another "new" SRI. Both types can exist simultaneously within the information management systems of an organization.			c.-à.-d. une composante sémantique. NOTE 3 Un EIE peut être une unité autonome (atomique). Il peut s'agir de deux EIE ou plus regroupés dans un « nouvel » EIE. Les deux types d'EIE peuvent exister simultanément dans les systèmes de gestion de l'information d'une organisation.
3.135	ISO 5127:2001 (1.1.3.02)	sign	99	any physical phenomenon interpreted to convey meaning	signe	01	tout phénomène physique interprété comme porteur de signification
3.136	ISO/IEC 15944-2:2006 (3.109)	Source Authority (SA)	99	<p>Person recognized by other Persons as the authoritative source for a set of constraints</p> <p>NOTE 1 A Person as a Source Authority for internal constraints may be an individual, organization, or public administration.</p> <p>NOTE 2 A Person as Source Authority for external constraints may be an organization or public administration.</p> <p>EXAMPLE In the field of air travel and transportation, IATA as a Source Authority, is an "organization," while ICAO as a Source Authority, is a "public administration"</p> <p>NOTE 3 A Person as an individual shall not be a Source Authority for external constraints.</p>	Autorité de source (AS)	02	<p>Personne reconnue par d'autres Personnes comme source faisant autorité pour un ensemble de contraintes</p> <p>NOTE 1 Une personne comme Autorité de source pour des contraintes internes peut être un individu, une organisation ou une administration publique.</p> <p>NOTE 2 Une personne comme Autorité de source pour des contraintes externes peut être une organisation ou une administration publique.</p> <p>EXEMPLE Dans le domaine du transport aérien, l'IATA, comme Autorité de source, est une « organisation », tandis que l'OACI en tant qu'Autorité de source est une « administration publique ».</p> <p>NOTE 3 Une Personne en tant qu'individu ne peut être une Autorité de source pour des contraintes externes.</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				<p>NOTE 4 Source Authorities are often the issuing authority for identifiers (or composite identifiers) for use in business transactions.</p> <p>NOTE 5 A Source Authority can undertake the role of Registration Authority or have this role undertaken on its behalf by another Person.</p> <p>NOTE 6 Where the sets of constraints of a Source Authority control a coded domain, the SA has the role of a coded domain Source Authority.</p>			<p>NOTE 4 Les Autorités de source sont souvent les autorités émettrices des identificateurs (ou des identificateurs composites) à utiliser dans les transactions d'affaires.</p> <p>NOTE 5 Une Autorité de source peut jouer le rôle d'un organisme d'enregistrement ou faire jouer ce rôle à sa place par une autre Personne.</p> <p>NOTE 6 Lorsque l'ensemble de contraintes d'une Autorité de source contrôle un domaine codé, l'AS joue le rôle d'Autorité de source d'un domaine codé.</p>
3.137	ISO 1087-1: 2000 (3.1.3)	special language	99	<p>language used in a subject field and characterized by the use of specific linguistic means of expression</p> <p>NOTE The specific linguistic means of expression always include subject-specific terminology and phraseology and also may cover stylistic or syntactic features.</p>	langue de spécialité	02	<p>langue utilisée dans un domaine et caractérisée par l'utilisation de moyens d'expression linguistique particuliers</p> <p>NOTE Les moyens d'expression linguistique particuliers englobent toujours une terminologie et une phraséologie propres au domaine et peuvent également présenter des traits stylistiques ou syntaxiques.</p>
3.138	ISO/IEC 15944-1: 2011 (3.64)	standard	99	<p>documented agreement containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose</p>	norme	02	<p>accord documenté contenant des spécifications techniques ou autres critères précis destinés à être utilisés systématiquement en tant que règles, lignes directrices ou définitions de caractéristiques pour assurer que des matériaux, produits, processus et services sont aptes à leur emploi</p>

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				NOTE This is the generic definition of "standard" of the ISO and IEC (and now found in the ISO/IEC JTC1 Directives, Part 1, Section 2.5:1998). {See also ISO/IEC Guide 2:1996 (1.7)}			NOTE Cette définition est la définition «normalisée» par l'ISO et la CEI (et qui se trouve désormais dans la Directives de l'ISO/CEI JTC1, Partie 1, Section 2.5:1998). {voir aussi le Guide 2:1996 (1.7) de l'ISO/CEI}
3.139	ISO 5127:2001 (1.1.2.11)	symbol	99	designation by means of letters, numerals, pictograms or any combination thereof	symbole	01	désignation au moyen de lettres, numéros, pictogrammes ou toute combinaison de ceux-ci
3.140	ISO 1087:2000 (5.3.1.2)	term	99	designation of a defined concept in a special language by a linguistic expression NOTE A term may consist of one or more words i.e. simple term, or complex term or even contain symbols.	terme	01	désignation au moyen d'une unité linguistique d'un concept définie dans une langue de spécialité . NOTE Un terme peut être constitué d'un ou de plusieurs mots (terme simple ou terme complexe) et même de symboles.
3.141	ISO 5127:2001 (3.1.5)	terminology	99	set of designations belonging to one special language	terminologie	02	ensemble des designations appartenant à une langue de spécialité
3.142	ISO/IEC 2382-23:1994 (23.01.01)	text	99	data in the form of characters, symbols , words, phrases, paragraphs, sentences, tables, or other character arrangements, intended to convey a meaning and whose interpretation is essentially based upon the reader's knowledge of some natural language or artificial language	texte	01	données sous forme de caractères , de symboles , de mots, d'expressions, de paragraphes, de phrases, de tableaux ou d'autres arrangements de caractères , ayant une signification particulière, dont l'interprétation dépend essentiellement de la connaissance de la part du lecteur d'un langage naturel ou d'un langage artificiel

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				EXAMPLE A business letter printed on paper or displayed on a screen.			EXEMPLE Une lettre commerciale imprimée sur papier ou affichée à l'écran.
3.143	ISO/IEC 15944-1: 2011 (3.65)	third party	99	<p>Person besides the two primarily concerned in a business transaction who is agent of neither and who fulfils a specified role or function as mutually agreed to by the two primary Persons or as a result of external constraints</p> <p>NOTE It is understood that more than two Persons can at times be primary parties in a business transaction.</p>	tierce partie	02	<p>Personne, autre que les deux Personnes concernées en premier lieu par une transaction d'affaires et qui n'est le mandataire d'aucune d'elles, et qui joue un rôle ou remplit une fonction spécifiés, selon l'accord mutuel des deux Personnes concernées en premier lieu, ou le résultat de contraintes externes</p> <p>NOTE Il est entendu que plus de deux Personnes peuvent parfois être les parties de première part dans une transaction d'affaires.</p>
3.144	ISO/IEC 15944-1: 2011 (3.66)	unambiguous	99	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	non-ambigu	03	niveau de certitude et d'explicité exigé dans la complétude de la sémantique d'une information enregistrée et échangée dans le but d'une transaction d'affaires
3.145	ISO 9241-11: 1998 (3.1)	usability	99	extent to which a product can be used by specified users to achieve specified goals, with effectiveness, efficiency, and satisfaction, in a specified context of use	utilisabilité	02	mesure dans laquelle un produit peut être utilisé par des utilisateurs spécifiés pour atteindre des objectifs spécifiés avec efficacité, efficience, et satisfaction, dans un contexte d'utilisation spécifiée

IT-Interface		Human Interface Equivalent (HIE) Components					
Identification		ISO English			ISO French		
Clause 3 ID	Source Ref. ID	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.146	ISO/IEC 15944-1: 2011 (3.67)	vendor	99	<p>seller on whom consumer protection requirements are applied as a set of external constraints on a business transaction</p> <p>NOTE 1 Consumer protection is a set of explicitly defined rights and obligations applicable as external constraints on a business transaction.</p> <p>NOTE 2 It is recognized that external constraints on a seller of the nature of consumer protection may be peculiar to a specified jurisdiction.</p>	fournisseur	01	<p>vendeur auquel s'appliquent des exigences de protection des consommateurs comme ensemble de contraintes externes sur une transaction d'affaires</p> <p>NOTE 1 La protection des consommateurs est un ensemble de droits et d'obligations explicitement définis, et qui s'appliquent comme contraintes externes à une transaction d'affaires.</p> <p>NOTE 2 On reconnaît que les contraintes externes, telles que la protection des consommateurs, exercées sur un fournisseur, peuvent relever d'une juridiction particulière.</p>
3.147	ISO 1087-1: 2000 (13.7.2)	vocabulary	99	<p>terminological dictionary which contains designations and definitions for one or more specific subject fields</p> <p>NOTE The vocabulary may be monolingual, bilingual or multilingual.</p>	vocabulaire	01	<p>dictionnaire terminologique contenant des désignations et des définitions tirées d'un ou plusieurs domaines particuliers</p> <p>NOTE Un vocabulaire peut être unilingue, bilingue ou multilingue.</p>

Annex B (normative)

Impacts and requirements of the UN Convention on the Rights of Persons with Disabilities on requirements for semantic interoperability for language accessibility and Human Interface Equivalents (HIEs)

B.1 Introduction and purpose

At its March, 2008 meeting, JTC1/SC36/WG7 adopted resolution #1. {See JTC1/SC36/WG7 document N0123} It states the following:

WG7 Resolution 01: Support the principals of UN Convention

SC36/WG7 resolves, that in its current standards development work and any of its new standards development projects, as well as any amendments or new editions of its existing standards, that these standards shall be architected and structurally engineered to support and facilitate the implementation of the objectives and requirements of the 2006 "UN Convention on the Rights of Persons with Disabilities" and Optional Protocols, both generally and especially in the fields of e-learning, education, and training.

Approved

In this context, the purpose of this Annex B is to identify those clauses in this UN convention which are of relevance to ISO/IEC 20016-1 in particular, and that of this multipart ISO/IEC 20016 standard in general. Annex B does so from a language accessibility and HIE perspective focusing on assuring that appropriate categories and required levels of semantic interoperability of HIEs are supported.

It is understood that this UN Convention places requirements of an external constraints nature, on organizations and public administrations to ensure the development, existence and accessibility of HIEs to individual users in LET applications.

It is noted that this Annex B focuses only on those Clauses of this *UN Convention* which are deemed to be directly applicable to this ISO/IEC 20016-1 *Framework and Reference Model*.

B.2 Summary overview

The primary purpose of Annex B (as stated below) is to ensure that ISO/IEC 20016-1 *Framework and Reference Model* as well as all subsequent Parts of this multipart standard support the requirements of this UN Convention.

B.2.1 To quote the text of the "UN Enable" web site on this convention:

"The Convention on the Rights of Persons with Disabilities and its Optional Protocol was adopted on 13 December 2006 at the United Nations Headquarters in New York, and was opened for signature on 30 March 2007. There were 82 signatories¹⁰⁰ to the Convention, 44 signatories to the Optional Protocol, and 1 ratification of the Convention. This is the highest number of signatories in history to a UN Convention on its opening day. It is the first comprehensive human rights treaty of the 21st

¹⁰⁰ This includes most, if not all, of the P and O members of JTC1/SC36, and those of JTC1, as well as ISO itself.

century and is the first human rights convention to be open for signature by regional integration organizations.

The Convention marks a "paradigm shift" in attitudes and approaches to persons with disabilities. It takes to a new height the movement from viewing persons with disabilities as "objects" of charity, medical treatment and social protection towards viewing persons with disabilities as "subjects" with rights, who are capable of claiming those rights and making decisions for their lives based on their free and informed consent as well as being active members of society".

B.2.2 It is vital that ISO/IEC 20016-1 take into account and support this paradigm shift in attitudes and approaches to persons with the disabilities. That is to view them as subjects, i.e., individuals, who are capable of claiming those rights and making decisions for their lives based on their free and informed consent as well as being active members of society. To support this requirement, the multipart ISO/IEC 20016 introduced the concept of "commitment exchange".

B.2.3 Clause (e) in the Preamble of this UN Convention states¹⁰¹:

(e) Recognizing that disability is an evolving concept and that disability results from the interaction between persons¹⁰² with impairments and attitudinal and environmental barriers that hinders their full and effective participation¹⁰³ in society on an equal basis with others,

B.2.4 Clause (n) in the Preamble of this UN Convention states:

(n) Recognizing the importance for persons with disabilities of their individual autonomy and independence, including the freedom to make their own choices¹⁰⁴,

This is understood to mean that **any (set of) recorded information provided to any individual shall be in a form, format and language of representation /communication to allow/support any individual to be equally informed with respect to the equivalency in the semantics of such sets of recorded information (SRI) in the preferred language of communication as stated by that individual.**

B.2.5 Finally, quoting Article 1, Purpose of this *UN Convention*:

Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.

This means that ICT standards which impact and/or are to be used by an individual (directly or indirectly) must be architected and structurally engineered to be able to support requirements of an individual accessibility nature.

¹⁰¹ <http://www.un.org/disabilities/default.asp?navid=12&pid=150> (2011-12-20)

¹⁰² It is understood that by "person" what is intended is the legally recognized entity of an "individual" and not an "organization" or "public administration" who are also "persons" in law. ISO/IEC 20016-1 recognizes this and is based on existing international standards which have already resolved this issue.

¹⁰³ From the perspective of development of ISO/IEC 20016-1 "full and effective participation in society on an equal basis with others" requires, that depending on the context and goal of the recorded information being communicated, that this be at the level of certainty, i.e., unambiguousness of the semantics communicated, to enable the individual to be able to make any decision of whatever nature including the entering into and making of a commitment.

¹⁰⁴ This means that an individual is to be viewed as an autonomous Person with respect to being provided with "communications" in a "language" whose semantics are clear and explicit, i.e., unambiguous, in order for the individual to make a choice, a decision, and/or commitment.

B.2.6 In support of the above, a key element of this paradigm shift is that **of the need to add a focus on the contents of the recorded information (or sets of recorded information (SRIs) as an integral and essential component of present and future development of assistive information technologies, access for all, inclusive design, etc.**

B.2.7 This means that independent of the form and format of “communications” and “language” (as preferred by an individual), the key challenge is that of ensuring that the semantics of the contents of the recorded information being communicated are made understandable, comprehensible, etc., at a level of certainty, i.e., unambiguousness, required **to ensure that for any individual:**

0 at the zero level – Not applicable

- this pertains to the provision of any set of recorded information (SRIs) by any (type of) Person for which the SRI provided is not intended to serve as a basis for Level 1, 2, or 3 aspects. Examples here include a book, a blog, a published article, a Website, etc., which does not or is not intended to impact or be of direct relevance to any individual.

Many sets of recorded information (SRIs) are of a “one way” nature only. They do not require or are intended to be responded to by an individual per se, (e.g., a publication, a broadcast, a speech, etc.). It is of the nature of a “one-to-many”. These are not intended to support semantic interoperability.

These in turn are either of an internal constraint nature or may be subject to external constraints.

A one-way communication may nevertheless be made for the purpose of a conversation, a discourse and even as the introduction to a negotiation leading to a commitment.

1 at the first level - “provision of information”

- that the content (and context) of the semantics being communicated is made understandable and comprehensible in the accessibility language of the individual. This includes that the HIEs in the preferred (needed) accessibility language are at a level of semantic unambiguity appropriate to the goal and intent of the information being provided.

The next step after a one-to-many is that of identification of the parties concerned to each other either on a one-to-one basis (dialogue), a many-to-many basis (as a multiparty “multilogue”). The end purpose here may be a conversation, the back-and-forth between or among the parties to ensure that the semantics being conveyed are understood but **without** the need for an individual to make a decision or eventual commitment.

2 at the second level – “informed consent and decision-taking”

- that the contents (and contexts) of the semantics being communicated is at a level of unambiguity and provided in an accessibility language to the individual in order for the individual to be able to provide informed consent and make decisions.

If the purpose of the HIE SRI is to serve in the making of a decision or even a commitment, then the next phase of establishing unambiguousness is that of “negotiation” and then the actual making of a commitment which is then actualized.

This includes such interchanges of the semantics of the SRIs with an individual in order to ensure that the individual is and remains fully informed in a decision-taking process.

3 at the third level - “commitment-making”¹⁰⁵

- that in addition to “second level” requirements being met, a higher level of precision and certainty, i.e., unambiguity, is required in the semantics being communicated and interchanged with an individual. This higher/highest level of unambiguity is required in the semantics to ensure that an individual is fully informed and able to negotiate the terms and conditions with respect to the making or accepting of a right, an obligation, a liability or responsibility including transactions involving the buying or selling of goods, services and/or rights.

Once a commitment is actualized there may well be associated “post-actualization” requirements forming part of the commitment made by an individual with an organization or public administration, (e.g., warranties, a 5-10 year period to “cancel” the commitment, etc.). Examples here include the obligation of Persons as “organization” or “public administration” to provide a “competency record” of an individual having achieved the same at that organization and/or public administration, (e.g., as a certified record of a high school diploma, a college or university degree, or professional certificate, etc.).

These primitive levels of semantic unambiguity for semantic interoperability support the *UN Convention on the Rights of Persons with Disabilities*. They are presented below in Table B.1 “Codes representing levels of semantic unambiguity in support of semantic interoperability requirements”.

Table B.1 — ISO/IEC 20016-1:01 Codes representing levels of semantic unambiguity in support of semantic interoperability requirements

IT interface			Semantic interoperability equivalency level (SIEL)	
Coded Domain ID	Table ID	ID Code	ISO English	Other HIEs ¹⁰⁶
ISO/IEC 20016-1	01	0	Not applicable	
ISO/IEC 20016-1	01	1	Informational – External constraints apply	
ISO/IEC 20016-1	01	2	Decision-taking – External constraints apply	
ISO/IEC 20016-1	01	3	Commitment-making – External constraints apply	

¹⁰⁵ The ISO definition of commitment as found in ISO/IEC 14662:2010 (3.5), is:

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*

¹⁰⁶ “Other” represents the facility to add HIE in languages other than ISO English.

B.3 Impact of the UN Convention on Rights of Persons with Disabilities (2006)¹⁰⁷

B.3.1 Objective of Clause B.3

The objectives of Clause B.3 are three-fold; namely:

- 1) to identify those Articles in the *UN Convention* of relevance to the multipart ISO/IEC 20016 standard and in particular to ISO/IEC 20016-1 “Framework and Reference Model”;
- 2) to bring forward key text in those Articles, i.e., in the form of quotations (presented in italic font); and,
- 3) to add notes pertaining to the impact of the text of these Articles on the development of the “ISO/IEC 20016-1: Framework and Reference Model.

B.3.2 Key objectives and requirements of the UN Convention impacting ISO/IEC 20016-1 Framework and Reference Model

➤ From the Preamble, Clause (e)

- (e) *Recognizing that disability is an evolving concept and that disability results from the interaction between persons¹⁰⁸ with impairments and attitudinal and environmental barriers that hinders their full and effective participation¹⁰⁹ in society on an equal basis with others,*

➤ From the Preamble, Clause (n):

- (n) *Recognizing the importance for persons with disabilities of their individual autonomy and independence, including the freedom to make their own choices¹¹⁰,*

This is understood to mean that any recorded information provided to any individual shall be in a form, format and language of representation /communication to allow/support any individual to be equally informed with respect to the equivalency in the semantics of such sets of recorded information (SRI) in the preferred language of communication as stated by that individual.

➤ From Article 1 Purpose:

Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.

¹⁰⁷ <http://www.un.org/disabilities/documents/convention/convoptprot-e.pdf> (2011-12-20). This is an initial analysis only.

¹⁰⁸ It is understood that by “person” what is intended is the legally recognized entity of an “individual” and not an “organization” or “public administration” who are also “persons” in law. This standard recognizes this and is based on existing international standards which have already resolved this issue. {See for example ISO/IEC 14662:2010, or ISO/IEC 15944-1:2011}

¹⁰⁹ From the perspective of development of sub-project “full and effective participation in society on an equal basis with others” requires, that depending on the context and goal of the recorded information being communicated, that this be at the level of certainty, i.e., unambiguousness of the semantics communicated, to enable the individual to be able to make any decision of whatever nature including the entering into and making of a commitment.

¹¹⁰ This means that an individual is to be viewed as an autonomous Person with respect to being provided with “communications” in a “language” whose semantics are clear and explicit, i.e., unambiguous, in order for the individual to make a choice, a decision, and/or commitment.

This means that ICT tools and technologies which impact and/or are to be used by an individual (directly or indirectly) must be architected and structurally engineered to be able to support requirements of an individual accessibility nature.

➤ From Article 2 Definitions:

“Communication” includes languages, display of text, Braille, tactile communication, large print, accessible multimedia as well as written, audio, plain-language, human-reader and augmentative and alternative modes, means and formats of communication, including accessible information and communication technology;

“Language” includes spoken and signed languages and other forms of non spoken languages;

Note: In this standard the existing ISO definitions for “communication” and “language” have been adapted, (e.g., via NOTES), to support these Article 2 definitions¹¹¹. {See further Clause 3 Definitions}

➤ From Article 3 General Principles:

(a) Respect for inherent dignity, individual autonomy including the freedom to make one’s own choices, and independence of persons;

(c) Full and effective participation and inclusion in society;

Freedom to make one’s own choice, independence of individuals, and full effective participation and inclusion in society, requires that the semantics of HIEs must be at a level of unambiguity to be able for any individual to be able to be fully informed so as to be able have/make informed consent for a decision and (even) making a “commitment”.

“incapable” - need for a separate paper , i.e. any individual is deemed to be capable unless laws of a jurisdictional domain state otherwise (e.g. “age of consent”, age required to be able to –marry, buy cigarettes/alcohol, have a driver’s license, etc.). This is also linked to competence.

➤ From Article 9 Accessibility:

(b) Information, communications and other services, including electronic services and emergency services.

(g) To promote access for persons with disabilities to new information and communications technologies and systems, including the Internet;

(h) To promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost.

This requires that “recorded information” be made available to any and all individuals.

➤ From Article 12 Equal Recognition Before the Law:

1. *States Parties reaffirm that persons with disabilities have the right to recognition everywhere as persons before the law.*

¹¹¹ See further documents SC36/WG7 N0128 for the discussion of the definition of “communication (in accessibility); and, SC36/WG7/N130 for the discussion on the definition of “language (in accessibility)”.

2. *States Parties shall recognize that persons with disabilities enjoy legal capacity on an equal basis with others in all aspects of life*¹¹².

Basically, this means that any set of recorded information which is or may be used by an individual to make a decision of the nature of a “commitment” shall be made available in a form and format, i.e., context/content, which will be “equal in law”, i.e., not disadvantage or discriminated against any individual.

➤ From Article 21 Freedom of expression, opinion and access to information:

States Parties shall take all appropriate measures to ensure that persons with disabilities can exercise the right to freedom of expression and opinion, including the freedom to seek, receive and impart information and ideas on an equal basis with others and through all forms of communication of their choice, as defined in article 2 of the present Convention, including by:

- (a) *Providing information intended for the general public to persons with disabilities in accessible formats and technologies appropriate to different kinds of disabilities in a timely manner and without additional cost;*
- (b) *Accepting and facilitating the use of sign languages, Braille, augmentative and alternative communication, and all other accessible means, modes and formats of communication of their choice by persons with disabilities in official interactions;*
- (c) *Urging private entities that provide services to the general public, including through the Internet, to provide information and services in accessible and usable formats for persons with disabilities;*
- (d) *Encouraging the mass media, including providers of information through the Internet, to make their services accessible to persons with disabilities;*
- (e) *Recognizing and promoting the use of sign languages.*

Similar to Notes on Article 12

➤ From Article 22 Respect for privacy:

22. *States Parties shall protect the privacy of personal, health and rehabilitation information of persons with disabilities on an equal basis with others.*

Note: Privacy is an important requirement. Several ISO committees are working on developing standards including: (1) ISO/IEC JTC1/SC27 “security services; (2) ISO/IEC JTC1/SC32 “Data management and interchange (via SC32/WG1 – “eBusiness”); and, (3) ISO/IEC JTC1/SC36 “e-learning”.

Of particular relevance here, in a LET application context, is the development work by ISO/IEC JTC1/SC36 of the multipart ISO/IEC 29187 *Information technology – Identification of Privacy Protection requirements pertaining to Learning, Education and Training (ITLET)*. The development of the ISO/IEC 20016-1 Framework and Reference Model” is expected to be completed in 2012.

➤ From Article 24 Education:

All the Clauses and especially Clause 5:

- (c) *Ensuring that the education of persons, and in particular children, who are blind, deaf or deaf, blind, is delivered in the most appropriate languages and modes and means of communication for the individual, and in environments which maximize academic and social development.*

¹¹² With respect to individuals with disability having full economic and property rights, see Article 12, Clause 5 in this *UN Convention*.

- 5 *States Parties shall ensure that persons with disabilities are able to access general tertiary education, vocational training, adult education and lifelong learning without discrimination and on an equal basis with others. To this end, States Parties shall ensure that reasonable accommodation is provided to persons with disabilities.*

Similar to Notes on Article 12

- From Article 27 Work and employment:

All of the Clauses from a “training” perspective and especially Clause (d).

- (d) *Enable persons with disabilities to have effective access to general technical and vocational guidance programmes, placement services and vocational and continuing training.*

Annex C (normative)

Degrees of linguistic equivalences based on ISO 5964

C.1 Introduction and context

ISO 5964, now withdrawn, was a widely used and recognized ISO standard. The guidelines provided in this ISO standard for the construction of a multilingual thesaurus are regarded as an extension of ISO 2788, also now withdrawn.

It is noted that the ISO 2788 and ISO 5964 construct of a “source language” and a “target language” was a very useful construct. However, it did not take into consideration the fact that:

- 1) there may well be more than one equivalent source language, (e.g., a jurisdictional domain, i.e. a UN member state, having two or more official languages and thus more than one source language¹¹³, an international UN recognized entity (and thus jurisdictional domain) having two or more official languages, (e.g., such as ISO which has three, the UN itself which has five),
- 2) within the context of this multipart ISO/IEC 20016 standard the focus is on language accessibility and human interface equivalents (HIEs).

Nevertheless the ISO 5964 construct of “linguistic equivalency” is very relevant and useful in that it provides for five (5) degrees of equivalence.

C.2 Purpose

The purpose of this normative annex is to capture in summary form the five (5) degrees of linguistic equivalence¹¹⁴ as stated in the ISO 5964 standard.

C.3 Summary of ISO 5964 Degrees Of Linguistic Equivalence (DLE)

The ISO 5964 five (5) degrees of linguistic equivalence are presented in its Table 2 as follows:

¹¹³ For examples of jurisdictional domain having more than one official language, the Union of South Africa has eleven (11); see Annex E (*Informative*) *Codes representing UN member states and their official (or de facto) languages* in ISO/IEC 15944-5:2008.

¹¹⁴ Note: ISO 5964 itself did not define the concept of “linguistic equivalency”. However, it did identify five (5) degrees of linguistic equivalence.

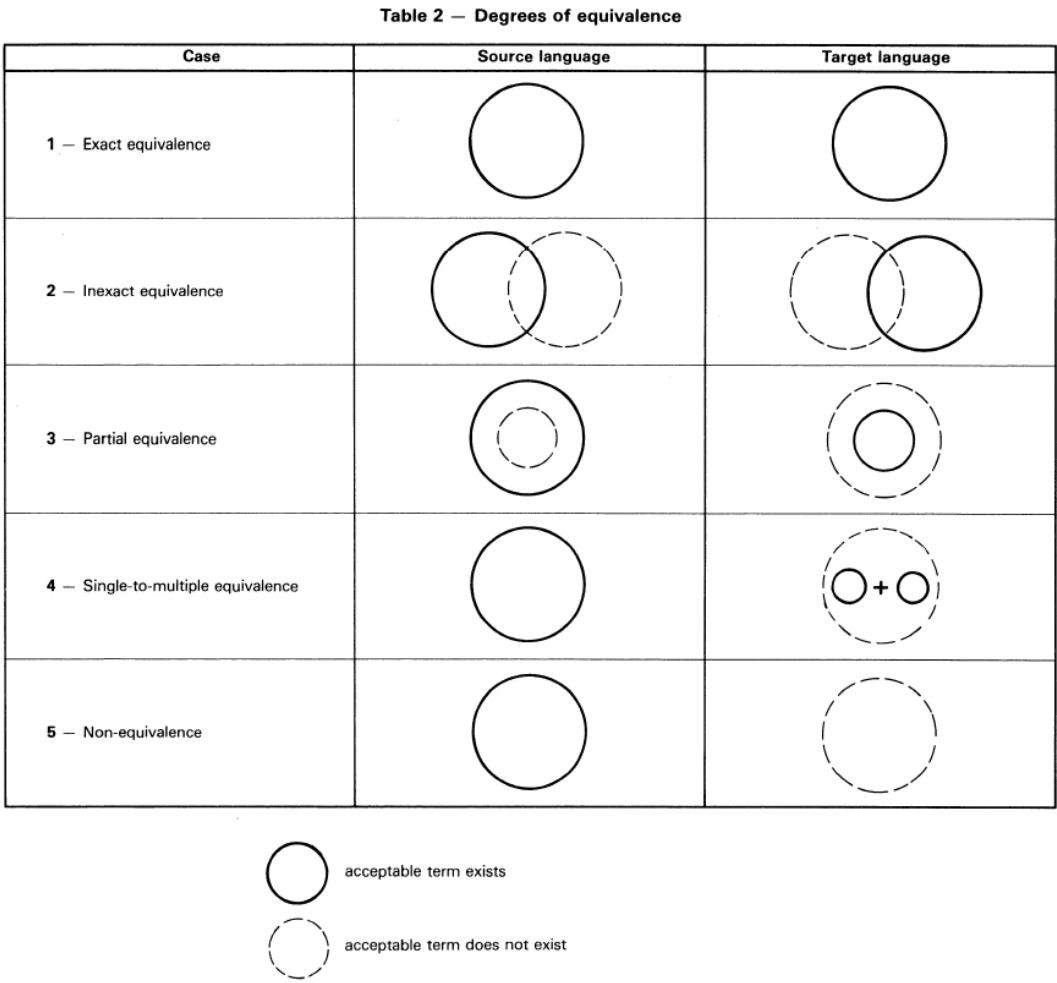
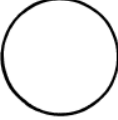
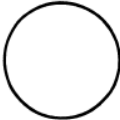
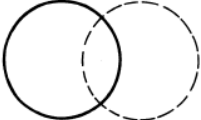

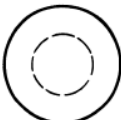

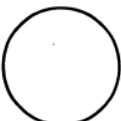

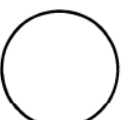



Figure C.1 — Degrees of Equivalences (as taken from ISO 5964)

Tableau 2 — Degrés d'équivalence

Cas	Langue source	Langue cible
1 — Équivalence exacte		
2 — Équivalence inexacte		
3 — Équivalence partielle		
4 — Équivalence d'un terme à plusieurs termes		
5 — Non-équivalence		



un terme acceptable existe



il n'existe pas de terme acceptable

Figure C.2 — Degrés d'équivalence (as taken from ISO 5964)

C.4 Application and use of ISO 5964 in an ISO/IEC 20016-1 context

The Table C.1 in ISO 5964 on “Degrees of Linguistic Equivalence” has been converted into matrix form as follows:

Table C.1 — Matrix of the Five Degrees of Linguistic Equivalence as taken from ISO 5964

Degree Code	English	French
1	Exact equivalence	Équivalence exacte
2	Inexact equivalence	Équivalence inexacte
3	Partial equivalence	Équivalence partielle
4	Single-to-multiple equivalence	Équivalence d'un terme à plusieurs termes
5	Non-equivalence	Non-équivalence

In the context of the requirements of the *UN Convention of Rights of Persons with Disabilities* and its four levels of semantic equivalency, the following mapping exists between the four (4) levels of semantic equivalency and the five (5) levels of linguistic equivalency.

Table C.2 — Mapping of ISO/IEC 20016-1 “Levels of Semantic Equivalency” to ISO 5964 “Degrees of Linguistic Equivalency”

Level of Semantic Equivalency	Degrees of Linguistic Equivalency
0 – Not applicable	All five Degrees apply
1 – Provision of information	Degrees 1 and 4 apply. Degrees 2 and 3 may apply. Degree 5 does not apply.
2 – Informed consent and decision-taking	Only Degrees 1 and 4 apply
3 – Commitment-making	Only Degree 1 applies. Degree 5 may apply

Annex D (normative)

Individual Accessibility Model: (IAM)

D.1 Introduction

- 1) This normative Annex D has as its source a Normative Annex which is found in most of the Parts of the multipart ISO/IEC 15944 eBusiness standard, i.e., a series of standards which focus on the user or operational view of requirements in an IT-enabled manner but which are IT-neutral with respect to their implementation on differing IT-platforms¹¹⁵.
- 2) The SC36/WG7 decision that ISO/IEC 20016 should be architected and structurally engineered to support the requirements of the *UN Convention on the Rights of Disabled Persons* {see Annex B above} has a major impact on the further development of this ISO/IEC 20016-1 *Framework and Reference Model*. **This is because this UN Convention in its totally takes a holistic approach supporting the ability of any individual to be a fully participating member in society, irrespective of any disabilities which that individual may have. Therefore this ISO/IEC 20016-1 Framework and Reference Model needs to differentiate among not only on Persons but also the semantics of the data communicated and processes.**
- 3) At the same time, it is important to note that the multipart ISO/IEC 20016 with respect to the “individual accessibility model (IAM)” incorporates not only:
 - a) data modelling constructs and techniques;
 - b) process modelling constructs and techniques, but also and more importantly that of.
 - c) including Persons in their roles as decision taker and/or commitment maker. {See further Figure D-1 below}
- 4) It is noted that the primary aspect of the concept of a commitment exchange, (e.g., in a LET context or e-learning context these would be instantiated as a LET transaction), is the making of a “commitment” among the parties concerned. This is quite independent of whether the making of such a commitment is undertaken on a for-profit or not-for-profit basis, or involves a public administration as a buyer, seller or regulator.

It is also noted that in an ITLET context, the default situation is that in almost UN member states, the vast majority the provision of LET activities are provided by the regulator via Persons public administrations acting on behalf of the regulator and funded by the same. This is especially so for the provision of LET goods, services and/or rights to individuals under the age of 18 (or via kindergarten, primary and secondary schooling).

¹¹⁵ ISO/IEC 21987-1 (a JTC1/SC36 standard) which focuses on privacy protection in an ITLET context also makes use of the same normative Annex of ISO/IEC 15944.

D.2 Purpose

The purpose for providing this Annex D text in ISO/IEC 20016-1 is to introduce the Individual Accessibility Model (IAM) as a modelling construct which (1) supports from an individual user and operational requirements perspective in support of individual accessibility requirements, as identified external constraints applicable to LET applications; and, (2) is one which is integrated and harmonized with the ISO/IEC 14662 *Open-edition Reference Model*.

A secondary purpose is to note that one key aspect of the Business Transaction Model (BTM) is also very much applicable to ISO/IEC 20016 standards development work in general. This is because it identifies and integrates three required fundamental components, namely “Person”, “process” and “Data”.

From an “individual accessibility” perspective, one substitutes as one of the three sub-types of Person, that of the “individual”. This adaptation results in the following “Individual Accessibility Model” (IAM).

The key aspect in modelling a learning transaction is that it involves the making and undertaking of commitments in achieving a mutually agreed to and understood, common goal, i.e., objective among the participating parties. This means that it has a semantic collaboration space (SCS). This requires a very high level of certainty in the semantics in the sets of recorded information interchanged among the autonomous parties to a commitment exchange, i.e., in establishing¹¹⁶ a commitment and its subsequent actualization¹¹⁷.

The added key aspect and purpose of the *UN Convention on Rights of Person with Disabilities* is to ensure that both the semantics of the recorded information being communicated to an individual exists and/or in which an individual communicates.

Three other key aspects apply; namely: (1) the fact that the BTM applies to any commitment making among autonomous parties; (2) the IAM applies irrespective of whether the good, service and/or right which is the goal of the LET transaction or a LET application is conducted on a for-profit or not-for-profit basis; and, (3) that the nature of the good, service, and/or right being provided in a LET transaction or LET application, being modelled, is governed by internal constraints and/or external constraints of an individual accessibility nature. {See further Annex F below}

D.3 Key elements of the Individual Accessibility Model (IAM)

D.3.1 Introduction

D.3.2 Summary overview of Business Transaction Model (BTM)

The individual accessibility model is based on the business transaction model (BTM). A key reason is that the BTM was developed to support commitment exchange. Therefore, key aspects of the BTM are presented first in Clause D.3. This is then followed by its adaption and use as a key input into the development the individual accessibility model.

¹¹⁶ “Establishing” here includes the planning, identification, and negotiation phases in the making of a commitment.

¹¹⁷ Actualization here also includes post-actualization phase in a commitment exchange, (e.g., warranties, provision of transcripts and diplomas over time, maintenance of “student record”, protection of privacy).

The Business Transaction Model (BTM), as stated in Clause 6.1.5 of ISO/IEC 15944-1, has three required components namely "Person", "Process", and "Data. These three fundamental components of the Business Transaction Model are presented graphically in Figure D.1 below.¹¹⁸

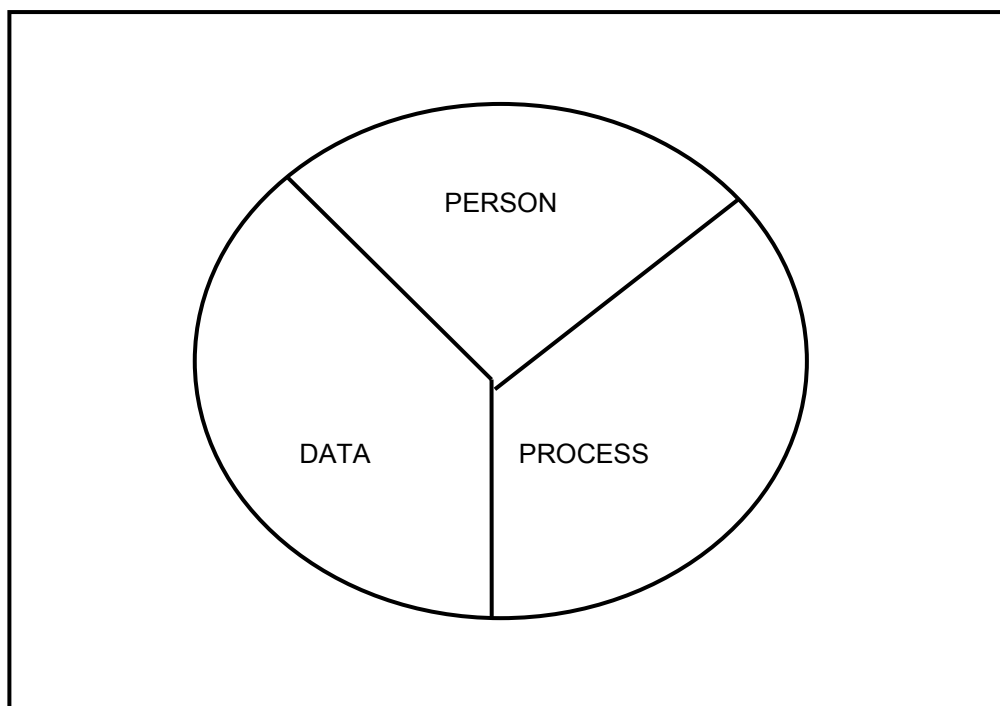


Figure D.1 — Business Transaction Model - Fundamental elements (Graphic illustration)

Using UML as a Formal Description Technique yields the following UML-based representation of the Business Transaction Model and is presented as Figure D.2¹¹⁹.

¹¹⁸ In ISO/IEC 15944-1:2011 for these three fundamental elements, the essential BOV aspects of the business transaction model, along with associated rules, definitions and terms as well as other attributes are stated in the following clauses:

- (1) Clause 6.2 "*Rules governing the Person Component*" (and further Annex E);
- (2) Clause 6.3 "*Rules governing the Process Component*" (and further Annex F); and,
- (3) Clause 6.4 "*Rules governing the Data Component*" (and further Annex G).

¹¹⁹ This UML-based representation incorporates the rules governing the interworking of these three fundamental components as specified in ISO/IEC 15944-1:2011.

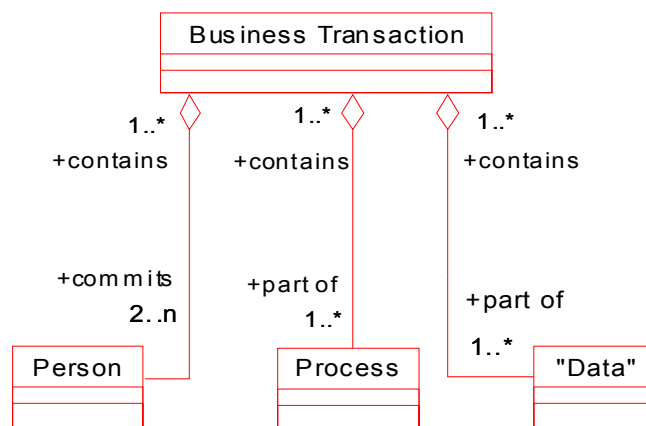


Figure D.2 — UML-based Representation of Figure D.1 – Business Transaction Model

The business transaction model (BTM) focuses on and addresses the essential needs of commitment exchange among autonomous parties, i.e., the ability of Persons as parties to a business transaction being able to make commitments and to do so while maximizing the use of automated methods. This is in addition to existing standards which pertain to various aspects of information exchange only.¹²⁰

As such, what sets Open-edi apart from information exchange in general are six (6) characteristics¹²¹. They are:

- actions based upon following clear, predefined rules;
- commitments of the parties involved;
- commitments among the parties are automated;
- parties control and maintain their states;
- parties act autonomously; and,
- multiple simultaneous transactions can be supported.

Electronic commitment exchanging including transactions therefore require:

- (1) a clearly understood purpose, mutually agreed upon goal(s) explicitness and unambiguity;
- (2) pre-definable set(s) of activities and/or processes, pre-definable and structured data;
- (3) commitments among Persons being established through electronic data interchange;

¹²⁰ It is important that users of this part of ISO/IEC 20016 familiarize themselves with ISO/IEC 15944-1, Clause 6.3.1 titled *"Business transactions commitment exchange added to information exchange"* including the rules and definitions/terms, i.e., "Person", and "commitment" as well as its normative text.

¹²¹ See further in ISO/IEC 15944-1:2011 Clause 5 *"Characteristics of Open-edi"*, where of these six (6) characteristics is described in more detail.

- (4) computational integrity and related characteristics; and,
- (5) the above being specifiable through Open-edi Description Technique(s) (OeDTs) (as the use of a Formal Description Technique(s) in support of modelling e-business), and executable through information technology systems for use in real world actualizations.

The key concepts of IAM are:

- a) content provider
- b) individual user
- c) set of recorded information (SRI)
- d) human interface equivalent (HIE)
- e) semantic collaboration space (SCS).

They are defined in Clause 3 above. They are further developed and explained in clauses and annexes in this document.

D.3.3 Three key elements of the individual accessibility model

As reflected and supported in the BTM, it identifies and integrates three key elements comprising a commitment exchange; namely:

- a) Persons, i.e., those who need to be informed, take decisions and are able to make commitments;
- b) Data, i.e. the sets of recorded information (SRIs) that participation parties need to create or be provided with in order to make a commitment exchanges;
- c) Process, i.e., various activities or phases in the making of commitment exchange, that is, actualized or instantiated in the form of a transaction.

An individual accessibility context requires the generic BTM to be adapted, reflect and support individual accessibility rights as a set of external constraints. These are summarized in the *UN Convention of rights of persons with disabilities* and enforced through law and regulations of UN member states as signatories to this *UN Convention*.

In an ITLET and accessibility context, scope and purpose of ISO/IEC 20016:

- a) "Person" is replaced by "content provider", and "individual user";
- b) "Data" is replaced by "SRIs as HIEs"
- c) "Process" is replaced by "SCS" (semantic collaboration space).

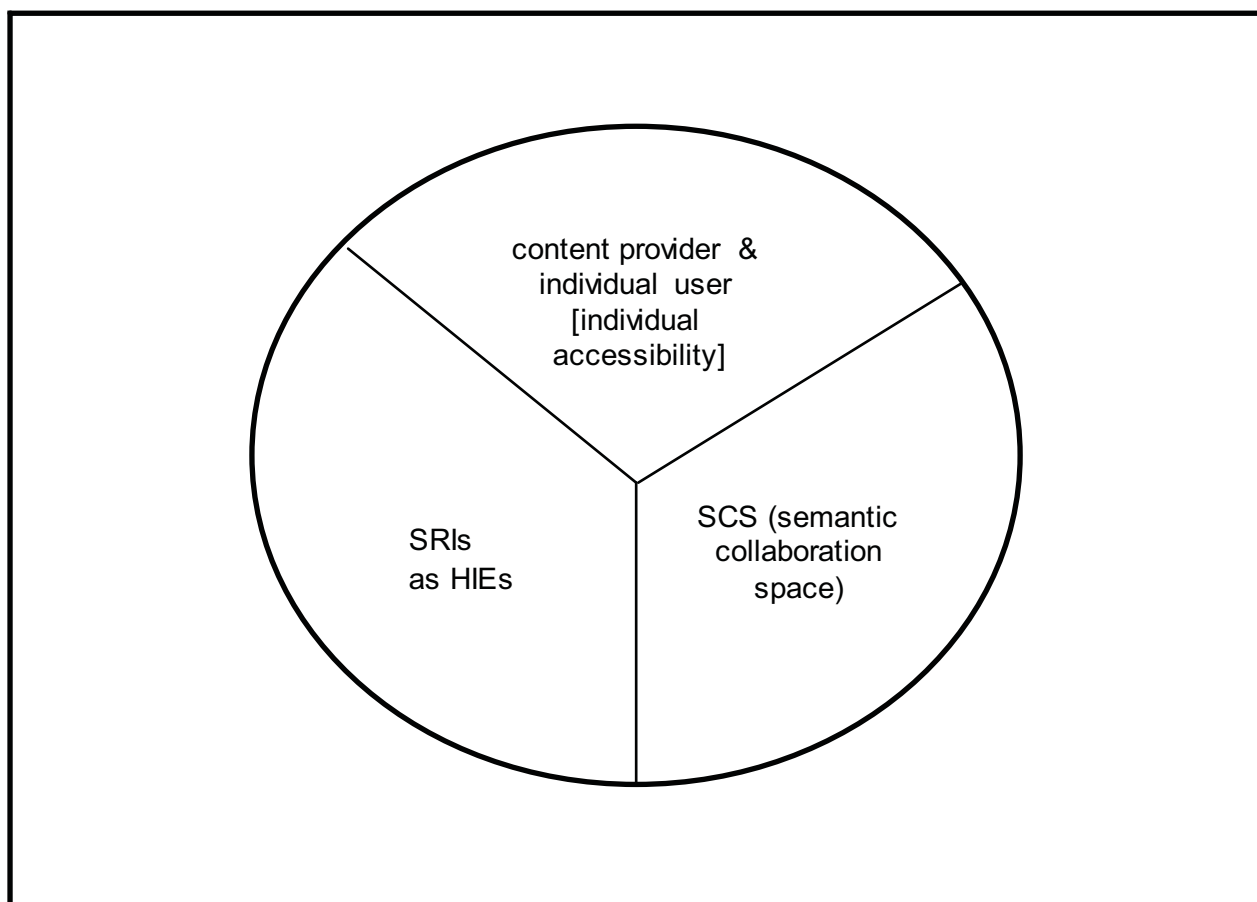


Figure D.3 — Individual Accessibility Model (IAM)

Annex E (normative)

Default conventions for unambiguous identification and referencing of codes representing jurisdictional domains (countries), languages and currencies in support of semantic interoperability

E.1 Introduction¹²²

This Annex identifies and summarizes the issues involved and provides a default solution for the unambiguous identification and systematic interworking of codes representing "countries", "languages", and "currencies". As such, it addresses not only some of the issues pertaining to "locale identifier" and "language identifier" {See JTC1 N6866}, but especially current need for unambiguity in support of semantic interoperability and jurisdictional domains. This Annex and solution focuses on the "semantic" aspects of the issues identified and not the delimiter aspects which are yet to be resolved. {See further below}

The existing sets of codes representing countries, languages and currencies as found in the ISO 3166, ISO 639-2 and ISO 4217 can continue to be used as they are.

It is stated and emphasized that the issue here is not of these ISO code sets themselves (as referenced below) but their interworking and doing so in an unambiguous, systematic and IT-enabled manner.

Common practices and conventions in the use of IT system evolve as IT technologies evolve and their use in applications becomes more diverse and global. Often these common practices and conventions were developed within the then existing IT and economic constraints. A prime example is that known as the "Y2K" problem, i.e., the mid-twentieth century IT decision to represent Gregorian calendar year values as "YY" and not "YYYY", i.e. the "19" of "1967" was not captured, only the "67" of this value was captured.

Similarly, it was the development of ISO/IEC 10646 (a.k.a. "Unicode"), the PC and the emergence of the Internet in 1990, which made it possible to conduct EDI on a global basis and in whatever language while doing so in an efficient and cost-effective manner. One result was the identification of several issues of a "Y2K" nature. ISO/IEC 15944- (based on its Annex D) addresses one set of such issues. In its work on e-business standards development, i.e. via the multipart ISO/IEC 15944 standard, ISO/IEC JTC1/SC32/WG1 e-Business noted that three of the most common semantic components (SCs) identified and re-used in commitment exchanges of any kind were those ID codes for the identification of countries, currencies and languages as well as the unambiguous interworking among the same. The requirements of this multipart ISO/IEC 2016 standard are similar in nature.

However, many equally valid different code sets exist for countries, currencies and languages, all of which are in use in various applications world-wide (e.g. in the most common standards used ISO 3166-1 and ISO 639 each contain three (3) different equivalent code sets while ISO 4217 contains two equivalent code sets). At the same time these three standards use 2- and 3-alpha codes in both upper and lower case. But these 2- and 3-alpha code sets of ISO 639, ISO 3166, and ISO 4217 are not mutually exclusive, i.e. unique.

¹²² This Annex E is based on normative text found in *ISO/IEC 15944-5:2008 Information technology — business Operational View — Part 5: Identification and referencing of requirements of jurisdictional domains as sources of external constraints, and in particular its Annex D (Normative) titled "Unambiguous semantic components and jurisdictional domains: Standard default convention for the identification, interworking and referencing of combinations of codes representing countries, languages and currencies"*.

It has been amended to take into account and reference the *UN Convention of Rights of Persons with Disabilities*. This includes placing it in the context of "language accessibility" and human interface equivalents' requirements.

It is noted that users of this document shall reference and use ISO 3166-1, ISO 639-2/T and ISO 4217 in support of implementation of this multipart ISO/IEC 20016-1 standard.

The key issue addressed in this normative Annex is that the 3-alpha codes for countries, languages and currencies overlap and are **not mutually exclusive** or unique. This causes confusion especially when use of various combinations of these code sets is required. Further, ISO 639-2 has two different tables for 3-alpha code sets, i.e., a "2/T" and a "2/B". This is significant in that their difference in language codes includes countries such as China, France, Germany, the Netherlands and others. The 2-alpha codes for languages and countries overlap and are not mutually exclusive or unique. This too causes confusion when used especially in combinations¹²³.

ISO/IEC JTC1 also recognized this being an issue (along with the related issue on the use of various conventions for the use of "delimiters") and stated so at its November, 2002 Plenary Meeting in its Resolution #39¹²⁴. As a result JTC1/SC32/WG1 assumed this task, with its experts undertaking detailed analyses of codes sets representing countries, languages and currencies. Annex D in ISO/IEC 15944-5 is based on the results and approach taken in e-business standards development¹²⁵.

As such, the order in which the codes representing country, language and currency are presented and the specific code set chosen leads to ambiguities in EDI in general and especially among autonomous parties and their heterogeneous IT systems when engaging in e-business transactions and any commitment exchange, in a global context. {See further JTC1 N7335 for some examples}

ISO/IEC 20016-1 adopts the normative Annex D of ISO/IEC 15944-5 as the basis for its Annex E placing it in an ITLET application context and in support of the requirements of the *UN Convention on Rights of Persons with Disabilities*.

In addition, and especially from a jurisdictional domain requirements perspective, it is important to note that:

- 1) many of the entities listed with a "country code" in ISO 3166-1 are not really "countries", i.e. they are not UN member states. Nearly 20% of the entities listed in ISO 3166-1 are not "countries" {See further ISO/IEC 15944-5 "*Annex J (Informative) Non-UN Member entities Listed in ISO 3166-1*"}. ISO 3166-1 acknowledges this and states so in its standard. However, many users mistakenly assume that they can use the ISO 3166-1 coded domain for "country codes" "as is" in commitment exchange and LET context on a world-wide basis.; and,
- 2) a majority of the languages listed in the code set of the coded domain for ISO 639-2/T are not languages of the status of being recognized as "official language(s)" by a jurisdictional domain, or used as the de facto language in those jurisdictional domain which does not have an official language. This is not surprising given that there are at least 4000-5000 known or in use languages around the world. Here ISO 639-2/T does not address legal or jurisdictional aspects on the languages which it registers and assigns a language code to. It is noted that the registration of a language and the assignment of an ISO 639-2, 3-alpha language code is

¹²³ For detailed information on such overlaps (duplication) in use of ID codes, see further ISO/IEC JTC1 N7335 and, in particular its following Annexes:

- Annex C.3 - *List of Natural Languages having different ISO 639-2 Alpha-3 Codes*
- Annex D - *List of Overlapping 2-alpha Country Codes and 2-alpha Language Codes*
- Annex E – *Multiple Human Interface Equivalents (Linguistic) for Codes Representing Country Code Examples.*

¹²⁴ See ISO/IEC JTC1 N6927 "Resolutions Adopted at the 17th Meeting of ISO/IEC JTC 1, 21-25 October 2002 in Sophia Antipolis, France" and its Resolution #39 titled "Resolution 39 – JTC1/SC32 SC36 Topics in Internationalization and Localization" which states:

JTC 1 notes the request from SC 36 as contained in document JTC 1 N 6866 concerning locale identifiers. JTC 1 understands that JTC1/SC32/WG1 is willing to assume this task subject to availability of resources.

JTC 1 notes that ISO/IEC 15897:1999 *Information technology – Procedures for registration of cultural elements* should be considered during this effort.

¹²⁵ See ISO/IEC JTC1 N7335 *Response to JTC1 Sophia Resolution #39: Development of a Solution for the Unambiguous Identification and Interworking of Codes Representing Countries, Languages, and Currencies* (prepared on behalf of JTC1/SC32/WG1)". The extensive work here undertaken by M. Janice Pereira is much appreciated.

totally independent of the status of that language in any jurisdictional domain. It is, however, assumed that the assignment of a new ISO 639-2 3-alpha code is driven by the requirements of a people who use that language.

Consequently, given the above facts plus the existence of multiple equivalent code sets, there is a need:

- 1) to identify, not only that subset of entities listed in ISO 3166-1 which are UN member states but to do so in an unambiguous manner; and,
- 2) to identify which of the language listed in ISO 639-2/T have a legal status, i.e., as an official or de facto language, and in which UN member state as well as a convention for establishing the same.

E.2 Purpose

The purpose and focus of Annex E is to provide common default conventions for specifying in an unambiguous manner the identification and interworking of two or three codes taken from the code sets for countries, languages, and currencies primarily for use in:

- 1) the modelling of business transaction through scenarios and scenario components as well their registration as business objects for re-use; and,
- 2) for general use in EDI- based applications where two or more of the country, language and/or currency code sets have to inter-work in unambiguous manner in support of commitment exchange of any kind among autonomous parties.

This is not a problem where only one of these codes needs to be/is use in support of an instantiated commitment exchange, (e.g. in stand-alone applications), within a closed system or network, within a defined market, etc. However in many business transactions and particularly those involving two or more jurisdictional domains, especially in international trade and transport, two of these, if not all three of these code sets need to be used and inter-work simultaneously.

In addition the two and three alpha codes used for the identification of countries, languages and currencies are not unique. Further, the two alpha codes of ISO 639-1 increasingly represent less and less of the languages in use, i.e. they represent only 42 % of the languages in use.

In a nutshell, the issues and problems arise when in a business transaction (or any application), one uses two or more of these three coded sets together to state a requirement or semantic component in an unambiguous manner.

E.3 Exclusions to Annex E

ISO/IEC JTC1 also identified as an internationalization and localization issue, the need for a single harmonized approach for “locale identifiers, i.e., for the “delimiters” used in “locale identifiers¹²⁶” as found in:

¹²⁶ On the whole, the issue of “locale identifiers”, “internationalization” (or i18n), use of delimiters, etc., is functional services view support perspective. This Annex E focuses on the semantic operational view perspective.

- (1) ISO/IEC 9945-1 (POSIX, Part 1); and,
- (2) IETF RFC 3066 (a revision of RFC 1766)¹²⁷.

The development of a harmonized approach to the specification of a common “delimiter” for locale identifiers is outside the scope of this Annex.

This Annex E (and this part of ISO/IEC 20016) focuses on the “semantic” and “syntax” aspects of the issues identified and not that the development of a common representation of “delimiters” which has yet to be resolved.

E.4 Current issues and approach taken

E.4.1 Summary of nature of issues pertaining to interworking of codes representing countries, languages, and currencies

The general issue pertains to being able to ensure unambiguous identification and interworking of combinations of codes representing “countries”, “languages” and “currencies”¹²⁸. This pertains not only to ISO/IEC (but also other international entities such as IETF, W3C, etc.) There is a need to develop one or more common default conventions for referencing combinations of the multiple “standard” codes sets, for the identification of countries, languages and currencies, not only from an IT functional services perspective but especially from an operational view perspective in all forms of international commitment areas of application, (e.g., e-learning, e-commerce, e-administration, e-medicine, e-logistics, e-government, etc.).

The issue arises when one needs to use more of these code sets together given the fact that for ISO 639 and ISO 3166 each, several code sets exist.

¹²⁷ The two most relevant specifications which contain “patterns” two different types of “delimiters” for locale identifiers are:

- ISO/IEC 9945-1 (POSIX, Part 1) specifies a locale identifier, using the pattern **{language code} + underscore character + {country code}**. UNIX and Java systems use this format; and,
- IETF RFC 3066 (a revision of RFC 1766) specifies a language identifier, using the pattern **{language code} + hyphen character + {country code}**.

See further document ISO/IEC JTC1 N7335.

¹²⁸ With respect to “country codes”, “language codes” and “currency codes”, it is recognized that:

- “country codes”, i.e., ISO 3166-1, ISO 3166-2, ISO 3166-3, etc., that this multipart standard is the responsibility of ISO TC 46/WG2;
- “language codes”, i.e., ISO 639-1, ISO 639-2, etc., that this multipart standard is the responsibility of ISO TC37/SC2; and,
- “currency codes”, i.e., ISO 4217, that this is the responsibility of ISO TC68.

Note 1: The solution proposed for the unambiguous interworking of combinations of codes representing countries (and their administrative subdivisions), languages and/or currencies (in the context of a global economy, and jurisdictional requirements) does not require changes/modifications to existing code sets for these three standards.

Note 2: The three strategic directions of JTC1 for its standards development work are “portability”, “interoperability”, and “cultural adaptability”. The proposed solution not only supports these three strategic directions of JTC1 for “information exchange” purposes but also addresses the requirements of “commitment” exchange of e-business.

Note 3: In a 30 September, 2003 Press Release (Ref: 871), the ISO reaffirmed its free-of-charge policy for use of its country, currency, and language codes. See <http://www.iso.ch/iso/en/comcentre/pressreleases/2003/Ref871.htm>

In this context, the issue of resolving whether to use a **underscore** or **hyphen** as a “delimiter” is less important than being able, in an unambiguous manner, to support combinations of ISO 3166-1 and ISO 3166-2 codes sets representing entities as jurisdictional domains and then their “official languages,” and/or currencies as well as that of the ISO 4217 currency code set¹²⁹. Here given the emergence of Internet and commitment exchange, it is the country which qualifies the use of a language (even the use of the same language such as the 20+official variants of English, the many variants of use of German, Spanish, Arabic, Portuguese, etc.), in specific jurisdictional domains. Thus from a commitment exchange and legal perspective, i.e., that from an external constraints perspective, the order should be that of providing the identification of the jurisdictional domain first, i.e. ISO 3166-1 (and 3166-2 codes as applicable) and then second the identification of the applicable language(s), i.e. ISO 639-2/T codes; and/or currency codes, i.e., ISO 4217.

E.4.2 ISO 3166-1 “Country Codes”

At present, three (3) “equivalent” different ISO 3166-1 code sets are in use for the identification of names of “countries” and other geopolitical entities, etc.; namely:

- 3-digit numeric code. [Source = United Nations]
- a 3-alpha code. [Source = United Nations]
- a 2-alpha code. [Source = ISO 3166-1].

The alpha codes are often represented in both lower and UPPER case although ISO 3166-1 specifies UPPER CASE¹³⁰. Of these three code sets, the 3-digit numeric code is the most stable. The 2-alpha and 3-alpha codes of ISO 3166-1 can and do change at the request of the country concerned either because a country decided to change its name designation(s) or prefers to use another alpha code designation¹³¹ but with the 3-numeric code staying the same. Further, the use of the 3-numeric code set has other advantages providing language independence. For example, a country can have multiple equivalent valid (official name representations, i.e. as human interface equivalents, for its 3-numeric code¹³²). {See further Annex E in J1N7335 for some examples}

¹²⁹ See further Sections 3.6, 3.7 and 4.0 in the document of ISO/IEC JTC1 N7335.

¹³⁰ ISO 3166-1:1997 (E/F) states in Clause 5.2 “Construction of the alpha-2 code”, and we quote:

“The alpha-2 code uses combinations in upper case of two letters of the 26-character Roman alphabet (ignoring diacritic signs) from the range AA to ZZ”.

The most widespread use of the ISO 3166-1 2-alpha code in lower case is as part of the top level domain in Internet (ICANN) domain names.

Clause 5.3 “Construction of the alpha 3-Code” states, and again we quote:

“This part of ISO 3166 also provides an alphabetic 3-character (alpha 3) code, based on the alpha-2 code, and using combinations, in upper case, of three letters of the 26-character Roman alphabet (ignoring diacritic signs) from the range AAA to ZZZ, for use in cases where a specific need has been identified.

NOTE 3 - Attention is drawn to the fact that other 3-letter codes exist”.

¹³¹ For UN member states, changes in names must be approved by the Security Council to be recognized. {See further document JTC1/SC32 N0535 “Approach to Development of the new ISO/IEC 18038 “Identification and Mapping of Various Categories of Jurisdictional Domains”} [Note: “18038” is now “15944-5”]. Also, document 32N0535 contains an Annex B titled “Identification and Mapping of “Countries” as Jurisdictions on a Peer-to-Peer Basis”.

¹³² For example, the multiple recognized names of a UN member state consist of a formal “long name”, the more frequently used “short name”, their name representation in (official) language(s) of that UN member state, their long and short name representations (HIEs) as stated in ISO English and ISO French as in ISO 639-1. Thus, for a single UN member state 3-digit numeric ID code there are multiple HIEs (“Canada” is more of an exception as its ISO English and ISO French HIEs are the same as well as its long and short form HIEs). Finally, one must keep in mind that the names of countries in other languages also have added HIEs for the same country (including the use of various different alphabets).

Neither ISO 639 nor ISO 4217 have a "numeric" code set. In addition, the financial services sector already uses the 3-digit numeric code for countries in financial transactions.¹³³

ISO 3166-1 states, in Clause 5.5 "Specification for use" that:

"When applying this part of ISO 3166, users should clearly state which of the three codes they are using. If a code element from this part of ISO 3166 is used in combination with other characters for special purposes, it is strongly recommended that the choice and function of any such additional character be specified".

Consequently, this multipart ISO/IEC 20016 standard adopts the ISO 3166-1, 3-digit numeric as its default convention for referencing codes representing countries.

E.4.3 ISO 639-2 "Language Codes"

With respect to "language codes," the 2-alpha code set is no longer adequate to meet global requirements. ISO TC37/SC2, the committee responsible, recognized this and responded, in 1998 by introducing ISO 639-2:1998 *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 639-2 has two 3-alpha code sets for the representation of names of languages, namely:

- one for terminology applications, i.e., ISO 639-2/T; and,
- one for bibliographic applications, i.e., ISO 639-2/B.

They are the same except for **twenty-five languages that have a variant code**. The problem here is that these include codes for major languages such as Chinese, French and German. {See further Annex C in ISO/IEC J1N7335}

As a result ISO 639 has three sets of codes for the representation of names of languages; namely:

- a 2-alpha code [Source = ISO 639-1]
- a 3-alpha code - bibliographic [Source = ISO 639-2/B]
- a 3-alpha code - terminology [Source = ISO 639-2/T]

Codes representing names of languages are presented in lower case¹³⁴ (although conventions for some user applications use UPPER case).

¹³³ For this and other reasons in financial transactions, the 3-digit ISO 3166-1 code set is used. See further ISO 8583-1:2003 *"Financial transaction card originated messages — Interchange message specifications — Part 1: Messages, data elements and code values"*.

¹³⁴ With respect to the 2-alpha code, ISO 639-1:2001 states in Clause 4.4 *"Form of the language identifiers"*, and we quote:

"The language identifiers consist of the following 26 letters of the Latin alphabet in lower case: a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z. No diacritical marks or modified characters are used. Implementers should be aware that these identifiers are not intended to be an abbreviation for the language, but to serve as a device to identify a given language. The language identifiers are derived from the language name. Each identifier is based on the indigenous name of the language or the preference of the communities using the language".

And with respect to the 3-alpha codes, ISO 639-2:1998 states in Clause 4.1 *"Form of the language codes"*, and we quote:

"The language codes consist of three Latin-alphabet characters in lowercase [sic]. No diacritical marks or modified characters are used. Implementers should be aware that these codes are not intended to be an abbreviation for the language, but to serve as a device to identify a given language or group of languages. The language codes are derived from the language name."

One therefore needs a "default" convention for referencing codes representing "languages".

The default chosen by JTC1/SC36/WG7 in this multipart standards development work is "ISO 639-2/T", i.e., the 3-alpha code for its terminology applications¹³⁵.

Consequently, this standard adopts as its default convention the "ISO 639-2/T" 3-alpha code lower case as its default convention for referencing codes representing languages.

E.4.4 ISO 4217 "Currency Codes"

ISO 4217 has two sets of codes for the representation for currencies and funds; namely:

- 3-alpha; and,
- 3-numeric.

The 3-alpha codes are represented in UPPER case only in ISO 4217:2001 and is the most widely used especially in the banking/financial services sector. The numeric currency code is derived, where possible, from the United Nations standard Country or Area Code. Additional codes to meet special requirements are allocated as necessary from within the user-assigned range of codes 950 to 998. Thus for many countries their 3-digit currency code is not the same. The introduction of the "euro" (EUR) has greatly increased this number¹³⁶.

This means that many countries use the same currency (code) as their official currency.

As such, **the 3-alpha code set UPPER case is the most widely used and avoids confusion with country codes.**

Consequently, this standard adopts as its default convention the use of the "ISO 4217, 3-alpha UPPER case code set as part of its default convention for referencing codes representing currencies.

E.5 Principles governing approach taken

The principles governing the approach taken in this Annex E (and in this part of ISO/IEC 20016 (and its other Parts as well) include (in no particular order):

- applicable and relevant sub-sets of ID codes stated in ISO 639, ISO 3166 and ISO 4219 serve as the basis for this standard and commitment exchange includes those in a LET context;
- the solution proposed for the unambiguous interworking of combinations of codes representing countries (and their administrative subdivisions), languages and/or currencies (in the context of a global economy, and jurisdictional requirements) does not require changes/modifications to existing code sets for these three standards;
- the three strategic directions of JTC1 for its standards development work are "portability", "interoperability", and "cultural adaptability". The proposed solution not only supports these three strategic directions of JTC1 for "information exchange" purposes but also addresses the requirements of "commitment" exchange of e-business;

¹³⁵ This is also the default convention in JTC1/SC standards which are directly related to that of ISO/IEC SC36.

¹³⁶ See further Table A.1 *Currency and Funds Code* in ISO 4217:2001 (E/F). Further, the currency codes for members of the European Union all have a deadline date after which they will no longer be valid for referencing in any actualized commitment exchange.

- it is up to the ISO committees responsible for ISO 639, ISO 3166 and ISO 4219 to decide to revise or add an attribute for an existing member in the coded domain for which they are responsible, and/or, add or delete member in these coded domains;
- in modelling business transactions, it is possible to develop scenarios and scenario components of a nature which are independent of or do not require the identification of specific jurisdictional domains, languages and/or currencies, (e.g., when dealing with internal constraints only);
- not all business transactions require the unambiguous identification, use and interworking of two or more code sets pertaining to “countries, languages and/or currencies”.

E.6 Common default conventions

E.6.1 Default convention #1 for the unambiguous identification and referencing of combinations of codes representing countries, languages and currencies in support of semantic interoperability

The common default convention #1 to identify and reference countries, languages and currencies codes where two or more of these have to inter-work together is of identifying and referencing:

- a) countries via their ISO 3166-1 3-digit numeric code, i.e., as "nnn";
- b) languages via their ISO 639-2/T 3-alpha code using the lower case, i.e., as "aaa"; and,
- c) currencies via their ISO 4217 3-alpha code using upper case, i.e., as "AAA".

This standard default convention for the unambiguous identification and references of codes representing the names of countries, languages, and currencies allows any combination of these three code sets to be specified in a semantically complete, unambiguous, and interoperable manner.

It is recognized that associated with each of these codes are multiple equally valid (if not official) name representations. {See further Annex D in ISO/IEC 15944-5} The adoption of a common default convention as proposed here will not only provide a systematic, pragmatic, cost-effective and efficient approach in support of "cultural adaptability", but will also support the global requirements of e-learning and commitment exchange.

E.6.2 Default convention #2 for the ordering of codes representing countries, languages and currencies

One key aspect of “localization” is that the use of a natural language is conditioned by the country or jurisdictional domain in which it is used. Thus, the default convention where both country code and language code are used should be that of:

- (1) if both country code and language code are used their order is:

{country code} + {language code}

- (2) where the geopolitical entity or jurisdictional domain of the user environment, also requires the identification of an administrative sub-division of a UN member state, the applicable ID code from the ISO 3166-2 code set is to be utilized in conjunction with the ISO 3166-1 3-digit numeric country code as:

{ISO 3166-1 3-digit numeric ID code + ISO 3166-2 ID Code} + {language code}

Default convention #2 as applied to combination of “country codes” and “currency codes” are likewise to be ordered as:

{country code} + {currency code}.

E.7 Application of default convention #1 for identifying codes representing countries, languages and currencies with default convention #2 for ordering them

The application of the proposed default conventions #1 and #2 provide for unique combinations which also support interoperability requirements from both the IT and semantic perspectives as well as those of commitment exchange and jurisdictional domains. Thus a unique combination of:

- (1) country and (official) language is identified and referenced as "**nnn:aaa**";
- (2) country and currency as "**nnn:AAA**".

Should one wish not to use the default ordering convention #2 then: language code + country code would be "aaa:nnn". However, a common, horizontal generic default convention or standard for the unambiguous ordering and identification of codes representing countries, languages and currencies will not only:

- (1) ensure semantic completeness and interoperability required in support of e-business and jurisdictional domains; but also,
- (2) serve as a standard "pivot" from which one can map to legacy systems, local usage conventions, sectoral applications, etc., use of various syntaxes (including ASN.1, UN/EDIFACT, HTML, XML, etc.).

E.8 Examples of applying “default convention #1” in an ITLET context

Example of applying default convention #1 include the following:

- 1) that an official announcement of the availability of Canadian federal government training program where the country ID for Canada is 124 and issued as separate English and French language SRIs and a fee is being charged, New Brunswick, which is officially English/French bilingual, of the criteria and deadline for parents to register their children for entry in 1st grade of a primary school by any school board in New Brunswick would be:
 - 124:NB:eng; and,
 - 124:NB:fra
 respectively.
- 2) that of request for payment for an adult education course being offered in Finland (246) in Finnish (fin) and Swedish (swe) and for which payment is made in euros (EUR) would be:
 - 246:fin:EUR; and,
 - 246:swe:EUR
 respectively.

Annex F (normative)

Classes of constraints

F.1 Introduction

The SC36/WG7 decision that ISO/IEC 20016 should be architected and structurally engineered to support the requirements of the *UN Convention on the Rights of Disabled Persons* {see Annex B above} has a major impact on the further development of this ISO/IEC 20016-1 *Framework and Reference Model*. **This is because this UN Convention represents a set of external constraints and therefore this ISO/IEC 20016-1 Framework and Reference Model needs to differentiate between internal constraints and external constraints.**

Much of the normative text for Annex F is taken from normative rules and text in ISO/IEC 15944-1 which introduced the need to distinguish between “internal constraints and “external constraints.” constraints”. “Annex C (Normative) Business Transaction Model (BTM): Classes of constraints” (which also serves as a common Annex to all the Parts of ISO/IEC 15944). It is important to note especially in an ITLET context that the concept and definition of “business transaction” is totally independent of whether or not is (1) is based on a for-profit, a not-for-profit basis; and/or, (2) whether or not it involves any public administration) either as “content provider” or in their role as “ regulators” can/should be generalized to include and identify external constraints which are introduced by ‘regulators’, i.e., are “public administration”.

F.2 Purpose

The purpose for providing this Annex F text in ISO/IEC 20016-1 is to serve as the basis for an HIE Classes of Constraints Model. The primary reason here is to introduce the two primary classes of constraints with respect to the provision of an HIE; namely:

- a) one which is internal among all the parties concerned, i.e., as mutually agreed among them, and whose purpose and content is not governed by any external constraint (including those of an “individual accessibility” nature, the *UN Convention on Rights of Persons with Disabilities*, any information law and/or public policy requirement, etc.); and,
- b) one which is of an external constraints nature, i.e., the nature, purpose, use, interchange, etc., where the set of recorded information forming HIEs in a LET application is governed by one or more external constraints.

F.3 Constraints: internal and external

These and related requirements of rules governing a commitment exchange (instantiated as a “transaction”) are specified in the form of “constraints”.

“Constraint” has already been defined as:

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-edl, 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]

The fact that ISO/IEC 20016-1 is constraint-based is reflected by the fact of extensive use of clearly stated rules. Each of these rules has a unique identifier. At times, a rule is supported by a guideline whose purpose is to provide guidance on the implementation and use of the rule.

At the most primitive level there are two classes of constraints; namely,

- (1) those which are "self-imposed" and agreed to as commitments among the parties themselves, i.e., "**internal constraints**"; and,
- (2) those which are imposed on the parties to a commitment exchange based on the nature of the good, service and/or rights exchanged, the nature of the commitment made among the parties (including ability to make commitments, the location, etc.), i.e., "**external constraints**".

They are defined as follows:

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 modeling 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.

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 Primary sources of external constraints are created by law, regulation, orders, treaties, conventions or similar instruments.

NOTE 2 Other sources of external constraints include those of a sectoral nature, those which pertain to a particular jurisdiction 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.

NOTE 5 Where the Information Bundles (IBs), including their Semantic Components (SCs) of a business transaction 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 (the Information Bundles exchanged), as a "record".

NOTE 6 A minimum external constraint that is often applicable to a business transaction requires one to differentiate whether the Person, i.e., that is a party to a business transaction, is an "individual", "organization", or "public administration".

EXAMPLE Privacy rights apply only to a Person as an "individual".

The class of "internal constraints" has been derived to provide a simplified view of commitment exchanges including learning transactions for which there are no external constraints or restrictions to the nature and conduct of the transaction. The only constraints are those mutually agreed to by the content provider and individual user for the explicitly stated goal of the commitment exchange, i.e., they are self-imposed. This allows one to build scenarios and scenario components, i.e., as repeatable and res-usable common patterns for referencing, registering and re-use as generic or base scenarios without having to include potential external constraints. The rules governing specification of Open-edi scenarios and their components require that all applicable external constraints must be stated at the time of instantiation but need not exist at the time of registration. {See further, Clause 9 in ISO/IEC 15944-1 and its Annex I}

However, in most commitment exchanges external constraints do apply, i.e., applicable laws and regulations. These range from taxation related regulation; health and safety or packaging and labelling requirements; ensuring that nature of the business transaction and/or the goods or services delivered do not comprise behaviour of a criminal nature. Whilst laws and regulations exist within and among jurisdictions they are the primary source of "external constraints".

External constraints exist which are horizontal in nature. These are the common and generic rules for business transactions, (e.g., privacy/data protection, consumer policy, uniform commercial codes, etc.).

COMMON PUBLIC POLICY: EXTERNAL CONSTRAINTS	
Common Public Policy: Individual Accessibility	
Common Public Policy: Consumer Protection	
Common Public Policy: Privacy Protection	
Common Public Policy: Other Human Rights	

Figure F.1 — Common public policy external constraints relevant to ITLET

The imposition of these horizontal external constraints ITLET-related activities is exemplified by the introduction of a third type of role, namely that of "regulator" as a third sub-type of Person as a player representing "public administration".

External constraints of a horizontal and common nature are constraints imposed by regulators (and enacted through public administrations) which apply regardless of the type of business or sector within which the commitment exchange occurs. This categorization allows one to build scenarios and scenario components for

referencing, registering and reuse of specific common sets of external constraints. These can then be combined with scenarios which focus on internal constraints for building application use scenarios.¹³⁷

These two basic classes of constraints on business transactions are illustrated below in *Figure F.2: Business Transaction Model: Classes of Constraints*.

These two basic classes of constraints on business transactions are illustrated here in Figure F.2.

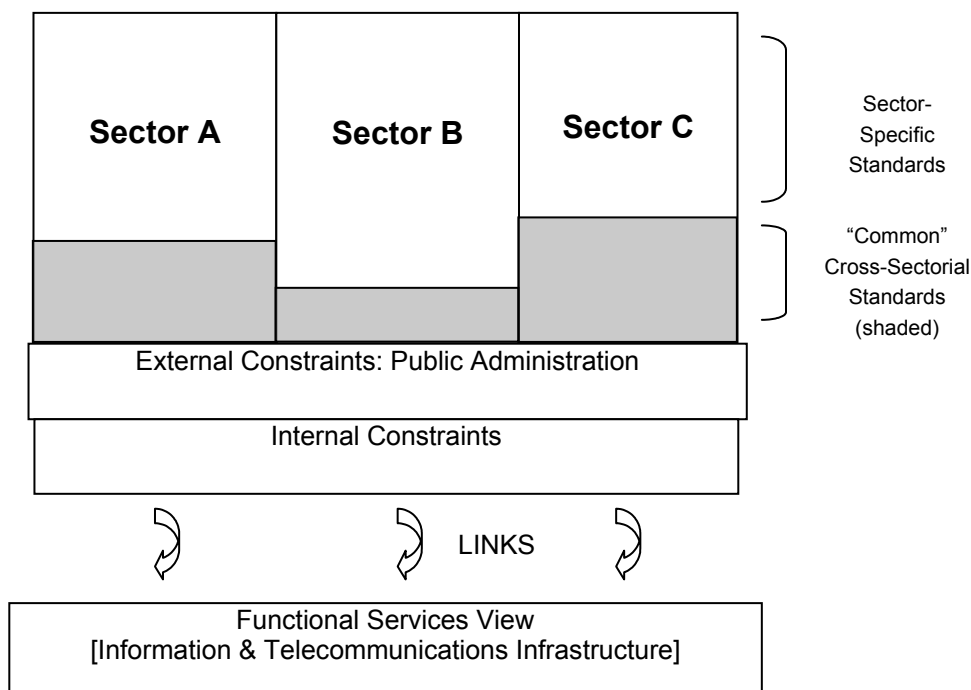


Figure F.2 — Business Transaction Model: Classes of constraints

The primary set of external constraints in ISO/IEC 20016 is the set required to support the *UN Convention on the Rights of Persons with Disabilities*. In this context and that with and ILET focus, this ISO/IEC 15944-1 Figure 8 is amended as follows.

¹³⁷ A useful characteristic of external constraints is that at the sectorial level, national and international focal points, recognized authorities often already exist. The rules and common business practices in many sectorial areas are already known. Use of this standard (and related standards) will facilitate the transformation of these external constraints (business rules) into specified, registered and re-useable scenarios and scenario components.

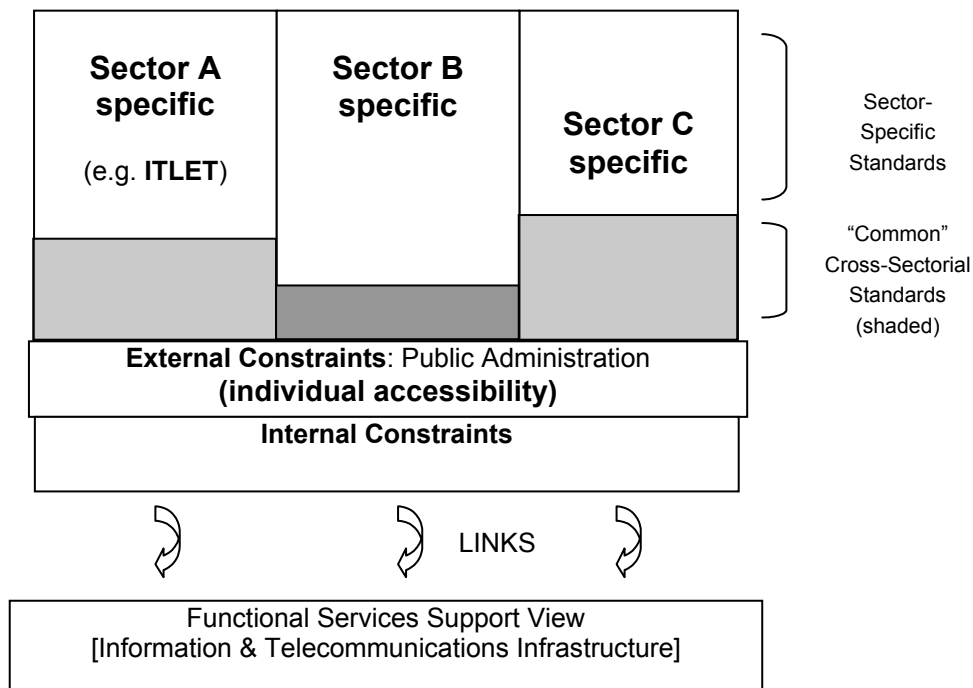


Figure F.3 — Individual accessibility: Classes of constraints

Figure F.3 illustrates (a) that both external and internal constraints reside primarily in the “operational view”; (b) the fact that individual accessibility is an external constraint which is horizontal in nature; and, (c) the focus of this document is on the ITLET sector.

Annex G (informative)

Summary on issues of language equivalencies¹³⁸

This Annex G is organized with the following sub-clauses:

G.1 Introduction and context

G.2 Purpose

G.3 Summary notes on “language equivalency”

G.4 Bibliography

G.1 Introduction and context

The purpose and scope of the new ISO/IEC 20016-1 is that of:

- 1) supporting language accessibility as a key aspect in supporting both (a) the legal requirements of jurisdictional domains in this area; and, (b) the user, i.e., individual, needs, client-centred approach; and,
- 2) doing so through the concept/construct of Human Interface Equivalents (HIEs),

The focus is on communicating the semantics (meaning) of the recorded information being interchanged among the individuals and facilitating the use of information communications technology (ICT) systems in support of the same.

As such, ISO/IEC 20016-1 focuses on supporting the availability, and thus the accessibility, of HIEs in whatever language a human being wishes to use, or is capable of using in communicating semantics through recorded information. Thus, ISO/IEC 20016-1 is directed at providing concepts and methodology as tools in support of “semantic equivalency and semantic interoperability”.

This is quite different from “language equivalency” which is a field where extensive work has been done and for which many international (and national standards) exist. A key example here is found in the “thesauri” standards¹³⁹.

Yet, there are many concepts, constructs, rules, definitions, etc., in the fields of translation and indexing which are applicable to language accessibility and HIEs, i.e., as “building blocks” or as “bridges”.

¹³⁸ See further SC36/WG7 N0080 (2007-02-20) *Summary on the issues of language equivalences*.

¹³⁹ The three “thesauri” standards analyzed here are ISO 2788 (withdrawn), ISO 5964 (withdrawn) and ANSI/NISO Z39-19 (2005). The international ISO standards used as sources, i.e., ISO 2788 and ISO 5964, are available in both English and French versions.

G.2 Purpose

The purpose of this Annex G is to bring together in a single document, concepts related to “language equivalency¹⁴⁰” as found in international standards, and contributions to JTC1/SC committees of particular relevancy to “language equivalencies”. These are found primarily in standards and documents pertaining to concepts, principles and rules for the construction and maintenance of thesauri¹⁴¹.

The main body of the text in this Annex G identifies concepts related to language equivalency as drawn from the sources identified in the bibliography (F.4) below.

Annex G thus identifies and analyses two approaches to “language equivalences”. These two approaches here are:

- translation theory; and,
- indexing theory (and thesauri construction) in particular¹⁴².

G.3 Summary notes on “language equivalency”

Language equivalences and the need to establish and deal with equivalences come from the worlds of both translation theory and indexing (and thesauri construction). This Annex G serves as an introduction to the concept of language equivalencies, and is presented in summary form only.

The basis in both translation and indexing is on determining the meaning. In both worlds too the focus is thus on dealing with establishing the relationship between a source and target language.

The concept of “language equivalence” can be categorized and presented in the many different ways. However, irrespective of the approach, i.e., translation or indexing, there are a few things that need to be kept in mind.

Translation equivalence-based theories define “equivalence” as the relationship between a source text (ST) and a target text (TT). In indexing practice, especially dealing with two or more languages, equivalences also deal with “source” and “target” languages. In both cases there is only one source language. The requirements of e-learning (as well as e-business) standards are for many source languages, i.e., any language can be a source and developing equivalences must be based on a Source Authority (SA). Further, where a jurisdictional domain has more than one official language, there will be more than one source language.

At the essence of the discussion of language equivalencies is the objective of ensuring that the meaning and semantics is not lost, misunderstood or misrepresented across languages.

ISO 5964 (withdrawn) dealt with establishing equivalences and relationships between terms and among categories when dealing with more than a single language. ISO 2788 (withdrawn) also dealt with establishing relationships between terms and categories of terms, but from a monolingual perspective only. The equivalencies in this monolingual standard cover the establishment of synonyms and quasi-synonyms within a single language. While the issue of synonyms is important, it is outside the scope of this discussion at the moment (and probably falls more in the realms of vocabulary discussion (and thus WG1 work) than ISO/IEC 20016-1).

¹⁴⁰ In this Annex G “term, unit, expression” in relation to components of source and target languages, are used interchangeably (even though there are significant differences) in that many of the concepts and their definitions, as stated below, often focus and pertain to “terms” only.

¹⁴¹ There are also international standards pertaining to vocabulary, (e.g., ISO 5127), and terminology, (e.g., ISO 1087-1 and -2).

¹⁴² These are considered sub-disciplines or areas of specialization in the field of “information science”.

ANSI/NISO Z39-19 (2005) defines equivalence relationships as follows:

equivalence relationship

relationship between or among terms in a controlled vocabulary that leads to one or more terms that are to be used instead of the term from which the cross-reference is made; begins with the word SEE or USE.

From an indexing perspective, the ISO 5964¹⁴³, i.e., the multilingual thesaurus standard, provides the following language equivalency relationships. Indexing deals with relationships between terms (inter-term) and among categories (inter-category) and thus differs from translation equivalencies which deal with approaches to the actual function of translation of dealing with source and target language equivalences.

- 1) **exact equivalence:** where a target language contains a term which is: (a) identical in meaning and scope to the term in the source language; and, (b) capable of functioning as a preferred term in the target language, i.e., contains a concept which is identical in meaning and scope
- 2) **inexact equivalence:** where the target language contains a term which expresses the same general concept as the source language although the meanings of these terms are not precisely identical
- 3) **partial equivalence:** where the term in the source language cannot be matched by an exactly equivalent term in the target language, but a near translation can be achieved by selecting a term with a slightly broader or narrower meaning.
- 4) **single-to-multiple term equivalence:** where the term in the source language cannot be matched by an exactly equivalent term in the target language, but the concept to which the source language term refers can be expressed by a combination of two or more existing preferred terms in the target language.
- 5) **non-equivalence:** where the target language does not contain a term which corresponds in meaning, either partially or inexactly, to the source language term.

At the lexical level, translation theory indicates the following lexical equivalencies:

- 1) **total equivalence (or one-to-one equivalence):** where the source language unit has a permanent equivalent in the target language, (e.g., terms, institutional names), or there is a single expression in the target language for a single source language expression.
- 2) **optional equivalence:** where a given source language has several equivalents in the target language, (e.g., German Spannung, in English: voltage, tension, suspense, stress, pressure).
- 3) **one-to-many equivalence:** where the target language has more than one expression for a source language expression.
- 4) **approximate equivalence:** where the meaning of a source language unit is divided between two target language equivalents, (e.g., German: Himmel, English: heaven/sky).
- 5) **one-to-part-of-one equivalence:** where a target language expression covers part of a concept designated by a single source language expression.
- 6) **zero equivalence (or nil equivalence):** where there is no target language equivalent for a source language expression.

¹⁴³ On the use of ISO 5964 in this document, see further above Annex C (normative) “Degrees of Linguistic Equivalence based on ISO 5964” above.

These lexical equivalences are referred to as quantitative equivalency, i.e., they are measurable. They operate at the lexical level and are thus limited in application. They do, however, work well when dealing with languages for specific purposes (LSP), (e.g., controlled vocabulary and specific contexts, coded domains). They are generally restricted to the word level and imply (implicitly) that the language system can be equated with concrete realization in a text.

From a qualitative equivalency approach/distinction perspective, translation theory provides for several types of equivalences. It should be noted that the concept of language equivalence from a translation perspective is fraught with much debate internally in the community, hence the search for the many types of equivalence.

Table G.1 — Levels of Lexical (Quantitative) Equivalency

Levels of Lexical (Quantitative) Equivalency	Definition
1	total equivalence (or one-to-one equivalence)
2	optional equivalence
3	one-to-many equivalence
4	approximate equivalence
5	one-to-part-of-one equivalence
6	zero equivalence (or nil equivalence)

Basically, the discussion on language equivalence in translation deals with various approaches to translation from basic literal translation equivalence to the extra-linguistic and situational equivalences. Discussion on what is language equivalence is thus at the essence of “What is translation”? Equivalence from this perspective is solely about understanding the relationship between texts in two languages (as opposed to between the languages themselves).

From a (linguistic) Human Interface Equivalent (HIE) perspective, the discussion helps to understand what actually goes on when one discusses establishing meaning between texts of different languages and how individuals will interact with text. From the work on multipart ISO/IEC 20016 standard, the concepts and approaches mentioned here will be part of the work of a Source Authority who will be establishing the HIE. This discussion is also of value in dealing with text/applications that deal with information which is undefined and unstructured. The current focus of ISO/IEC 20016-1 is on predefined and structured data. {See the “A” quadrant in the HIEM}.

The various types of language equivalences which imbed various approaches to establishing equivalence, as presented in the literature on translation studies, include the following. They range from the inter-lingual to the intertextual¹⁴⁴ approaches (and beyond to the communicative and situational) and represent the thinking over time whose basic function has been to establish the relationship between source and target languages.

The term **formal equivalence** is used to describe equivalence where the source and target language words have similar orthographic and phonological features, i.e., where a source language form would be strictly replaced by an identical target language form. Formal equivalence is always contextually motivated.

¹⁴⁴ Translation theory also presents the concept of “typology of equivalence”. This term refers to the levels of a language at which any equivalence applies. These include the following levels: word (morphology and lexical meaning), above the word (collocation, mark, register), grammatical (number, gender, person, tense and aspect, voice, word order), textual (thematic and information structure), textual (cohesion), and pragmatic.

In addition, equivalence relations work at several other layers. These include the communication goal, the equivalence of the situation, the level of the message, the level of the utterance; and at the linguistic sign level (semiotics).

In addition, it is also used to cover similarity in source and target language information flows and cohesion roles in both languages where the linguistic devices play similar roles, (also known as **textual equivalence**). Textual equivalence involves establishing a mapping between the formal structures of two languages. It is any target language form which is observed to be an equivalent of a given source language form.

Several other types of equivalence address various ways of establishing meaning. These include:

- 1) **referential or denotative equivalence**¹⁴⁵: where the expressions are referring to the same real world entity.
- 2) **connotative equivalence**: where the source and target language expression (or words) trigger the same or similar associations in the minds of native speakers of the two languages.
- 3) **text-normative equivalence**: where the expressions (or words) in a source and target language are being used in the same or similar contexts in their respective languages.
- 4) **pragmatic or dynamic equivalence**: where the source and target language expression/words have the same effect on their respective readers.
- 5) **functional equivalence**: is the term used when not all the variables in translation are relevant in every situation and translators must decide which considerations should be given priority at any one time.

Intertextual and extratextual are terms which deal with the nature of equivalence rather than equivalence per se. Intertextual equivalences include: cohesive equivalence, textual equivalence which deals also with genre theory, and situational equivalence.

Aspects of the extratextual influences on establishing equivalence include objects, persons, emotions, memories, history, and culture. Semiotics and the use of signs/symbols and the use of codes, and their meaning often reside outside of language specifically, and is dependent on understanding extratextual influences.

In conclusion, a key impact of *the UN Convention on the Rights of Persons with Disabilities* is that it introduces a new perspective and new set of requirements related to language equivalences pertaining to the taking of decisions and/or the making of commitments¹⁴⁶. In order to address these and related requirements, this ISO/IEC 20016-1 has introduced the concept of “semantic equivalency level” and associated levels of unambiguity in order to address the various issues of semantic interoperability.

G.4 Bibliography

Note: The sources cited below are part of this normative Annex. Most do not pertain to ISO/IEC 20016-1 as a whole.

- [1] ISO 2788:1986 *Documentation – Guidelines for the establishment and development of monolingual thesauri*. 2nd edition 1986-11-15 (Withdrawn.)
- [2] ISO 5954:1985 *Documentation -- Guidelines for the establishment and development of multilingual thesauri*
- [3] ANSI/NISO Z39.19-2005 *Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies*. Bethesda, Maryland, National Information Standards Organization: ANSI/NISO. Available: <http://www.niso.org/kst/reports/standards/> (accessed 2009-09-30)

¹⁴⁵ Referential, contextual and functional equivalences are types of communicative equivalence.

¹⁴⁶ See further Annex B above.

- [4] ISO/IEC JTC1/SC36 N0463 *Languages and Jurisdiction: "Natural", "Special", "Official", "de Jure", "National", "Artificial", "Indexing", "Programming", etc.* 2003-03-21. Available: [http://metadata-standards.org/metadata-stds/Document-library/Meeting-reports/SC32WG2/2002-05-Seoul/WG2-SEL-003-Languages-&-Jurisdiction-\(WG1N210r\).rft](http://metadata-standards.org/metadata-stds/Document-library/Meeting-reports/SC32WG2/2002-05-Seoul/WG2-SEL-003-Languages-&-Jurisdiction-(WG1N210r).rft). (accessed 2009-09-30)
- [5] ISO/IEC SC36/WG7 N0156 *Notes on Semantic Equivalency: Identification and Use of Existing ISO Standards as Sources of Relevant Tools/Methodologies*. (2009-09-10)
- [6] ISO/IEC SC36 N1666 Rev1. *Text of ISO/IEC CD 24751-8, Individualized adaptability and accessibility in e-learning, education and training Part 8: Language accessibility and HIEs in e-learning applications: Principles, rules and metadata elements*. (2008-05-28)
- [7] ISO/IEC JTC1/SC32/WG1 N0205 *Cultural Adaptability and "Dog", "Doghouse", "Chip", etc.: A Case Study in Cross-Sectorial Challenges* (2002-02-04) Available: [http://metadata-standards.org/metadata-stds/Document-library/Meeting-reports/SC32WG2/2002-05-Seoul/WG2-SEL-003-Languages-&-Jurisdiction-\(WG1N210r\).rft](http://metadata-standards.org/metadata-stds/Document-library/Meeting-reports/SC32WG2/2002-05-Seoul/WG2-SEL-003-Languages-&-Jurisdiction-(WG1N210r).rft). (accessed 2009-09-30)
- [8] ISO/IEC SC36/WG7/N080 *Summary on the Issues of Language Equivalencies* (2007-02-20) Available: http://isotc.iso.org/livelink/livelink/36-WG7N0080_Summary_on_the_Issues_of_Language_Equivalencies.pdf?func=doc.Fetch&nodeId=6203920&docTitle=36-WG7N0080+Summary+on+the+Issues+of+Language+Equivalencies. (accessed 2009-09-30)
- [9] Pereira, J.; Knoppers, J. *"Bridges" and "Equivalences" – "How Firm a Foundation for EDI?: An Analysis Based on ISO Thesauri Standards*. ISO/IEC JTC1/SC30 N125, 1995-01-21
- [10] Pereira, J.; Knoppers, J. *Thesauri Relationships vis-à-vis Object Classes and Instantiations: The Role Utility of Look-Up and Authority File (LUAF) Tables in EDI*. ISO/IEC JTC1/SC30 N126, 1995-01-21
- [11] Károly, K. (2006). *Translation Studies: The concept of equivalence*. Available: <http://seas3.elte.hu/coursematerial/KarolyKrisztina/index.html> (accessed 2009-09-30, click on Lecture 5)
- [12] Kenny, D. (1998) Equivalence. in ... Baker, M. (ed) with K. Malmkjær. *Routledge Encyclopedia of Translation Studies*. London; New York: Routledge, 1998, pp. 77-80. Available: http://books.google.ca/books?id=T8Mt8ObEBOQC&dq=routledge+encyclopedia+of+translation+studies&printsec=frontcover&source=bl&ots=MgvODaogb0&sig=kK_rjOBSIjSYN2oCeGDvoX1DbXM&hl=en&ei=Kp3DSv-WBsvZIAfmnontBA&sa=X&oi=book_result&ct=result&resnum=2&ved=0CBMQ6AEwAQ#v=onepage&q=&f=false (accessed 2011-12-19)
- [13] Pym, A. (1992) Equivalence defines translation. in... Pym, A. *Translation and Text Transfer: An Essay on the Principles of Intercultural Communication*. Frankfurt am Main: P. Lang, 1992: 37-50. Available: http://www.tinet.cat/~apym/publications/text_transfer/2.html (accessed 2009-09-30)

Annex H (informative)

Examples of multiple Human Interface Equivalents (HIEs) for a single IT-Interface Identifier

H.1 Purpose and use of Annex H

The purpose and use of Annex H is:

- to provide some examples taken from other ISO standards which are already implementing an approach of having single IT Interface identifier with multiple human interface equivalents (HIEs); and,
- to demonstrate to users of the ISO/IEC 20016 multipart standard (and the ISO/IEC that this part of ISO/IEC 20016 (and the other Parts) is harmonized with other ISO and ISO/IEC standards which address user requirements of a cultural adaptability and multilingual equivalency nature.

H.2 Example 1: Taken from ISO 19135:2005 (E)

The first example is taken from ISO 19135:2005 (E) titled “*Geographic information – Procedures for registration of items of geographic information*”. It is taken from Clause 7 “*Some principles of registration*” and within this Clause 7 that of Clause 7.2 “*Identification of register items*”. The text and figure which follow is a direct quote from ISO 19135, Clause 7.2.1 and Figure 6 in this standard¹⁴⁷.

“7.2 Identification of Register Items

7.2.1 Introduction

All items shall include both an identifier that supports the requirement for an information process efficient denotation and a name that supports the requirement for a human-accessible denotation

¹⁴⁷ It is noted that this Clause of ISO 19135:2005, *Geographic information — Procedures for registration of items of geographic information* is part of its normative text.

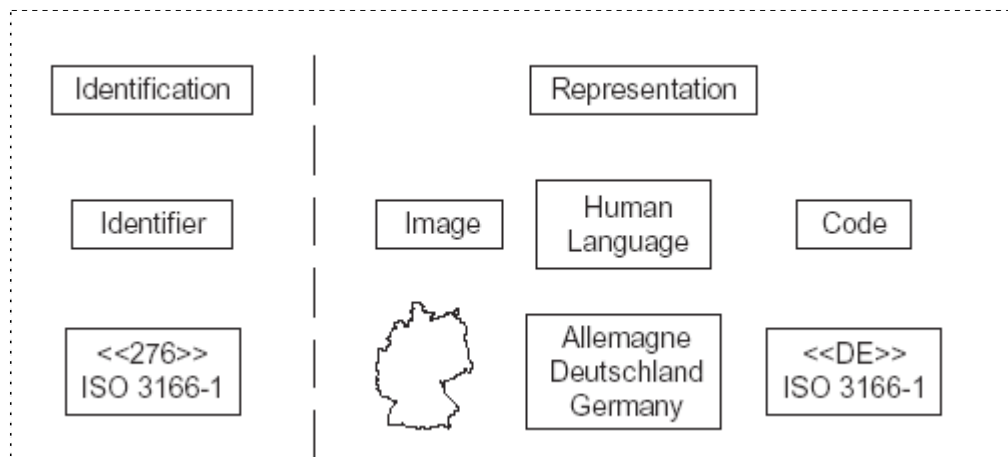


Figure H.1 — Example of the distinction between identifiers used in an information technology (IT) interface and representations used in a human interface equivalents (HIEs)

Five aspects should be highlighted here.

The first is that Clause 7.2.1 in ISO 19135 is normative text.

The second is that the first sentence in Clause 7.2.1 is of the nature of a rule which is mandatory. From an individual accessibility perspective standard it would be presented as

Rule H-001:

All items shall include both an identifier that supports the requirements for an information process efficient denotation and a name that supports the requirement for a human-accessible denotation.

ISO 19135 defines identifier as “linguistically independent sequence of characters capable of uniquely and permanently identifying that with which it is associated” (Clause 4.1.5). As such this definition has similar properties (as well as an identifier (in MLR), an “identifier (in business transaction” of ISO/IEC 15944-1 (as well as of “identifier (in Metadata Registry)” of ISO/IEC 11179-3).

Thirdly, ISO 19135 requires that the “identifier” support the requirements for an information process efficient denotation, i.e. be of an IT-enabled nature.

Fourthly, it is noted that the IT-Interface identifier is a composite identifier consisting of the identifier for the coded domain used, in this case “ISO 3166-1”; and, the ID code of the entity which is a member of this coded domain, in this case “276” which is the 3-digit numeric identifier.

Fifthly, and finally, Clause 7.2.3 “Item Names” states “... *Names are not required to be unique and therefore may only be used as secondary identifiers within a register.*”

Associated with this single IT-Interface identifier are examples of three types of human interface equivalents, namely an “image”, one linguistic in nature, i.e. human language, and the third in the form of a code. The example provides three linguistic HIEs including:

- “Deutschland” – which is the (short) official name of the country in the language of that country
- “Allemande” – which is the name of the country by which it has been so designated in the French language; and,
- “Germany” – which is the name of the country by which it has been so designated in the English language.

[Note: Many more linguistics HIEs exist (both in written and non-written form)].







In individual accessibility a HIE as an “image” is usually presented as a sign, symbol, photograph, picture, schematic drawing, etc. of a semantic. A common example is a catalogue with the Catalogue Number (or date) serving as the coded domain identifier and the ID code being the article or part number in the catalogue with the HIEs being presented as an “image”, along with its description, choices of colours, fonts sizes, etc.

H.3 Example 2: Taken from ISO/IEC 5218:2004

The second example is taken from ISO/IEC: 2004 (E/F) “Information technology – Codes for the Representation of the Human Sexes”/ «Technologies de l’information – Codes pour la représentation des sexes humains»¹⁴⁸. This second example consists of copies of two tables taken from “Annex A (Informative) – Codes for the representation of Human Sexes with cultural adaptability”/«Annexe A (Informative) – Codes pour la représentation des sexes humains avec adaptabilité culturelle».

The first table provides an example of HIEs of a linguistic nature from a global or world-wide perspective. The column containing the Bliss symbols demonstrate that individual accessibility requirements of a particular nature can also be supported.

Table H.1 — Human Interface Equivalents (Linguistic) for “Codes for the representation of human sexes: ISO and/or UN Languages”/ «Équivalents interface humaine (linguistiques): «Codes de représentation des sexes humains: Langue selon l’ISO et/ou l’ONU»

IT Interface / Interface TI		Human Interface Equivalents (Linguistic) / Équivalents Interface Humaine (Linguistiques)			
Table ID/ Tableau	ID Code/ Code	ISO UN-ONU English / anglais	ISO UN-ONU French / français	ISO UN-ONU Spanish / español	Symbole / BLISS Symbol ¹⁴⁹
ISO/IEC 05218:01	0	not known	inconnu	desconocido	— 
ISO/IEC 05218:01	1	male	masculin	masculino	 
ISO/IEC 05218:01	2	female	féminin	femenino	 
ISO/IEC 05218:01	9	not applicable	sans objet	no aplica	— 

The second table, taken from ISO/IEC 5218, is that of Table 2 in its Annex A. Provided below as H.2, it serves as an example of HIEs from an official language(s) perspective of UN member states as jurisdictional domain. Those listed in Table H.2 represent P-member bodies of JTC1/SC32 who provided the HIEs in their official language(s). In addition, Table H-3 demonstrates the ability to be able to represent any language (based on ISO/IEC 10646).

¹⁴⁸ ISO/IEC JTC1 at its November, 2004 Berlin Plenary adopted a resolution to make ISO/IEC 5218 a freely available standard. {See further <<http://www.jtc.org>> or go directly to the page containing ISO/IEC publicly available standards at: <isotc.iso.ch/livelink/livelink/fetch/2000/2489/lftf/Home/PubliclyAvailableStandards.htm>.

¹⁴⁹ For those interested in XML, the last section of Annex A is “A.6 Representations of Table “ISO/IEC05218:02” using XML / A.6 Représentation en XML du Tableau «ISO/CEI05218:02».

Table H.2 — Human Interface Equivalents (Linguistic) for “Codes for the representation of human sexes: Examples of countries and their official language(s)” / «Équivalents interface humaine (linguistiques) des «codes de représentation des sexes humains: Exemples de pays et de leur(s) langue(s) officielle(s)»¹⁵⁰

IT Interface / Interface TI		Human Interface Equivalents (Linguistic)/ Équivalents interface humaine (linguistiques)				
Table ID/ Tableau	ID Code/ Code	Australia Australie	Austria Autriche	Belgium Belgique		Brazil Brésil
		036:eng	040:deu	056:fra	056:nld	076:por
ISO/IEC 05218:02	0	not known	unbekannt	inconnu	niet bekend	desconhecido
ISO/IEC 05218:02	1	male	männlich	masculin	man	masculino
ISO/IEC 05218:02	2	female	weiblich	féminin	vrouw	feminino
ISO/IEC 05218:02	9i	not applicable	nicht zutreffend	sans objet	niet van toepassing	nenhuma reposta

Table ID / Tableau	IDCode/ Code	Canada		China Chine	Denmark Danemark	
		124:eng	124:fra	156:zho	208:dan	
ISO/IEC 05218:02	0	not known	inconnu	不明	ukennt	
ISO/IEC 05218:02	1	male	masculin	男	man	
ISO/IEC 05218:02	2	female	féminin	女	kvinne	
ISO/IEC 05218:02	9	not applicable	sans objet	不适用	gjelder ikke	

Table ID/ Tableau	ID Code/ Code	Finland Finlande		France	Germany Allemagne	Italy Italie
		246:fin	246:swe	250:fra	276:deu	380:ita
ISO/IEC 05218:02	0	tuntematon	okänd	inconnu	unbekannt	non sconosciuto
ISO/IEC 05218:02	1	mies	man	masculin	männlich	maschio
ISO/IEC 05218:02	2	nainen	kvinna	féminin	weiblich	femmina
ISO/IEC 05218:02	9	ei sovellu	inte lämplig	sans objet	nicht zutreffend	non applicabile

Table ID/ Tableau	ID Code/ Code	Japan Japon	Korea Corée	Netherlands Pays-Bas	Norway Norvège	Russian Federation Fédération de Russie
		392:jpn	410:kor	528:nld	578:nor	643:rus
ISO/IEC	0	不明	알수없음	niet bekend	uvisst	неизвестный

¹⁵⁰ The entries in this Table 2, taken from Annex A, in ISO/IEC 5218, represent the language equivalents provided by the ISO/IEC JTC1/SC32 P-members at the time this Table was developed.

05218:02						
ISO/IEC 05218:02	1	男	남	man	mann	мужской
ISO/IEC 05218:02	2	女	여	vrouw	kvinne	женский
ISO/IEC 05218:02	9	適用不能	적용불가	niet van toepassing	gjelder ikke	не применяется

Table ID/ Tableau	ID Code/ Code	Sweden Suède	Switzerland Suisse			
		752:swe	756:deu	756:ita	756:fra	
ISO/IEC 05218:02	0	okänd	unbekannt	sconosciuto	inconnu	
ISO/IEC 05218:02	1	man	männlich	maschio	masculin	
ISO/IEC 05218:02	2	kvinna	weiblich	femminile	féminin	
ISO/IEC 05218:02	9	inte lämplig	nicht zutreffend	non applicabile	sans objet	

Annex I (informative)

Examples of the need for specifying gender of terms and nouns to ensure unambiguity in the use of an official language¹⁵¹

I.1 Introduction

The informative Annex I is in support of Clause 6.5 “*Gender and Official, de facto or LRL Languages*”. Although the English language does not have gender in its grammar, many other widely used languages do. Knowing the gender of the nouns as words, terms, “names”, etc., is needed to be able to determine their semantics, i.e. meaning. **This is because the same word (as a character string) may have different meanings depending on its gender form.** The grammar rules of languages have different gender forms¹⁵² as well as differing conventions for specifying this gender form. The two most common genders are masculine and feminine often represented by the use of an article or change in word format (word prefixes, suffixes or infixes), or both. The table below illustrates the use of the article as a specifier of gender.

This Annex I provides some examples of where the word itself remains the same but a preceding article is used to indicate the gender form and where depending on its gender form the same word has two different meanings. The article¹⁵³ is used because it forms part of the semantics of the word (e.g. (1) “le livre” = book and “la livre” = “pound” (money & weight); (2) “el papa” = “pope”¹⁵⁴ and “la papa” = “potato”, etc.).

I.2 Organization of the ANNEX I matrix

The examples are provided in matrix form and organized as follows:

Col No.	Use
1	Example of a word whose meaning changes depending on the gender
2	The ISO 639-2/T 3-alpha code of the language of the noun [fra = French, esp = Spanish]
3	The “masculine” gender use of the word
3.1	The article utilized to indicate the masculine gender in the language of the word
3.2	The semantics, i.e. meaning, of the word in English
4	The “feminine” gender use of the word
4.1	The article utilized to indicate the feminine gender in the language of the word
4.2	The semantics, i.e. meaning of the word in English

¹⁵¹ This Annex I is based on Annex K as found in ISO/IEC 15944-5:2008.

¹⁵² Grammatical gender forms are at times also referred to as “noun classes”.

¹⁵³ In the French language, the article which play this role are referred to as “mots liens”, literally, “binding words” or “word bonds. A “mot lien” thus in binding itself to a word also binds/associates its semantics in an unambiguous manner.

¹⁵⁴ That is “pope” as in the Pope as head of the Roman Catholic Church.

I.3 Examples of the same word having two gender forms and two different meanings¹⁵⁵

Table I.1 — Examples of the same word having two gender forms and two different meanings

Word	Language Code	Masculine [Gender Code = 01]		Feminine [Gender Code = 02]	
		(3)		(4)	
		Article	Semantics (eng)	Article	Semantics (eng)
(1)	(2)	(3.1)	(3.2)	(4.1)	(4.2)
barbe	fra	le	barb	la	beard
capital	esp	el	capital (money)	la	capital (city)
chine	fra	le	china, rice paper	la	second hand/used trade
diesel	fra	le	diesel fuel	la	diesel automobile
finale	fra	le	finale (music)	la	final (sports)
greffe	fra	le	court clerk's office	la	transplant, graft
livre	fra	le	book	la	pound (money & weight)
orden	esp	el	order (system of rules)	la	command
papa	esp	el	pope	la	potato ¹⁵⁶
parte	esp	el	information	la	part
pez	esp	el	fish	la	pitch (substance)
platine	fra	le	platinum	la	turntable, deck, strip of metal
pub	fra	le	pub/bar	la	ad (advertising) ¹⁵⁷
somme	fra	le	snooze, nap	la	sum, amount
tour	fra	le	tour, turn, trick	la	tower, rook (chess)
vase	fra	le	vase	la	silt, mud
vista	esp	el	custom officer	la	view
voile	fra	le	veil	la	sail

Note that the use of character string + language code + gender code = unambiguity in semantics and as such supports semantic interoperability in the development of HIEs (especially those of the nature of Quadrant “A”) in the HIEM.

¹⁵⁵ These examples do not contain one for which the gender code is “03 = neuter/neuter”. However, these are terms in Clause 3 for which the French language form is “03=neuter: Examples of these are found in Annex A.

¹⁵⁶ See also Annex J below where “potato” serves as an example in an international data interchange and multilingual semantic equivalence and semantic interoperability.

¹⁵⁷ «la pub» as in a short form for «la publicité».

Annex J (informative)

Case study of multilingual retrieval of HIEs for unilingual users: the “potato”

The purpose of this informative Annex is six-fold; namely to provide:

- a very powerful, yet simple and easily understandable case study of key constructs and rules of this standard;
- an example which is IT-platform neutral yet facilitates the use of ICT while also being scalable;
- a representation of a common global world-wide approach yet at the same time supports decision-taking and determination of human interchange equivalents (HIEs) at a granular level, (e.g., here that of jurisdictional domains as source authorities through their membership in the World Customs Organization (WCO);
- an example of the use of more than one language within a jurisdictional domain and thus more than one valid HIE within a jurisdictional domain;
- an illustration that within the same natural language, differing HIEs can exist having exactly the same semantics but which are conditioned by the context, (e.g., of the jurisdictional domain);
- a case study demonstrating the fact that there exist classification systems (of global reach) which use ID codes in such coded domain(s) as unique identifiers for multiple HIEs in different languages and use of language contexts; and,
- a case study in the construction and management of HIEs in support of multilingual semantic interoperability.

It is also noted that many classification systems, especially those which are utilized world-wide and/or have status of a jurisdictional domain nature, i.e. the role and stature of the (international) organization which is the Source Authority for the classification system and the use of the ID codes of its coded domain(s) is acknowledged by UN member states.

Here one example which supports the above noted requirements and demonstrates their applicability, on a global basis is the classification system known as the "Harmonized System Nomenclature" (commonly identified and referenced as "HS") of the World Customs Organization (WCO)¹⁵⁸.

LET application of various natures, learning resources, etc., are also interchanged (in hard copy, digital form, via the Internet), etc. Here WCO rules also apply.

¹⁵⁸ The HS system is one of the most widely used coded domains worldwide. This HS, for which the Source Authority is the World Customs Organization (WCO), is the multiple goods nomenclature which serves as the basis for customs tariffs as well as for the compilation of trade statistics, to coding of goods for transport purposes worldwide, etc.

The HS and its coded domain(s) have full market acceptance. Over 170 countries and economies, (e.g., Taiwan) use the HS System (covering 98% of world trade). Information on the HS and related documentation is available via its Source Authority, the World Customs Organization (WCO) via:

<<http://www.wcoomd.org>>, and,

the HS Convention itself at: <http://www.wcoomd.org/ie/En/Topics_Issues/topics_issues.html>.

This classification system applies to the movement of all goods in and out, i.e. anything imported or exported, among its signatory member jurisdictional domains, i.e. essentially UN member states, but some other categories of jurisdictional domains as well. The HS as a classification system imbeds a coded domain with the ID codes being pre-assigned and structured in a hierarchical manner based on the rulebase of the WCO governing this coded domain.

As a coded domain, the Harmonized System (HS) of the WCO thus provides predefined ID codes for all its member entities which goods of whatever nature being imported and exported among it the jurisdictional domains who are members of the WCO.

For example, the IT Interface value (which likely will also serve in any actualized international business transaction as the instantiated value of a semantic component (SC) of the item referenced) utilized in this Annex is that for "potato" (fresh or chilled). Fresh or chilled potatoes have been assigned the ID code in the HS of "0701". The human interface equivalents are many and take into account the (official or de facto languages) of jurisdictional domains yielded the following example:

Table J.1 — Illustrating IT Interfaces and HIEs using the WCO HS for “potato”

Common IT Interface			Human Interface Equivalent	
Code ID	Country Code – UN 3-digit numeric ID code & Short Name (eng) Equivalent		Localization and Multilingual Equivalents (ISO 639-2/T 3-alpha code + HIE term in the official languages in use in that country)	
HS:0701	124	CANADA	(eng):	potato
			(fra):	pomme de terre
			(iku):	patiti ¹⁵⁹
HS:0701	464	MEXICO	(esp):	papa
HS:0701	724	SPAIN	(esp):	patata
HS:0701	040	AUSTRIA	(deu):	erdapfel
HS:0701	276	GERMANY	(deu):	kartoffel
HS:0701	056	BELGIUM	(fra):	pomme de terre
			(nld):	aardappel
HS:0701	246	FINLAND	(fin):	peruna
			(swe):	potatis

The example presented above therefore demonstrates:

- **a jurisdictional domain, in this case a country (as UN member state), having more than one (official) language of use and thus multilingual HIEs; and,**
- **differences in the uses of the same natural language in various countries and thus different multilingual HIEs within a natural language as used in various jurisdictional domains.**

While not LET application specific (unless “Mr. Potatoman” is being used in kindergarten), “potato” is a very common object which recognized world-wide. Thus Annex J therefore serves as a good analogy.

¹⁵⁹ Inuktitut is an official language only in the “Territory of Nunavut”, an administrative sub-division in Canada. The example here uses the Latin-1 alphabet and not the syllabic one.

The point here is that if in one's LET application, learning resource, etc., one includes multilingual HIEs (and/or provides direct access to them via the Internet), and then a search on "pomme de terre" will identify all LET applications, learning resources which have semantic contents of the same nature.

Annex K (informative)

Notes on standard table of contents template for parts 2+ of ISO/IEC 20016

K.1 Introduction

The purpose of this Annex K is to provide added text of an informative and best practices nature to complement the normative text found in Clause 13 above.

It is recognized that the development and use of international ISO standards in support of learning, education and training is a relatively new activity for both the P-members of ISO/IEC JTC/SC36 ITLET who develop these standards as well as for implementers and users of these ITLET standards.

K.2 Notes on Clause 0 Introduction

The purpose of this informative Annex K is to provide informative information in support of Clause 12 of ISO/IEC 20016-1.

K.3 Notes on Clause 1 Scope

- 1) The scope of each Part 2+ of ISO/IEC 20016 inherits the overall scope of the ISO/IEC 20016 standard as stated in ISO/IEC 20016-1 Clause 1 “*Statement of Scope – Multipart Standard*”.

This means that Clause 1.2 in each Part 2+ will contain the text for the scope statement for that particular Part only.

- 2) With respect to Clause 1.3 it is important to note any “Exclusions” to the Scope of that Part, if any, stating “exclusions” facilitates the work of standard development. It also clarifies to implementers and users what the standard does not cover, thereby providing a better understanding of the nature and purpose of the standard.
- 3) The use of the Clause 1.4 “Aspects not currently addressed” (in this nth edition), this reflects the following facts in standard development:
 - a) at times, all the issues which need to be addressed cannot (and perhaps should not) be addressed at once. A key issue here is that at whatever level of detail the 1st edition of the standard should be developed and its use tested. For example, it is important to get the basic concepts (and their definitions), rules, etc., agreed to first, a.k.a., “primitives”, before working with sub-types of the same, more detailed levels of granularity, etc.
 - b) it is necessary to complete a standard project within the limited time period described, available resources (and time) of JTC1/SC36 P-members and their experts may constrict the amount of standards development work that can be completed in one standards development cycle.
 - c) it is not only important that one completes a standard development project within the mandated applicable ISO timeframe, but it is even more important to test the implementation and use of the standard in order to be able to ascertain improvements, changes, additions, etc., which need to be made in response to user needs and requirements resulting from implementation of the standard.

- d) In addition, the use of Clause 1.4 recognizes that at times it is not possible to address “at once” all the P-member comments from ISO/IEC JTC1/SC36 P-members in the development of a 1st (or 2nd) edition of a standard. Here, in order to achieve consensus and ensure progression of a standard. A practical solution here is to formally recognize the “issue” via a sub-clause 1.4.n in order to ensure that (1) it is recognized as an issue to be addressed; and, (2) will be addressed via (a) an “Addendum” to the existing edition; or (b) in the next edition of the standard.

K.4 Notes on Clause 2 Normative references

- 1) “Normative References” are of two kinds; namely:
 - a) ISO/IEC, ISO, IEC and/or ITU international standards; or
 - b) Referenced specifications.
- 2) The introduction of “Referenced Specifications” recognizes the fact that documents exist which can serve as a normative reference in an ISO standard. However, any non-ISO, IEC and/or ITU document, to be able to serve as a “Normative Reference in an ISO standard, one needs to prepare a “Reference Explanatory Report (RER) at the CD stage or no later than at the FCD stage. The text for that RER however is deleted at the stage of the preparation of the FDIS document.

K.5 Notes on Clause 4 Symbols and abbreviated terms

- 1) It is important that all symbols and abbreviated terms being used in a standard be captured in Clause 4. From a language accessibility and HIE perspective, it is up to JTC1/SC36 P-members as to whether or not they want to use the existing ISO symbol or abbreviated term as is, or change it in response to localization requirements of a jurisdictional domain.

K.6 Notes on Clause 5 Conformance

- 1) Basically, it is important that an international ISO standard has a “conformance statement”. At present, JTC1/SC36 standards development does not have any standard which requires “mandatory conformance”. Consequently, at present with respect to the multipart ISO/IEC 20016 standard a “voluntary” approach is being supported.
- 2) Consequently, it is required that any ISO/IEC 20016 Part 2+ standard be able to fully support any organization or public administration to be able to complete a “voluntary” conformance statement, (e.g., of an ISO 9000 or ISO 1400 nature), with respect to ISO/IEC 20016-1 and its subsequent Parts 2+.

K.7 Notes on Clause 6 Fundamental principles and assumptions

- 1) Any Part 2+ of ISO/IEC 20016 needs to have text in Clause 5.2 to the effect that it supports and is compliant with the “principles” stated in Clause 5.2 of ISO/IEC 20016-1.

Here it is important that each Part 2+ of the multipart ISO/IEC 20016 stated in its Clause 5.2 that it has been developed in support of ISO/IEC 20016-1 Clause 5.2 “Principles”.

- 2) Any Part 2+ of ISO/IEC 20016 may well have, or not have, additional “principles” applicable to that Part N. Whether or not this is the case, this needs to be stated explicitly in Clause 5.3.

Annex L (informative)

ISO/IEC 14662 open-edi reference model, commitment exchange and collaboration space

L.1 Introduction

A very significant aspect of the ISO/IEC 14662 “*Information technology -Open-edi Reference Model*” is that it focuses on the making of commitments among autonomous parties as a whole. ISO/IEC 14662 is very important in that (1) it is transaction-based; and, (2) that these transactions pertain to and support the making of commitments¹⁶⁰ among Persons. Further the Open-edi Reference Model addresses the totality of standardisation requirements in support of learning transaction, and acknowledges that these need to be viewed from two different but complementary perspectives.¹⁶¹ The Open-edi Reference Model therefore makes a clear distinction between two perspectives; namely:

- 1) the Business Operational View (BOV); and,
- 2) the Functional Services View (FSV).

Figure L.1 below titled “*Open-edi environment – Open-edi Reference Model*” and *commitment making*, is a copy of Figure 1 in ISO/IEC 14662. In this context, the multipart ISO/IEC 20016 is basically an “operational view” type of standard while the multipart ISO/IEC 24751 is basically a “functional services view” type of standard.

¹⁶⁰ For the purposes of ISO/IEC 20016-1, one should view a “transaction” as an instantiation of a commitment exchange.

¹⁶¹ The ISO/IEC 14662 Open-edi Reference Model serves as the basis of the 2000 Memorandum of Understanding (MOU) between ISO, IEC, ITU and the UN/ECE on concerning standardization in the field of electronic business. {See: <http://www.itu.int/ITU-T/e-business/files/mou.pdf> }

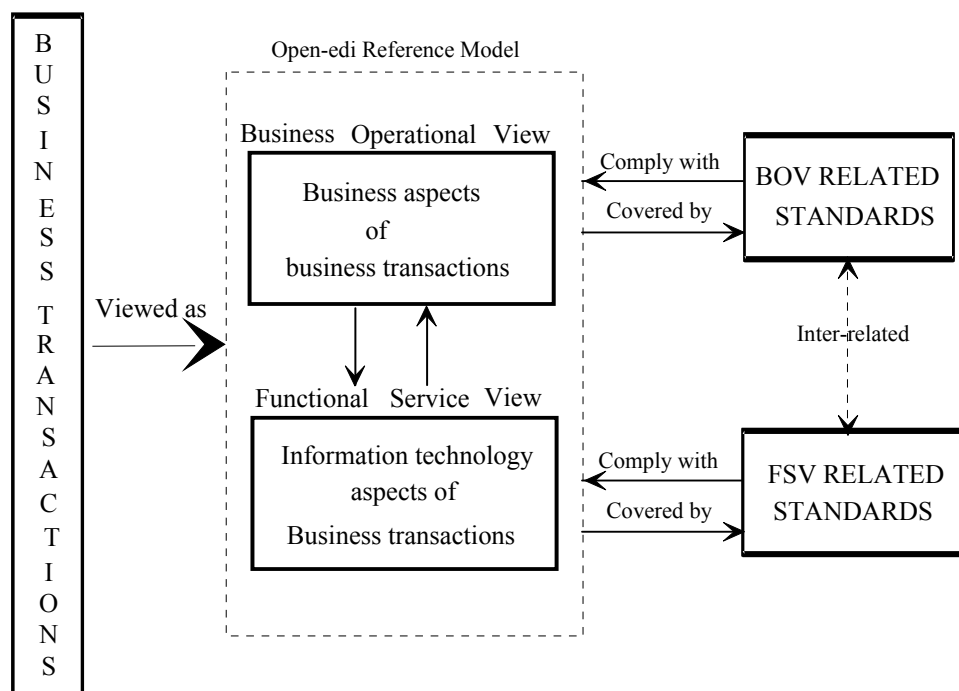


Figure L.1 — Open-edi Environment - Open-edi Reference Model and commitment making

L.2 Relevance of open-edi reference model

Applying the Open-edi reference Model to this multipart ISO/IEC 20016 standard is and based on the premises that:

- 1) recorded information used or required in an ITLET context is something of value;
- 2) a “business transaction” is a sub-type of possible types of instantiations of a commitment exchange agreed to by participating parties. In this context a “learning transaction” is another sub-type of a commitment exchange.
- 3) the scope, focus and orientation of ISO/IEC 20016 is that of “semantic interoperability”.

Adapting the “Open-edi Reference Model” in an ITLET context and in scope and focus of ISO/IEC 20016 yields the following figure.

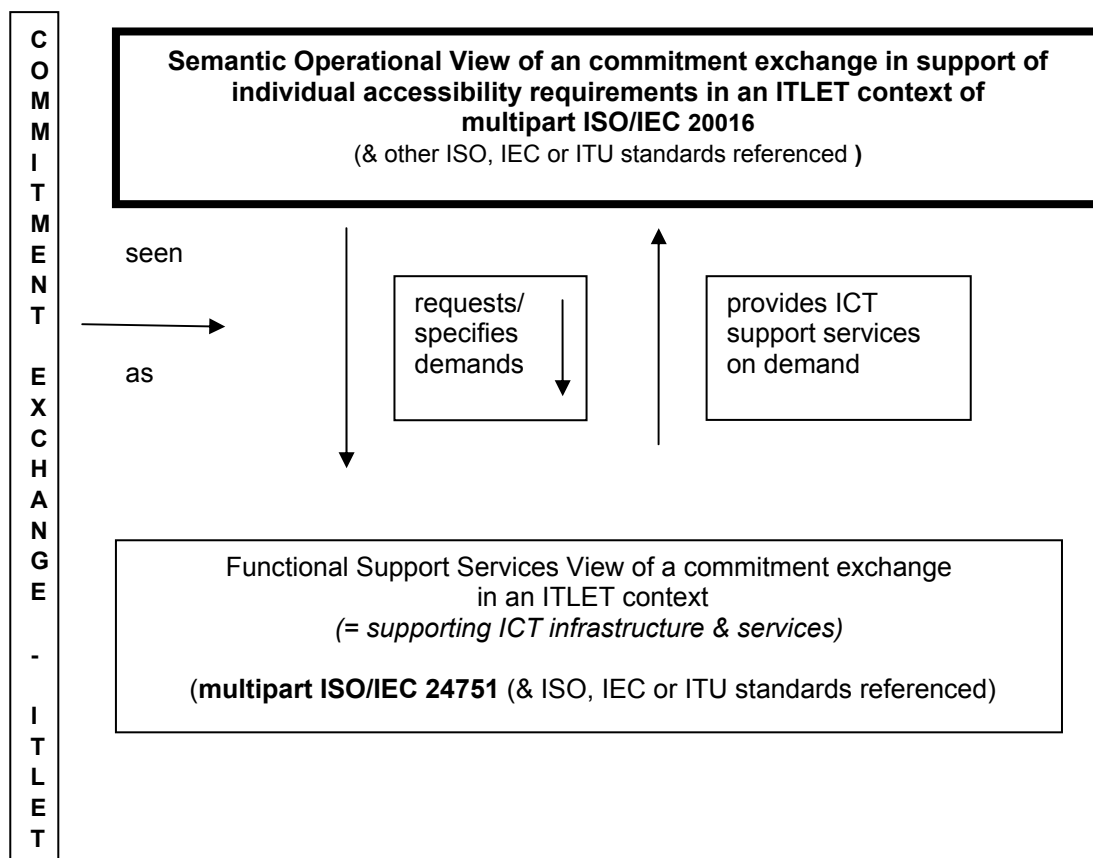


Figure L.2 — Commitment exchange involving an ‘individual’ in a (potential) commitment exchange with an organization or a public administration

The making of a commitment between an individual, on one hand, and that of an organization or public administration, on the other hand, is instantiated as a “transaction”. In a LET context, this can be viewed as a learning transaction.

Therefore, one can model the exchanges of semantics, i.e., in the form of SRIs as a learning transaction keeping in mind that not all provisions of SRIs by content providers to individual learners will result in “decision-taking” or “commitment-making”.

Further, applying the Open-edi Reference Model in an overall ITLET context the multipart ISO/IEC 20016 is basically an “operational view” type of standard while the multipart ISO/IEC 24751 standard is basically a “functional services view” type of standard.

This section summarizes “collaboration space” as already defined along with applicable rules in Parts 4 and 5 of ISO/IEC 15944 and does so from a Part 8 from an individual accessibility requirements perspective. The concept of collaboration space applies where the nature, goal and/or purpose of use of a SRI is intended to serve as an input into the taking of a decision or the making of a commitment by an individual (in an ITLET context). This means that SIEL levels 2 and 3 are applicable. In addition, it is not uncommon that SRIs at a SIEL level 1, i.e., for information purposes, are often provided in the context and overall purpose of leading to the taking of a decision or the making of a commitment.

L.3 Basic aspects of open-edi collaboration space: content provider and individual user

The primary purpose of collaboration space is to avoid having the same commitment exchanges from being modelled multiple times, i.e., as mirror images views of the same sets of recorded information (SRIs) being interchanged among “Persons” in their roles as content provider and individual user. By way of example, the

issuance of a receipt of payment for enrolment in a course” between content provider and individual user contains exactly the same information with respect to:

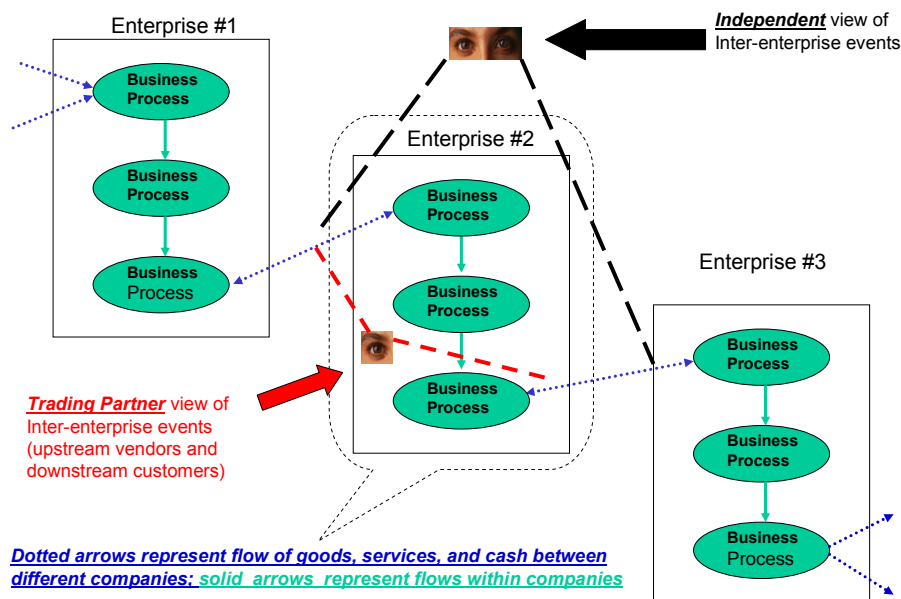
- 1) the commitment exchange identifier;
- 2) date (and time) of sale, i.e., the date of the instantiated commitment exchange, i.e. as a transaction;
- 3) the price paid (often before and then including applicable taxes);
- 4) identification (at various levels of granularity) of what was committed to
- 5) the means and mode of payment (if required);
- 6) conditions, warranties, rebates, etc., as applicable; and,
- 7) any other documentation provided (including that as part of the packaging, recorded information in the packaging, or “online” via the Internet, including where it is a “virtual” LET good, service and/or right being transacted).

The purpose of business process modelling in the Open-edu context is to model the recorded information exchanged among the two primary Persons to a learning transaction. In that context there are two roles of Person, one assuming the role of “buyer” and the other the role of “seller”, and the focus is on the information bundles that are being interchanged among these two primary partners in the learning transaction.

From an Open-edu perspective, the collaboration space is a view of transactions that take place outside the internal control space of the Persons which are parties to a learning transaction. This view sees both interchanges of information, i.e., from seller to buyer and buyer to seller as conceptually similar. Such a perspective is quite different than that of the view taken from inside of an organization.

For Open-edu collaboration modelling, internal processes are not relevant until a resource as an information flow (or represented by it via a reference tag) crosses an organization’s logical boundaries. This independent perspective is the focus of Open-edu and is represented by collaboration space where values in the form of sets of recorded information (SRIs) are interchanged among the parties to a learning transaction.

This is illustrated in Figure L.3 below (taken from Figure E.4 “*Concept of a Business Collaboration*” in ISO/IEC 15944-4:2007).

Collaboration Space Perspective: Trading Partner vs. Independent

SOURCE: Adapted from ISO/IEC 15944, 2007

Figure L.3 — Concept of a business collaboration space

The key and distinguishing aspect of the concept of collaboration space is that of providing an “independent view” from that of the specific views of each of the parties to a commitment exchange. In the ISO/IEC 15944-4 standard, which focuses on “accounting and economic ontology,” the parties to the collaboration space in support of the establishment of a commitment exchange, instantiated as a transaction, are “trading partners” and the application field is that of a “business transaction”.

In this ISO/IEC 20016-1 Framework and Reference Model which focuses on a learning, education, and training (LET) context, the (primary) parties to the collaboration space in support of the establishment of a commitment exchange, is instantiated as a transaction, are the individual user and the content (or LET) provider.

Here one notes that the role of “regulator” and its definition is essentially generic in nature and applies in any environment or sector. Amending the existing definition for “regulator / autorité de réglementation” and substituting provides the following definition for this concept.

The focus of the Open-edi and eBusiness standards is that of modelling the collaboration space among the primary parties to a learning transaction. For modelling purposes, a learning transaction requires at the least the roles of a “buyer” and a “seller,” based on “internal constraints” only. Depending on the nature of the LET good, service and/or right (or combination of the same) one or more sets of “external constraints” may apply. These are modelled through the introduction of the role of a “regulator”.

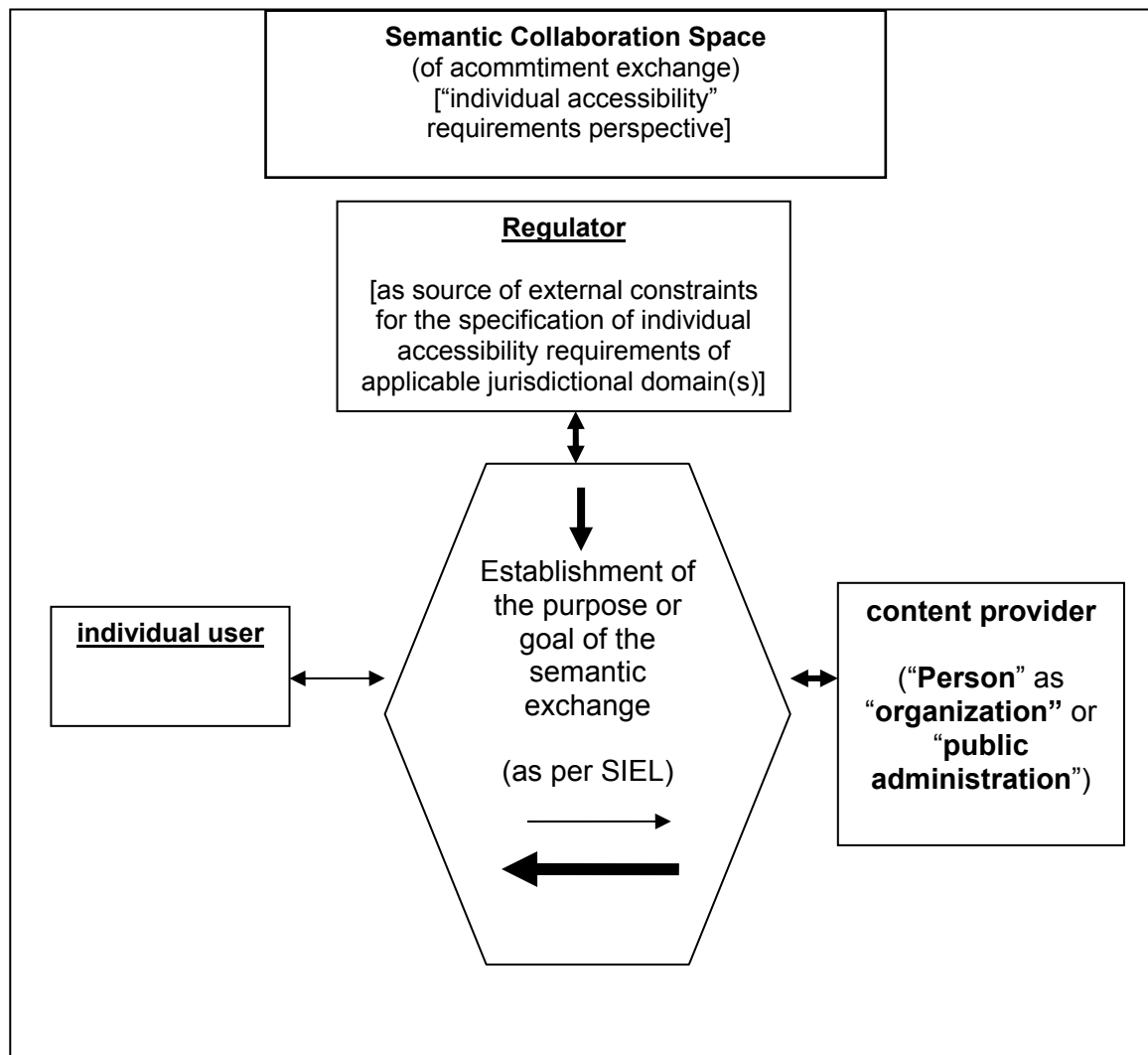


Figure L.4 — Semantic collaboration space - for commitment exchange in support of individual accessibility requirements (including the role of a regulator)

Annex M (informative)

Implementation considerations for the ISO/IEC 20016-1 *Framework and reference model*

M.1 Introduction

ISO/IEC 20016-1 is a “*Framework and Reference Model*” as such it does not deal with implementation aspects. This is the role and purpose of Parts 2+ of ISO/IEC 20016¹⁶². Nevertheless, during the development of ISO/IEC 20016-1, it was recognized and accepted that this document should include some text on implementation considerations even though these are planned to be addressed in Parts 2+ of this multipart standard.

M.2 Purpose

The purpose of this informative Annex M is to provide scenarios, examples, figures, etc., on implementation considerations to be addressed in a more formal and detailed “Normative” manner in Parts 2+ of this multipart ISO/IEC 20016.

M.3 Implementation considerations

M.3.1 Application of Clause 1.4 “Aspects not currently addressed in this 1st edition”

This Clause 1.4 (see above) already identifies many implementation aspects which need to be addressed in Parts 2+. It is not necessary to repeat this in this Annex M.

M.3.2 Implementation of individual accessibility as a human right is enforced by jurisdictional domain requirements

The *UN Convention on the Rights of Persons with Disabilities* serves as the basis for the *Framework and Reference Model*. This is because this *UN Convention* represents the key common, essential and world-wide set of requirements, i.e., as external constraints, of UN member states. However, the enforcement of the individual accessibility rights generally is the role of jurisdictional domain (generally the one in which the individual resides).

¹⁶² This is a common and recommended practice in the development of an ISO multipart standard. In a JTC1/SC36 ITLET context one already has two multipart international standards for which its Part 1 provides a Framework or Reference Model with their Parts 2+ dealing with implementation aspects. They are:

- a) ISO/IEC 25751-1:2008 (E/F) *Information technology — Individualized adaptability and accessibility in e-learning, education and training — Part 1: Framework and reference model*
- b) ISO/IEC 19788-1: 2011 *Information technology — Learning, education and training — Metadata for learning resources — Part 1: Framework*.

In addition, it is noted that because these are “Part 1: Framework/Reference Models” for multipart standards, ISO/IEC JTC1 has made them “publicly available standards.”

In addition, in an ITLET context, “education” (as well as “learning” and “training”) are often the responsibility in whole or in part, of jurisdictional domains of the nature of administrative sub-divisions of a UN member state, especially in UN member states which are “federated” (and not “unitary” in nature. Examples here include Australia, Canada, Germany, India, Switzerland, South Africa, etc., which have provinces, territories, länder, cantons, etc., which as jurisdictional domains have the primary responsibility in the field of “education”, especially as it pertains to that for providing funding (as public administrations) at the K-12 level, i.e., kindergarten, primary and secondary school levels.

This having been said, from a language accessibility requirements the following conditions need to be specified at the appropriate and applicable level of jurisdictional domain in a LET context (in no particular order):

- 1) What is/are the official language(s) of the jurisdictional domain?
- 2) From a language of instruction (LOI) perspective, what are the additional legally recognized language(s) (LRLs) of the jurisdictional domain (in addition to its official languages).
- 3) What are the public policy requirements?

Based on 1) or 2) one can establish the number of languages in which SRIs need to be made available and therefore in which HIEs need to be made available. The, based on individual accessibility legislation applicable (and enforced) in that jurisdictional domain, one adds to these HIE “language” requirements those required to support the provision of additional HIEs as required to support individual accessibility requirements in that jurisdictional domain.

M.3.3 Intended use of a SRI as prepared by a content provider

A content provider is free to decide what SRI it creates and the purpose and focus in nature. As such, a content provider may simply decide to develop a SRI which is of a SIEL a Level 0. Examples here include the publishing, broadcasting, and entertainment industries. These create resources in the form of books, newspapers, periodicals, and plays, etc., as SRIs intended for “one way” communications. The SRIs provided of this nature are not expected to be responded to.

In addition, a content provider may simply provide a SRI at a level of unambiguity which is of a Level 1 in nature and purpose. Examples here include (a) announcements of the start, holidays and end of a school year; (b) a catalogue of courses offered; (c) an invitation to enrol in a course of whatever nature, etc.

The content provider must (a) respect the language accessibility requirements which apply of the jurisdictional domain(s) which applies.

Further, depending on the stated goal or intended use of the SRI created, the content provider, the contents of the SRI, as HIEs, must be unambiguous so as not to be “misleading”. However, if a SRI is provided after informational purposes, i.e., SIEL Level 1, but intended to be used by an individual user for decision-making (SIEL Level 3) or commitment-making (SIEL Level 4), then the content provider is advised to prepare the HIEs for such SRIs already at SIEL Level 4 of unambiguity and in support of language accessibility requirements, i.e., through the provision of multiple HIEs as determined by the external constraints of the applicable jurisdictional domain(s).

In addition, a SRI provided by a content provider may well be not intended or oriented to be used as a learning resource¹⁶³. However, multilingual HIEs may well already exist as provided by the “original” content provider and/or by other Persons. As such, when and where an existing SRI is intended to be used as a learning resource in a LET context, one needs to verify that the contents provided at a SIEL Level of unambiguity which matches the intended goal of the use of the SRI.

¹⁶³ It is a fact that many of the SRIs used as a resource in a LET context were not (primarily) developed to be used as a learning resource in a LET context.

M.4 Example case studies as “scenarios”

It is possible to provide more detailed case study based on Mi'kmaq as a legally recognized language (LRL) for education (teaching) purposes in Nova Scotia, that of the use of Dogrib and other aboriginal languages for educational purposes as a result of treaties, land claim settlements, etc., made by the federal Government of Canada.

The example provided below is based on the interplay of a set of external constraints governing individual accessibility rights of students (and their parents) at the primary or secondary school level in the territory of Nunavut, a jurisdictional domain which is an administrative sub-division of Canada, which is a UN member state. The external constraints which are deemed to apply to this Nunavut case study¹⁶⁴ and which are relevant in an ITLET context include the following:

- 1) Canada is a signatory to the UN Convention on the rights of persons with disabilities;
- 2) Canada has enacted enabling legislation and pursuant regulations in support of this UN Convention (integrating it with existing requirements which are similar in nature¹⁶⁵;
- 3) The official languages of Canada are (Canadian) English and French;
- 4) The official languages of Nunavut¹⁶⁶ are English, French and what is officially referred to as “the Inuit language” which includes two written forms called Inuktitut (syllabic) and Inuinnaqtun (Roman orthography). This means that content providers issuing official documents, notices, etc., as SRIs may well be required to provide four HIEs for each such SRI; namely:
 - a) a (Canadian) English HIE;
 - b) a (Canadian) French HIE;
 - c) a (Nunavut) Inuktitut HIE (syllabic character-based); and,
 - d) a (Nunavut) Inuinnaqtun HIE (Latin-1 alphabet-based).

The provision of these four HIEs is in fact what is done for all official documents issued by the Government of Nunavut on a daily basis.

- 5) On the whole, in Canada the (legal) responsibility or mandate for education rests at the provincial or territorial level¹⁶⁷;
- 6) In addition, it is deemed that individual accessibility requirements apply at the primary and secondary school level.

¹⁶⁴ It is noted that this case study is not a legal brief. Also, it does not cite relevant laws, regulations, directives, at the Canada Canadian federal, Nunavut territorial, Nunavut local school board, or individual schools, etc., levels of jurisdictional domains. This Nunavut base case study is therefore illustrative in nature.

¹⁶⁵ Here for example in support of individual accessibility requirements Revenue Canada as the content provider makes available a HIE in Braille of the income tax filing requirements for individuals along with all the forms required. {See <http://www.cra-arc.gc.ca/menu/BR-e.html>}

¹⁶⁶ See *Nunavut Official Languages Act*, Statutes of Nunavut 2008 Chapter 10, Section 3(1); and *Nunavut Inuit Language Protection Act*. Statutes of Nunavut 2008, Chapter 17) Section 1 (Definitions – Inuit language) <http://www.justice.gov.nu.ca>

¹⁶⁷ Since “LET” also involves “learning” and “training”, i.e., in addition to “education”, learning and training” are also activities of federal and provincial/territorial ministries and other public administrations as well as of private sector organizations.

The following sample scenarios are worked out below using ISO/IEC 20016-1 *Framework and Reference Model*

Scenario #1 - A notice (as a SRI) by a Nunavut school¹⁶⁸ for an event at the school

The use of ISO/IEC 20016-1 here means that:

- a) the SRI needs to be made available in the HIEs of the languages of use by the school;
- b) the applicable level of unambiguity of the semantics of the different HIEs for the same SRI is SIEL Level 1 (informational)
- c) in a HIEM context, such a “Notice” can be a structured (Quadrant B) type SRI or unstructured (Quadrant D) type SRI.
- d) based on individual accessibility needs and preferences of its enrolled students (or their parents), the school board will need to provide added HIEs to match the needs/preferences of those with disabilities from a communication (accessibility) nature.

Scenario #2 - Issuance by the Department of Education, as content provider, of the courses and program streams being offered by a secondary school¹⁶⁹

The use of ISO/IEC 20016-1 here means that:

- a) this set of SRIs needs to be made available in the HIEs of the official languages of Nunavut as it is issued by the Nunavut Department of Education (which as a government department is mandated by law to provide all material in Nunavut’s official languages);
- b) the applicable level of unambiguity of the semantics of the various HIEs for the same SRI is SIEL Level 2 or 3 (decision-taking; and commitment-making);
- c) in a HIEM context, such a catalogue of “courses” is likely to be of a Quadrant A or Quadrant C type SRI;
- d) based on individual accessibility needs and preferences of its potential student geographic enrolment area, (or that of their parents), the Department of Education needs to be capable of providing additional HIEs in support of communication accessibility and language accessibility.

Scenario #3 - Issuance of a (standard) form-based notice to parents for permission of their child to participate in a school-sponsored field trip (and possible payment of associated fee)

The use of ISO/IEC 20016-1 here means that:

- a) this SRI needs to be made available in the HIEs of the language in use by the school including as well as all the other official languages of Nunavut which may not be a school language of instruction, i.e., in the four HIEs mentioned above.
- b) the applicable unambiguity of the semantics of each of the HIEs for this SRI is SIEL Level 4 (commitment-making);

¹⁶⁸ Note: Nunavut does not have school boards (due to the size of the population), but has individual schools (currently 40) spread throughout the territory, which fall under the responsibility of the (Nunavut) Department of Education. {See <http://www.edu.gov.nu.ca/apps/authoring/dspPage.aspx?page=75>}

¹⁶⁹ In Nunavut, not all locations have secondary schools and the students must leave home to attend high school in another location. Parents and students may choose which of the available secondary schools is most appropriate for their requirements. Thus, secondary school courses and programs may not be issued by an individual school but rather by the Department of Education instead.

- c) in a HIEM context, such a (standard) form requesting permission is most likely of the nature of a Quadrant A SRI as it consists of a set of pre-defined mandatory data elements;
- d) where either the student (or parent) has an individual accessibility requirement, the school shall provide the appropriate HIE of the content to enable the parent to be able to conclude the commitment exchange and “sign” the form, pay the added fee, if required, etc. In the semantic collaboration space of this transaction, one may need to determine, negotiate and/or make arrangements required to support disability needs of the student.

Annex N (informative)

Contributors and acknowledgement

Contributors to ISO/IEC 20016-1 of this multipart standard include:

- 1) Project Co-Editors Dr. Jake V.Th. Knoppers, Canaglobe International Inc.; and,
M. Janice Pereira, Information Management Services (INFOMAN()) Inc.
- 2) Members of the ISO/IEC JTC1/SC36 ITLET Working Group 7 “Culture, language and individual needs” (including Mr. Erlend Øverby as SC36/WG7 Convenor).
- 3) François Mouzard and M. Janice Pereira who worked on the French language versions of the definitions and abstract.
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- 5) The assistance of Dr. Zhu Hong (CNIS, China) in transforming the FDIS text prepared by the Project Co-Editors in a form and format compliant with the ISO template.

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- Note: In addition, there are fourteen (14) standards of ISO TC46 for transliteration into Latin characters, i.e., «Romanization» of Cyrillic (Slavic and non-Slavic languages, Arabic, Persian, Hebrew, Greek, Japanese (kana script), Chinese, Georgian, Armenian, Korean, Devanagari and related Indic scripts, etc.
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¹⁷⁰ ISO 639-3 is included here as the source of codes for sign languages. ISO 639-2 only has a “collection” reference to sign languages (sgn). It does not have any codes for any of the sign languages. Over one hundred and thirty are found in ISO 639-3.

¹⁷¹ For standards referenced for which both English and French versions are available both the English and French language titles are provided. This is independent of whether the English and French language versions of the standard are published as a single document or as separate documents. For those standards which are available in English only, only the English language title is provided.

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