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2025-02

Information technology — Business operational view —

Part 1: Operational aspects of open-edi for implementation

Technologies de l'information — Vue opérationnelle d'affaires —
Partie 1: Aspects opérationnels de l'Edi ouvert pour application

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

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

This third edition cancels and replaced the second edition (ISO/IEC 15944-1:2011), of which it constitutes a minor revision.

The changes are as follows:

— Clause 1 (Scope) has been amended to delete a quote of text of ISO/IEC 14662:2010, Clause 4. (However ISO/IEC 14662 remains a normative reference for this document);

— Clause 2 (Normative references) has been updated, a number of references have been moved to the Bibliography;

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

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

This document is intended to be used in conjunction with ISO/IEC 14662 and ISO/IEC 15944-2, as well as other subsequent parts of the multipart ISO/IEC series of eBusiness standards.

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

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

0.1 Purpose and overview

ISO/IEC 14662[1)] presents the conceptual architecture necessary for carrying out Open-edi. That architecture described the need to have two separate and related views of business activities. The first is the Business Operational View (BOV). The second is the Functional Service View (FSV). ISO/IEC 14662:2010, Figure 1 illustrates the Open-edi environment. For definitions of the terms in Figure 1, see Clause 3.

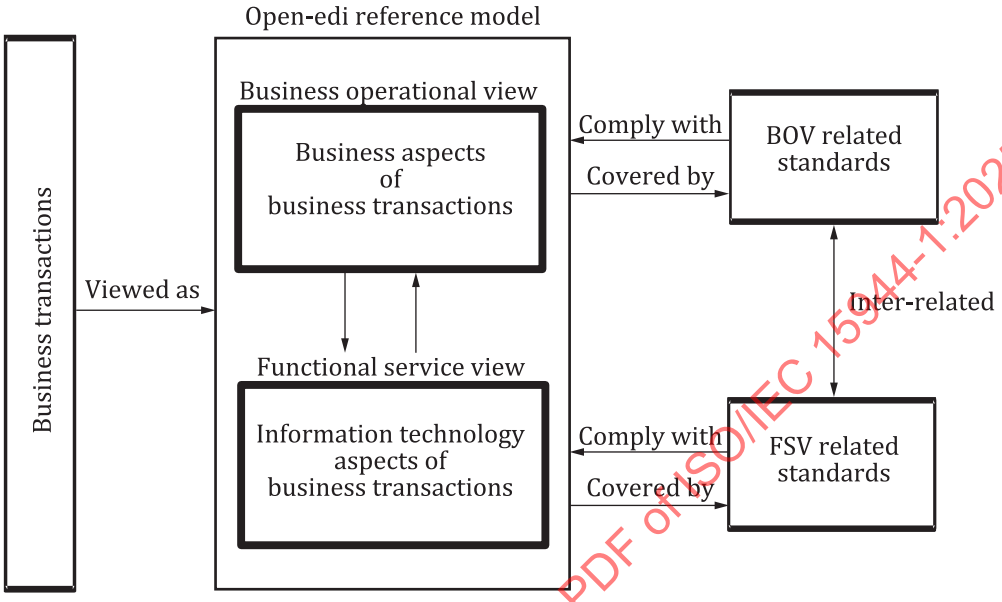


Figure 1 — Open-edi environment

In the BOV, the requirements that the business puts on the exchange of information are described using a modelling technique. ISO/IEC 14662 recognized that there was no single modelling technique identified whilst the International Standard (IS) was in preparation that would satisfy all of the conditions which can be identified as necessary input for the FSV. It was also recognized that business users would need a selection of modelling tools since some tools appear to be better suited to particular types of business specifications and descriptions than others[2)].

To provide for a situation where business users can select from a range of modelling systems, selection criteria identifying the characteristics which any suitable modelling system is required to be able to support have to be defined. These criteria can be used in two ways. One is to be able to select a suitable modelling system. Another is to identify shortcomings in a modelling system currently in use so that the users can provide the extra information themselves if they prefer to use that modelling system.

The BOV is used to capture the business processes from the business perspective, but there are other things that the BOV would not capture because they are part of the operation of the Open-edi architecture itself. One example is that a process needs be able to relate to specific Information Bundles. This relationship has to be precise because any supporting IT system(s) application(s) has to be able to respond to the information structure that it receives as a result of a message from another Open-edi user. Another example is the need

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

2) A Formal Description Technique (FDT) is used to transform, plain text, rule-based BOV requirements into computer-processable IT system level instructions/programming code. For the definition of FDT, see 3.9. ISO/IEC 14662 contains an Annex C (informative) Example of formal description techniques for modeling role behaviour". The three examples of FDTs here are "state transition", "Petri Nets", and "UML".

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to provide for the ability to trigger an action because an event has not occurred (a message has been sent but no response has taken place). Therefore, it is necessary to identify those characteristics which are not expected to be captured in the BOV but are required by IT systems developers in their work on the FSV.

The FSV is used to express the technical methods by which the parts of the business processes used in Open-edi are developed. The FSV has to address the definition, development and lifecycle management of Information Bundles consisting of Semantic Components, together with any rules which are essential to their management and operation.

The FSV is a specification of the way in which the exchange of information is managed. It does not specify the syntax used to encode or represent information that is being exchanged. The selection of a suitable syntax is left to the Electronic Data Interchange (EDI) implementers, just as the selection of the data interchange service on which messages are sent and received is left to networking specialists. Appropriate specialists must ensure that these syntaxes and services are able to satisfy overarching communications requirements such as security services if these are not to be supported through the FSV.

In summary, ISO/IEC 15944 focuses on aspects of "What to do" as opposed to "How to do it", as shown in Figure 2. Existing standards/tools will be used to the extent possible for the "How to." ISO/IEC 15944-2 focuses on identification, registration, referencing and re-use of scenarios, their attributes and components).

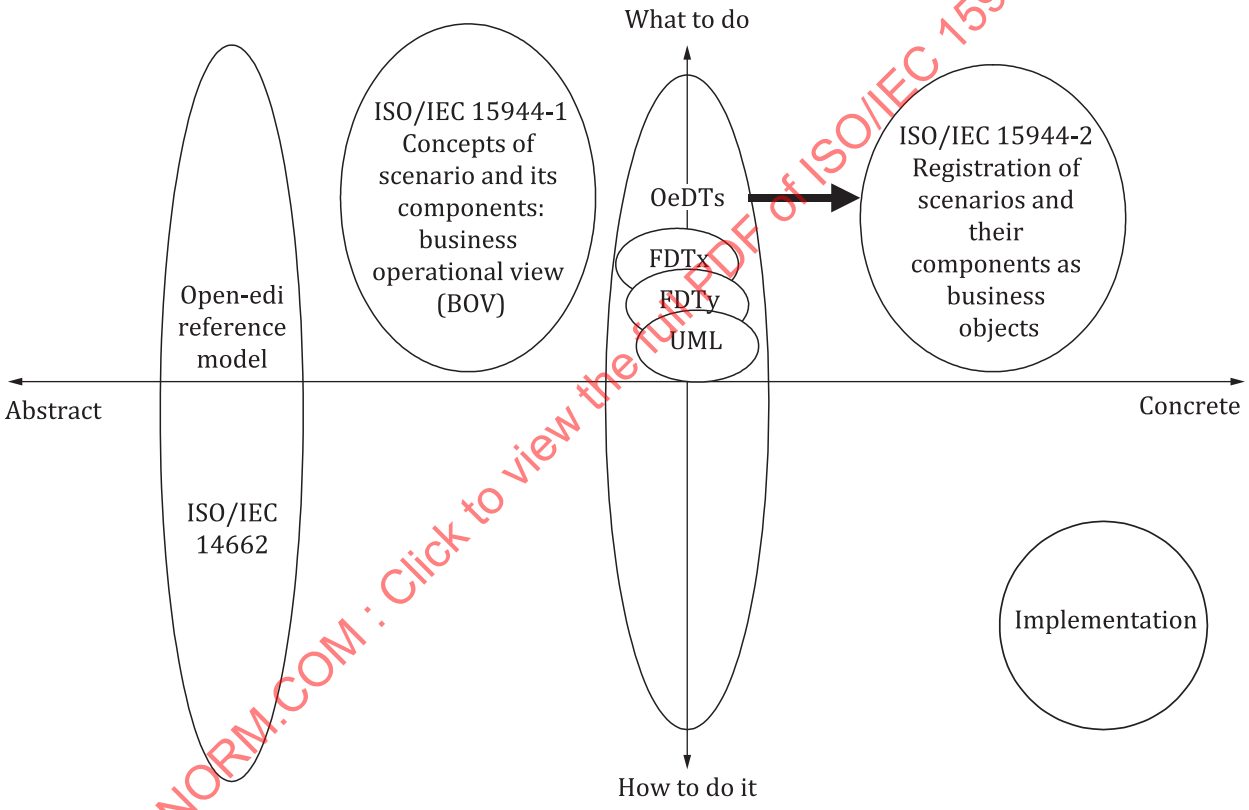


Figure 2 — Aspects of ISO/IEC 15944

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0.2 Requirements on the business operational view aspects of Open-edi

The evolution of information and communications technologies (ICT) has created a need and opportunity for different user groups to engage in business relationships using these technologies. This requires automated methods to carry out EDI among Persons.

Standards required for Open-edi cover a large spectrum of areas: commercial aspects, support for national and international laws and regulations, information technology perspectives, telecommunications and interconnections, security services, etc. To these are added public policy requirements of a generic and horizontal nature such as consumer protection and privacy / data protection. ISO/IEC 14662:2010, Annex A describes how the Open-edi Reference Model serves as the basis for coordination of work of different standardization areas and types of standardization for Open-edi.

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In addition, the widespread adoption and use of Internet and World Wide Web- (WWW-) based technologies by Persons as well as individuals has added urgency to the need to identify and specify the key components of a business transaction. For such specifications to be carried out as electronic business transactions supported by automated methods of the functional support services (FSV) requires a standards-based approach for business semantic descriptive techniques in support of the Business Operational View of Open-edi.

The sources of requirements on the Business Operational View (BOV) aspects which need to be integrated and/or taken into account in the development of business descriptive techniques for Open-edi based business transactions include the following:[3)]

a) commercial frameworks and associated requirements;

b) legal frameworks and associated requirements;

c) public policy requirements, particularly those of a generic nature such as consumer protection and privacy protection;

d) sectorial and cross-sectorial requirements;

e) requirements arising from the need to support cultural adaptability requirements. This includes meeting localization and multilingualism requirements, i.e. as may be required to meet requirements of a particular jurisdictional domain or desired for providing a good, service, and/or right in a particular market[6]. Distinguishing between information technology (IT) interfaces and their multiple human interface equivalents is the recommended approach.

This list of sources of requirements is a summary of ISO/IEC 14662:2010, and its Annexes A and B.

Figure 3 provides an integrated view of the business operational requirements (BOV).

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3) This list of sources of requirements is a summary of ISO/IEC 14662:2010, Annexes A and B.

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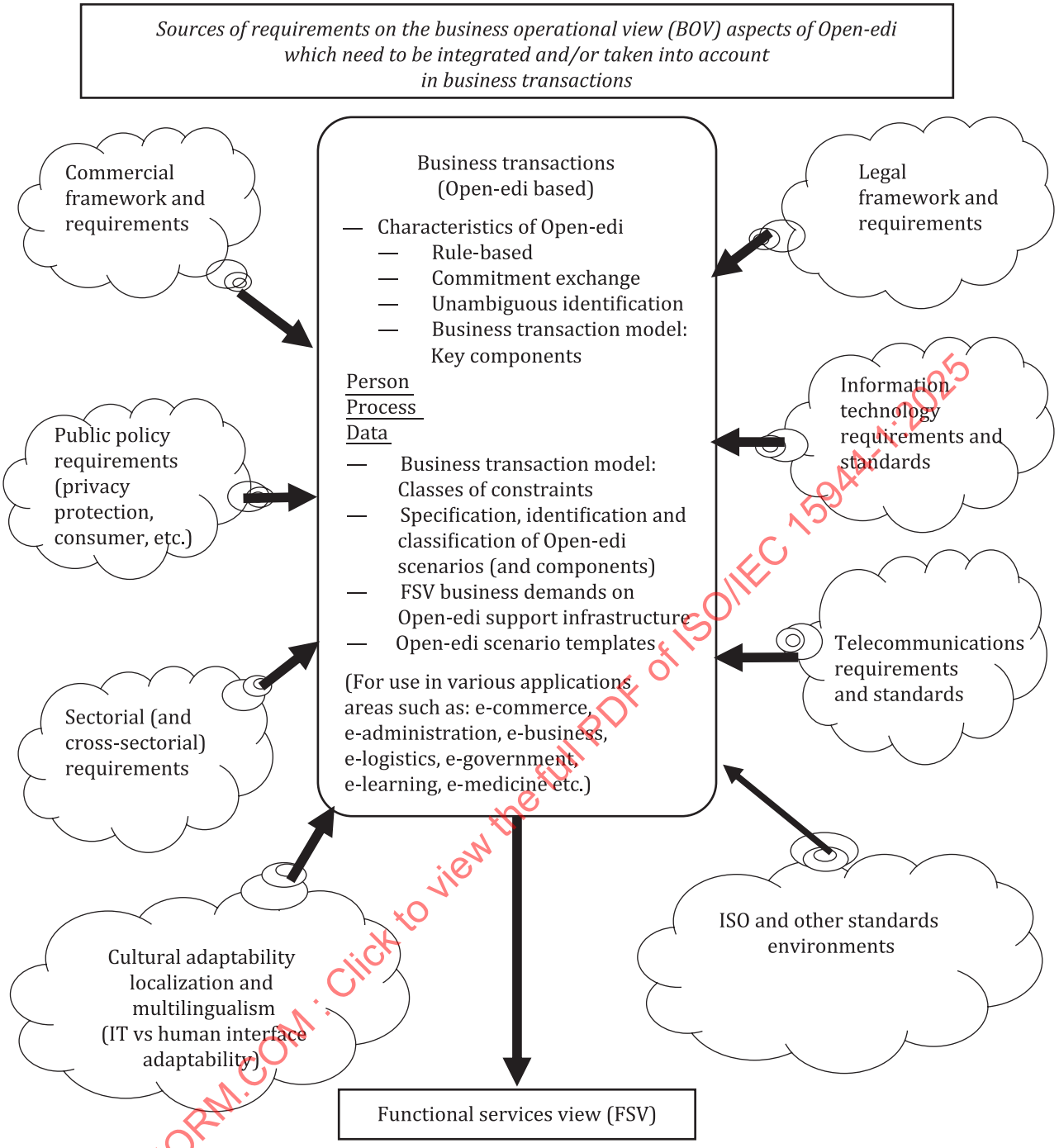


Figure 3 — Integrated View — Business operational requirements focus

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0.3 Business operational view (BOV), Open-edi, e-business, etc.

The purpose of this subclause is to provide users with an understanding of the relationship between concepts/terms in this document and concepts/terms such as “electronic commerce”, “electronic administration” and “electronic business”.

Concepts/terms such as “EDI”, and now e-commerce (and its compatriots e-administration, e-business, e-government, e-logistics, e-travel, e-health, etc.), have a high profile among users and suppliers alike, including those working in standardization. These concepts/terms have many different meanings in various

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contexts and perspectives.[4] In addition, marketing people and those seeking to raise investment funds do and will continue to use "e-"words in a variety of ways.

The underlying principles and characteristics of e-commerce and e-administration, e-business, etc. include:

a) being business transaction-based (of both a financial and non-financial nature);

b) using information technology (computers and telecommunications);

c) interchanging electronic data involving establishment of commitments among Persons.

From a commercial, legal and standardization perspective, one can view electronic commerce[5] as the category of **business transactions**, involving two or more **Persons**, enacted through **Electronic Data Interchange (EDI)**, based on a monetary and for-profit basis.

In this document, the concept of "eBusiness", term is used as a high level umbrella concept covering many IT-based applications. The concept of eBusiness, its defintion and associated assigned term was "formally" introduced in ISO/IEC 15944-7 "eBusiness vocabulary"[6]. Specific eBusiness applications include any types of business transactions (including e-commerce, e-logistics, e-government. (See further Figure 3 and its associated text.)

Persons can be individuals, organizations, and/or public administrations.

Consequently, interpretations and use of the concepts/terms "e-commerce", "e-business", "e-administration", etc. which do not require:

— a clearly understood purpose, mutually agreed upon goal(s), explicitness and unambiguity;

— pre-definable set(s) of activities and/or processes, pre-definable and structured data;

— commitments among Persons being established through electronic data interchange;

— computational integrity and related characteristics; and

— the above being specifiable through Formal Description Techniques (FDTs)[7] and executable through information technology systems for use in real world instantiations;

are not considered a priority for this document and are likely to be outside its scope.

These five requirements, noted above, are essential for achieving interoperability from a BOV perspective (just as existing computer and telecommunication standards have as a key objective interoperability from an IT perspective).

0.4 Use of "Person", "person", and "party" in the context of business transactions and commitment exchange

When ISO/IEC 14662 was being developed, in the early 1990s and finally published in 1997, the "Internet" and "WWW" were at an embryonic stage and their impact on private and public sector organizations was not fully understood. The definition of "Business Operational View (BOV)" is given in 3.6.

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4) The ISO/IEC JTC1 Business Team on Electronic Commerce (BT-EC) in its May 1998 Report to JTC1 (N5296) stated (p.9) "*BT-EC recognizes that Electronic Commerce (EC) can be defined in many different ways. But rather than attempting to provide a satisfactory definition, the Team has chosen to take a more heuristic approach to EC and to do so from a global perspective, i.e., world-wide, cross-sectorial, multilingual, various categories of participants (including consumers)*".

5) In ISO/IEC 15944-7, the more generic concept of "eBusiness" was defined as "***business transaction**, involving the making of **commitments**, in a defined collaboration **space**, among **Persons** using their **IT systems**, according to **Open-edi standards***". For the complete definition including the Notes, see ISO/IEC 15944-7. In this context, e-commerce, e-government and e-learning are sub-types of eBusiness.

6) The defintion of the concept of "eBusiness" is found in ISO/IEC 15944-7:2017, 3.06

7) The Formal Description Technique (FDT) used in support of this document is based on ISO/IEC 19501 and has been adopted in an EDI context in ISO/IEC 14662:2010 in 3.9.

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The existing and widely-used ISO/IEC 6523 standard definition of "organization" was used in ISO/IEC 14662. The fact that today Open-edi through the Internet and WWW also involves "individuals" has now been taken into account in this document. Further, the 1997 edition of ISO/IEC 14662 did not define "commitment", nor the discrete properties and behaviours an entity is required to have to be capable of making a "commitment" as well as bridging legal and IT perspectives in the dematerialized world of the Internet.

During the development of this document, the concept of "commitment" was defined. At the same time, it was recognized that in order to be able to make a commitment, the term Open-edi Party was not specific enough to satisfy scenario specifications when the legal aspects of commitment were considered. In many instances, commitments were noted as actually being made between and among machines (automata or computer programs) acting under the direction of those legally capable of making commitments, rather than the individuals in their own capacities. It was also recognized that in some jurisdictional domains, commitments could be made by "artificial" persons such as corporate bodies. Finally, it was recognized that there are occasions where agents act either under the instruction of a principal or as a result of a requirement(s) laid down by a jurisdictional domain, or where an individual is prevented by a relevant jurisdictional domain from being able to make a commitment.

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

The user should understand that:

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

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

c) the words "person(s)" and/or "party(ies)" are used in their generic contexts independent of roles of "Person" as defined sub-types in this document. A "party to a business transaction" has the properties and behaviours of a "Person" (See further Clause 6, in particular 6.1.3 and 6.2).

0.5 Registration aspects of Open-edi scenarios, scenario attributes and scenario components

This document serves as a rule-based methodology and tool for building and defining scenarios, scenario attributes, and scenario components. It identifies these basic or primitive components of a business transaction, provides guidelines for scoping Open-edi scenarios as well as rules for specification of Open-edi scenarios and their components. It consolidates these through a "Primitive Open-edi Scenario Template". (See Clause 9.) Registration aspects of Open-edi, including requirements, procedures, etc., are covered in ISO/IEC 15944-2, which supports the registration of scenarios, scenario attributes and scenario components as "objects". The objective of ISO/IEC 15944-2 is the identification, registration, referencing and re-usability of common objects in a business transaction. Re-usability of scenarios and scenario components is an achievable objective because existing (global) business transactions, whether conducted on a for-profit or not-for-profit basis, already consist of reusable components unambiguously understood among participating parties. However, such existing "standard" components have not yet been formally specified and registered. ISO/IEC 15944-2 fills this gap.

0.6 Organization and description of the document

This document describes the key concepts required for developing the BOV of a business transaction and scenario. It considers how a scenario may be decomposed into functions and how the different classes of constraints to be applied shall be identified and documented. It provides for methods of modelling processes, work flow and information flow. This document provides methods for identifying primitive or common components so that there is a) a high likelihood of reusability; and b) the ability to locate suitable components in registries. A key purpose of this document is to enable support of legal and regulatory requirements in business transactions.

This document provides two checklists to guide the user through the mechanics of determining the scope of a business transaction and determining the adequacy of the scenario definition as well as those of scenario components. The definitions of scenarios and scenario components are required to be accessible to all

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Persons in order to minimize resources needed to communicate between parties in a clear and unambiguous manner. Designers need therefore ensure that scenarios and components are designed to be interoperable and re-useable. They are also required to be clearly described such that a recipient can interpret them without external information. This document focuses on addressing horizontal, generic issues common to all Open-edi applications and does so from the BOV perspective on business transactions. The diversity of sources of requirements that need to be integrated is illustrated in Figure 3. In addition, this document is also intended to be used by those not that familiar with formal ISO/IEC standards.

To address these requirements and to ensure understandability and thus widespread use of this document, has two normative Annexes, i.e. Annexes A and B, and eight informative Annexes, i.e. Annexes C through J. The focus of Annex A is to provide English and French Human Interface Equivalents (HIEs) for all the terms and definitions found in Clause 3 while that of Annex B is to provide the codes representing presence-type attributes. The purpose of the Annexes C through H is to provide added informative and explanatory text to the normative text of this document. They have been organized to mirror the sequence of the clauses of the normative part. Users who have difficulty in understanding the necessarily short, explicit text of the normative text of this document and its two normative annexes are advised to read the related informative and explanatory text in the annexes.

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Information technology — Business operational view —

Part 1:
Operational aspects of open-edi for implementation

1 Scope

This document addresses the fundamental requirements of the commercial and legal frameworks and their environments on business transactions. It also integrates the requirements of the information technology and telecommunications environments.

In addition to the existing strategic directions of "portability" and "interoperability", the added strategic direction of ISO/IEC JTC 1 of "cultural adaptability" is supported in this document. It also supports requirements arising from the public policy/consumer environment, cross-sectoral requirements and the need to address horizontal issues. It integrates these different sets of requirements. (See Figure 3)

This document allows constraints which include legal requirements, commercial and/or international trade and contract terms, public policy (e.g. privacy/data protection, product or service labelling, consumer protection), laws and regulations to be defined and clearly integrated into Open-edi through the BOV. This means that terms and definitions in this document serve as a common bridge between these different sets of business operational requirements, allowing the integration of code sets and rules defining these requirements to be integrated into business processes electronically.

This document contains a methodology and tool for specifying common business practices as part of common business transactions in the form of scenarios, scenario attributes, roles, Information Bundles and Semantic Components. It achieves this by: 1) developing standard computer processable specifications of common business rules and practices as scenarios and scenario components; and thus, 2) maximizing the re-use of these components in business transactions.

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2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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3.1
agent
Person (3.47) acting for another *Person* in a clearly specified capacity in the context of a *business transaction* (3.7)

Note 1 to entry: Excluded are agents as "automatons" (or robots, bobots, etc.) In ISO/IEC 14662, "automatons" are recognized and provided for but as part of the Functional Service View (FSV) where they are defined as an "Information Processing Domain (IPD)".

3.2
Application Program Interface
API
boundary across which application software uses facilities of programming languages to invoke services

Note 1 to entry: These facilities may include procedures or operations, shared data objects and resolution of identifiers.

Note 2 to entry: A wide range of services may be required to support applications. Different methods may be appropriate for documenting API specifications for different types of services.

Note 3 to entry: The information flows across the boundary are defined by the syntax and the semantics of a particular programming language, such that the user of that language may access the services provided by the platform on the other side of the boundary. This implies the specification of the mapping of the functions being made available by the application platform into the syntax and semantics of the programming language.

[SOURCE: ISO/IEC 14662:2010, 3.1]

3.3
authentication
provision of assurance of the claimed identity of an *entity* (3.20)

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

3.4
authenticity
property that ensures that the identity of a subject or resource is the one claimed

Note 1 to entry: Authenticity applies to entities such as users, processes, systems and information.

3.5
business
series of *processes* (3.53), each having a clearly understood purpose, involving more than one *Person* (3.47), realized through the exchange of *recorded information* (3.56) and directed towards some mutually agreed upon goal, extending over a period of time

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

3.6
Business Operational View
BOV
perspective of *business transactions* (3.7) limited to those aspects regarding the making of *business* (3.5) decisions and *commitments* (3.9) among *Persons* (3.47), which are needed for the description of a *business transaction*

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

3.7
business transaction
predefined set of activities and/or *processes* (3.53) of *Persons* (3.47) which is initiated by a *Person* to accomplish an explicitly shared *business* (3.5) goal and terminated upon recognition of one of the agreed conclusions by all the involved *Persons* although some of the recognition may be implicit

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

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3.8
buyer
Person (3.47) 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

3.9
commitment
making or accepting of a right, obligation, liability or responsibility by a *Person* (3.47) that is capable of enforcement in the jurisdictional domain in which the commitment is made

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

3.10
consensus
<standardization perspective>general agreement, characterized by the absence of sustained opposition to substantial issues by any important part of the concerned interests and by a *process* (3.53) that involves seeking to take into account the views of all parties concerned and to reconcile any conflicting arguments

Note 1 to entry: Consensus need not imply unanimity.

3.11
constraint
rule, explicitly stated, that prescribes, limits, governs or specifies any aspect of a *business transaction* (3.7)

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

Note 2 to entry: For constraints to be registered for implementation in Open-edi, they are required to 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.

3.12
consumer
buyer (3.8) who is an *individual* (3.28) to whom consumer protection requirements are applied as a set of *external constraints* (3.23) on a *business transaction* (3.7)

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 consumer protection applies only where a buyer in a business transaction is an individual. If this is not the case in a particular jurisdictional domain, 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 jurisdictional domain.

3.13
data
reinterpretable representation of *information* (3.29) in a formalized manner suitable for communication, interpretation, or processing

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

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

3.14
data (in a business transaction)
representations of *recorded information* (3.56) that are being prepared or have been prepared in a form suitable for use in a computer system

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3.15
data element
unit of *data* (3.13) for which the definition, *identification* (3.26), representation and permissible values are specified by means of a set of attributes

[SOURCE: ISO/IEC 11179-1:2023, 3.3.4]

3.16
data element
<organization of data>unit of *data* (3.13) that is considered in a certain context to be indivisible

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

[SOURCE: ISO/IEC 11179-1:2023, 3.3.4]

3.17
Decision Making Application
DMA
model of that part of an *Open-edi system* (3.42) that makes decisions corresponding to the *role(s)* (3.60) that the *Open-edi Party (OeP)* (3.39) plays, as well as originating, receiving and managing *data* (3.13) values contained in instantiated*Information Bundles (IBs)* (3.30), which is not required to be visible to the other *Open-edi Party(ies) (OeP)*

[SOURCE: ISO/IEC 14662:2010, 3.7]

3.18
distinguishing identifier
data (3.13) that unambiguously distinguishes an *entity* (3.20) in the *authentication* (3.3) *process* (3.53)

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

3.19
Electronic Data Interchange
EDI
automated exchange of any predefined and structured *data* (3.13) for *business* (3.5) purposes among information systems of two or more *Persons* (3.47)

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

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

3.20
entity
any concrete or abstract thing that exists, did exist, or might exist, including associations among these things

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

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

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

3.21
entity authentication
corroboration that an *entity* (3.20) is the one claimed

[SOURCE: ISO/IEC 9798-1:2010, 3.14]

3.22
(entity) identification
method of using one or more attributes whose attribute values uniquely identify each occurrence of a specified *entity* (3.20)

[SOURCE: ISO/IEC 2382:2015, 2121444]

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3.23
external constraint
constraint (3.11) which takes precedence over *internal constraints* (3.33) in a *business transaction* (3.7), 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 sectoral nature, those which pertain to a particular jurisdictional domain or mutually agreed 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 are required to be recorded.

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

Note 6 to entry: A minimum external constraint applicable to a business transaction often requires one to differentiate whether the Person 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.

3.24
Formal Description Technique
FDT
specification method based on a description language using rigorous and *unambiguous* (3.66) rules both with respect to developing expressions in the language (formal syntax) and interpreting the meaning of these expressions (formal semantics)

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

3.25
Functional Service View
FSV
perspective of *business transactions* (3.7) limited to those information technology interoperability aspects of *IT Systems* (3.32) needed to support the execution of *Open-edi transactions* (3.43)

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

3.26
identification
rule-based *process* (3.53), explicitly stated, involving the use of one or more attributes, i.e. *data element(s)* (3.15), whose content value (or combination of values) are used to identify uniquely the occurrence or existence of a specified *entity* (3.20)

3.27
identifier
<in business transaction> *unambiguous* (3.66), unique and a linguistically neutral value, resulting from the application of a rule-based *identification* (3.26) *process* (3.53)

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

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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.

3.28
individual
Person (3.47) who is a human being, i.e. a natural person, who acts as a distinct indivisible *entity* (3.20) or is considered as such

3.29
information
<information processing>knowledge concerning *objects* (3.36), such as facts, events, things, *processes* (3.53), or ideas, including concepts, that within a certain context has a particular meaning

[SOURCE: ISO/IEC 2382:2015, 2121271]

3.30
Information Bundle
IB
formal description of the semantics of the *recorded information* (3.56) to be exchanged by *Open-edi Parties* (3.39) playing *roles* (3.60) in an *Open-edi scenario* (3.40)

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

3.31
Information Processing Domain
IPD
Information Technology System (3.32) which includes at least either a *Decision Making Application (DMA)* (3.17) and/or one of the components of an Open-edi Support Infrastructure, and acts/executes on behalf of an *Open-edi Party* (3.39) (either directly or under a delegated authority)

[SOURCE: ISO/IEC 14662:2010, 3.12]

3.32
Information Technology System
IT System
set of one or more computers, associated software, peripherals, terminals, human operations, physical processes, and information transfer means that form an autonomous whole, capable of performing information processing and/or information transfer

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

3.33
internal constraint
constraint (3.11) which forms part of the *commitment(s)* (3.9) mutually agreed to among the parties to a *business transaction* (3.7)

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.

3.34
medium
physical material which serves as a functional unit, in or on which information or *data* (3.13) 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.

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Note 3 to entry: This definition of "medium" is independent of: (a) form or format of recorded information; (b) physical dimensions and/or size; and, (c) 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: (a) the property of medium as a material in or on which information or data can be recorded and retrieved; (b) the property of storage; (c) the property of physical carrier; (d) the property of physical manifestation, i.e. material; (e) the property of a functional unit; and, (f) the property of (some degree of) stability of the material in or on which the information or data is recorded.

3.35
name
designation of an *object* (3.36) by a linguistic expression

3.36
object
anything perceivable or conceivable

Note 1 to entry: Objects may also be material, (e.g. engine, a sheet of paper, a diamond), or immaterial, (e.g. conversion ration, a project play), or imagined, (e.g. a unicorn).

[SOURCE: ISO 1087:2019, 3.1.1]

3.37
Open-edi
Electronic Data Interchange (EDI) (3.19) among multiple autonomous *Persons* (3.47) to accomplish an explicit shared *business* (3.5) goal according to *Open-edi standards* (3.41)

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

3.38
Open-edi Description Technique
OeDT
specification method such as a *Formal Description Technique* (3.24), another methodology having the characteristics of a *Formal Description Technique*, or a combination of such techniques as needed to formally specify *BOV* (3.6) concepts, in a computer processable form

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

3.39
Open-edi Party
OeP
Person (3.47) that participates in *Open-edi* (3.37)

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

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

3.40
Open-edi scenario
OeS
formal specification of a class of *business transactions* (3.7) having the same *business* (3.5) goal

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

3.41
Open-edi standard
standard (3.64) that complies with the *Open-edi* (3.37) Reference Model

[SOURCE: ISO/IEC 14662:2010, 3.19]

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3.42
Open-edi system
information technology system (IT System) (3.32) which enables an *Open-edi Party* (3.39) to participate in *Open-edi transactions* (3.43)

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

3.43
Open-edi transaction
business transaction (3.7) that is in compliance with an *Open-edi scenario* (3.40)

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

3.44
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 document include the following examples:

EXAMPLE 1 An organization incorporated under law.

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

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

[SOURCE: ISO/IEC 6523-1:2023, 3.1]

3.45
organization part
any department, service or other *entity* (3.20) within an *organization* (3.44), which needs to be identified for information interchange

[SOURCE: ISO/IEC 6523-1:2023, 3.2]

3.46
organization Person
organization part (3.45) which has the properties of a *Person* (3.47) and thus is able to make *commitments* (3.9) on behalf of that *organization* (3.44)

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

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

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

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

3.47
Person
entity (3.20), i.e. a natural or legal person, recognized by law as having legal rights and duties, able to make *commitment(s)* (3.9), assume and fulfil resulting obligation(s), and able to be 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 jurisdictional domains.

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.

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

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

3.48
persona
set of *data elements* (3.15) and their values by which a *Person* (3.47) wishes to be known and thus identified in a *business transaction* (3.7)

3.49
persona Registration Schema
pRS
formal definition of the *data* (3.13) fields contained in the specification of a *persona* (3.48) of a *Person* (3.47) and the allowable contents of those fields, including the rules for the assignment of *identifiers* (3.27)

Note 1 to entry: This may also be referred to as a persona profile of a Person.

3.50
Person authentication
provision of the assurance of a *recognized Person identity (rPi)* (3.55) (sufficient for the purpose of the *business transaction* (3.7) by corroboration

3.51
Person identity
Pi
combination of *persona* (3.48) information and *identifier* (3.27) used by a *Person* (3.47) in a *business transaction* (3.7)

3.52
Person signature
signature, i.e. a *name* (3.35) representation, distinguishing mark or usual mark, which is created by and pertains to a *Person* (3.47)

3.53
process
series of actions or events taking place in a defined manner leading to the accomplishment of an expected result

3.54
public administration
entity (3.20), i.e. a *Person* (3.47), which is an *organization* (3.44) and has the added attribute of being authorized to act on behalf of a *regulator* (3.59)

3.55
recognized Person identity
rPi
Person identity (Pi) (3.51) established to the extent necessary for a specific purpose in a *business transaction* (3.7)

3.56
recorded information
any *information* (3.29) that is recorded on or in a *medium* (3.34) irrespective of form, recording *medium* (3.34) or technology used, and in a manner allowing for storage and retrieval

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

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

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

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3.57
Registration Authority
RA
Person (3.47) responsible for the maintenance of one or more *Registration Schemas (RS)* (3.58) including the assignment of a unique *identifier* (3.27) for each recognized *entity* (3.20) in a *Registration Schema (RS)*

3.58
Registration Schema
RS
formal definition of a set of rules governing the *data* (3.13) fields for the description of an *entity* (3.20) and the allowable contents of those fields, including the rules for the assignment of *identifiers* (3.27)

3.59
regulator
Person (3.47) who has authority to prescribe *external constraints* (3.23) which serve as principles, policies or rules governing or prescribing the behaviour of *Persons* involved in a *business transaction* (3.7) as well as the provisioning of goods, services, and/or rights interchanged

3.60
role
specification which models an external intended behaviour (as allowed within a scenario) of an *Open-edi Party* (3.39)

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

3.61
scenario attribute
formal specification of *information* (3.29), relevant to an *Open-edi scenario* (3.40) as a whole, which is neither specific to *roles* (3.60) nor to *Information Bundles* (3.30)

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

3.62
seller
Person (3.47) 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

3.63
Semantic Component
SC
unit of *recorded information* (3.56) unambiguously defined in the context of the *business* (3.5) goal of the *business transaction* (3.7)

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

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

3.64
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* (3.53) and services are fit for their purpose

Note 1 to entry: This is the generic definition of "standard" of the ISO and IEC as found in ISO/IEC Guide 2:2004, 1.7.

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3.65
third party
Person (3.47) besides the two primarily concerned in a *business transaction* (3.7) who is *agent* (3.1) of neither and who fulfils a specified *role* (3.60) or function as mutually agreed to by the two primary *Persons* or as a result of *external constraints* (3.23)

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

3.66
unambiguous
level of certainty and explicitness required in the completeness of the semantics of the *recorded information* (3.56) interchanged that is appropriate to the goal of a *business transaction* (3.7)

3.67
vendor
seller (3.62) on whom consumer protection requirements are applied as a set of *external constraints* (3.23) on a *business transaction* (3.7)

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 jurisdictional domain.

3.68
privacy
right to be left alone, free from intrusion or interruption, privacy is an umbrella term, encompassing elements such as physical privacy, communications privacy, and information privacy

Note 1 to entry: Privacy is linked to other fundamental human rights such as freedom and personal autonomy.

3.69
personal information
any *information* (3.29) about an identifiable individual that is recorded in any form, including electronically or on paper

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

Note 1 to entry: In some jurisdictional domains, privacy/data protection legislation can apply to electronically, i.e. computer system-based, recorded information only.

4 Abbreviated terms

API	Application Program Interface
BOV	Business Operational View
BTM	Business Transaction Model
CD	Coded Domain
COPOLCO	ISO's Commettee on Consumer Policy
DMA	Decision Making Application
EDI	Electronic Data Interchange
FDT	Formal Description Technique
FSV	Functional Service View

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HIE	Human Interface Equivalent
IB	Information Bundle
ICT	Information communications technology
IPD	Information Processing Domain
IT System	Information Technology System
IS	International Standard
OeDT	Open-edi Description Technique
OeP	Open-edi Party
OeS	Open-edi Scenario
OeSE	Open-edi Support Entity
OeSI	Open-edi Support Infrastructure
OeUD	Open-edi User Data
Pi	Person identity
pRS	persona Registration Schema
QoS	Quality of Service
RA	Registration Authority
rPi	recognized Person identity
RS	Registration Schema
SC	Semantic Component

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5 Characteristics of Open-edi

5.1 General

Open-edi describes flows of information using Information Bundles which cause pre-defined changes in the states of the parties to the exchange. Parties using Open-edi make the commitment that they will adhere to the predefined rules associated with the registered associated scenario attributes, roles and Information Bundles (including registered Semantic Components). This is necessary to support the exchanges of commitments applicable to the parties involved in the business transaction.

This clause is based on ISO/IEC 14662. As such, all Open-edi implementations shall meet the requirements specified in ISO/IEC 14662.

The characteristics by which Open-edi is recognized and defined are:

a) actions based on following predefined rules;

b) commitment of the parties involved;

c) communications among parties are automated;

d) parties control and maintain their states;

e) parties act autonomously;

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f) multiple simultaneous transactions can be supported.

Each of these characteristics is now described in more detail.

5.2 Actions based on following clear, predefined rules

Open-edi requires the use of clear and pre-defined rules, principles and guidelines. These rules formally specify the role(s) of the parties involved in Open-edi and the available expected behaviour(s) of the parties as seen by other parties engaging in Open-edi. Open-edi rules are applied to both the:

— content of information flows; and,

— the order and behaviour of information flows themselves.

The combination of both of these provides a complete definition of the relationships among the parties since it requires them to achieve a common semantic understanding of the information exchanged. They need also have consistent generic procedural views on their interaction. Therefore, rule sets have to be agreed to in advance and captured in Open-edi scenarios. This is a major component of the agreement required among parties.

5.3 Commitment of the parties involved

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

5.4 Communications among parties are automated

Open-edi activities take place in automated modes among IT systems of the participating parties. The actual exchange of information and compliance with rule sets agreed to for the Open-edi exchange must be implemented by using an automaton or computer program. As a result, the use of Open-edi means that only requirements for interchange of information among information systems and applications are considered.

Requirements on the interchange of information between humans and terminals or programs are not addressed. Any human intervention is considered to be a part of the Decision Making Application (DMA). That is not to say that computer applications surrounding an Open-edi system could not provide for human intervention, but these would not form part of the Open-edi scenario itself. It is always possible for one or more Open-edi Parties to carry out steps or actions manually and not through automata. Where manual steps or actions are contemplated these should be recorded as part of the business transaction definition for the party concerned.

5.5 Parties control and maintain their states

An Open-edi Party is required to always have, and make available to other parties, a state description. As perceived by another party, a state description includes only the knowledge necessary for a particular Open-edi activity to take place. A state description is the characteristic of a party at a given point in time which allows the prediction of its external behaviour (or possible ranges of behaviour). A state description is defined in terms of those characteristics which are required to be available to other parties for the purpose of enabling agreed upon Open-edi scenarios. States are required to therefore be stable, sustainable and persistent. When a party needs to change its state, it is required to observe the rules by which state changes are allowed. Changes of the state of one party should be available to all other parties for whom this change has an importance.

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5.6 Parties act autonomously

Open-edi is intended to preserve the autonomy of parties as they engage in business transactions. The characteristic of autonomy is crucial from several perspectives, including the ability to commit from a business/operational perspective, technical, legal, audit, etc. Just as commitment can exist at several levels, so can autonomy exist at several levels.

The characteristic of autonomy provides a controlled means by which the information systems of parties can retain the individuality of the manner in which they carry out their internal business processes whilst providing a consistent external behaviour conforming to agreed business processes.

5.7 Multiple simultaneous transactions can be supported

Open-edi systems can enable an Open-edi Party to participate in multiple distinct Open-edi transactions simultaneously.

Characteristics 5.2 through 5.7 serve as criteria which are required to be satisfied in order for electronic flows of information or data to be considered Open-edi. These criteria apply irrespective of the area of application for Open-edi.

6 Components of a business transaction

6.1 General

6.1.1 Overview

The BOV is used to capture and define the integration between business operational requirements and requirements that arise from:

a) existing commercial frameworks;

b) existing legal frameworks;

c) those of a public policy/consumer requirements nature;

d) sectoral (and cross-sectoral) requirements;

e) localization and multilingualism, and,

f) information technology and telecommunication requirements and standards.

The BOV is able to provide this capability because issues such as contents of contract and applicable law can be captured during the business analysis phase. It cannot be captured at a later stage in scenario definition, i.e. that of planning, identification, negotiation, actualization, post-actualization phases of the process component of the BTM. (See 6.3)

Capturing these additional requirements is essential to ensuring that the parties have, or are able to obtain through the use of the Open-edi scenario, a clear understanding of the parameters of any commitment being made. In order to understand this chapter, readers are advised to familiarize themselves with the definitions of the following terms: “Business Operational View (BOV)”, “Functional Services View (FSV)”, “business”, “business transaction”, “Open-edi”, and “Electronic Data Interchange (EDI)”. See further Clause 3 or Annex A which also includes the French language equivalents. For the Chinese and Russian language equivalents, see the consolidated “eBusiness vocabulary” in ISO/IEC 15944-7.

Fundamental defined concepts include:

a) the introduction of Person as the entity within an Open-edi Party that carries the ability, competency and legal responsibility for making a commitment;

b) the need to have rule-based processes which together deliver the commonly agreed business objectives;

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c) data exchange, which is the transfer of Information Bundles (and their associated Semantic Components) between and among parties;

d) constraints that have to be applied to the scenario as a result of the nature of the Persons, the role they are playing or the scenario itself. It is essential, when considering scenarios, to determine clearly the constraints that apply to the scenario, either preconditions on entry to any point in a scenario, or post-conditions determined by the scenario component(s) and role combination that have just been played.

The primary purpose of this Clause is two-fold, namely:

a) to capture key aspects of a business transaction in order to serve as a common basis and understanding for users of this document representing these different sources of business operational requirements; and

b) to serve as source for the “WHATs” of business requirements as “rules for scoping Open-edi scenarios” as specified in 7.2, and as part of the context and rules for specification of Open-edi scenarios and their components for Clause 8. Further, the focus of this BOV standard in being rule-based is on the "WHATs" and not on the "HOWs", (e.g. the specification of scenarios and scenario components remain the same but there will be various ways to implement them without compromising interoperability).

The introductory subclauses of this clause cover aspects which apply to business transactions as a whole and introduce the Business Transaction Model (BTM) in terms of its three components and two classes of constraints; “internal” and “external”. Subclauses 6.2, 6.3, and 6.4 focus on the three component parts of the Business Transaction Model. Subclause 6.5 provides business demands on the Open-edi Support Infrastructure. Identification and Classification of Open-edi scenarios, based on the concepts of this clause, are presented in ISO/IEC TR 15944-6.

6.1.2 Standard based on rules and guidelines

This document is intended to be used within and outside of the ISO and IEC by diverse sets of users having different perspectives and needs. (See Figure 3).

See 3.64 for ISO's definition of a "standard. One can interpret "agreement" in a variety of ways. The 8th edition of the ISO/IEC Guide 2:2004, 1.7 uses the term "consensus" which need not imply unanimity. An earlier version of Guide 2 also included the phrase “but rather “absence of sustained opposition to substantial issues…”. See further, 3.10.

This document focuses on "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".

As noted in 5.1, Open-edi is based on rules which are predefined and mutually agreed to by the parties concerned. They are precise criteria and agreed upon requirements of business transactions representing common business operational practices and functional requirements. These rules also serve as a common set of understanding bridging the varied perspectives of the commercial framework, the legal framework, the information technology framework, standardizers, consumers, etc.

The working principle is that of "coordinated autonomy", i.e. all parties are autonomous. Therefore, the extent to which they cooperate, agree on common needs, business rules constraints, practices, etc., and reach agreement on the same in form of precise rules, terms and definitions, etc., is a key influence on the creation of necessary standards as well as common scenarios, scenario attributes and scenario components. In this document, the common rules are sequentially enumerated and presented in bold font. Where guidelines are provided for a rule they are numbered sequentially after that rule and are shown in an italic font. For example, “Guideline 5G2” equals the second guideline under Rule 5. Choice of words in the rules, the guidelines and the terms and definitions are governed by maximizing the ability to map, on the one hand, to commercial and legal frameworks of the day-to-day world of business, and on the other, to information and technology frameworks, service providers, and standardizers, etc.

For the human interface equivalents (HIEs) of terms used in the rules and guidelines, Annex A shall apply.

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6.1.3 Business transaction: commitment exchange added to information exchange

The Business Operational View (BOV) states the need for information exchange and commitment exchange as essential for business transactions among autonomous parties using Open-edi. Most ISO/IEC JTC1 standards focus on information exchange aspects only. This document focuses on integrating commitment exchange with information exchange in the dematerialized world of Open-edi.

Rule 1:

Business transactions require both information exchange and commitment exchange.

A key property of a business transaction is that it involves commitment exchange among Persons in addition to information exchange among their IT systems. To date, the primary focus of FSV-related standards, i.e. those in the areas of information technology, telecommunication services, security services, etc., is on information exchanges among technical components as objects, i.e. as senders and receivers via locations specified as an address.

In this context, a "Person" is seen simply as an entity which may or may not be associated with the technical components which are considered to be the objects that send or receive data, i.e. the focus of existing telecommunication and information technology standards, as information exchange only with technical components as the "end points" is illustrated in Figure 4.[8)]

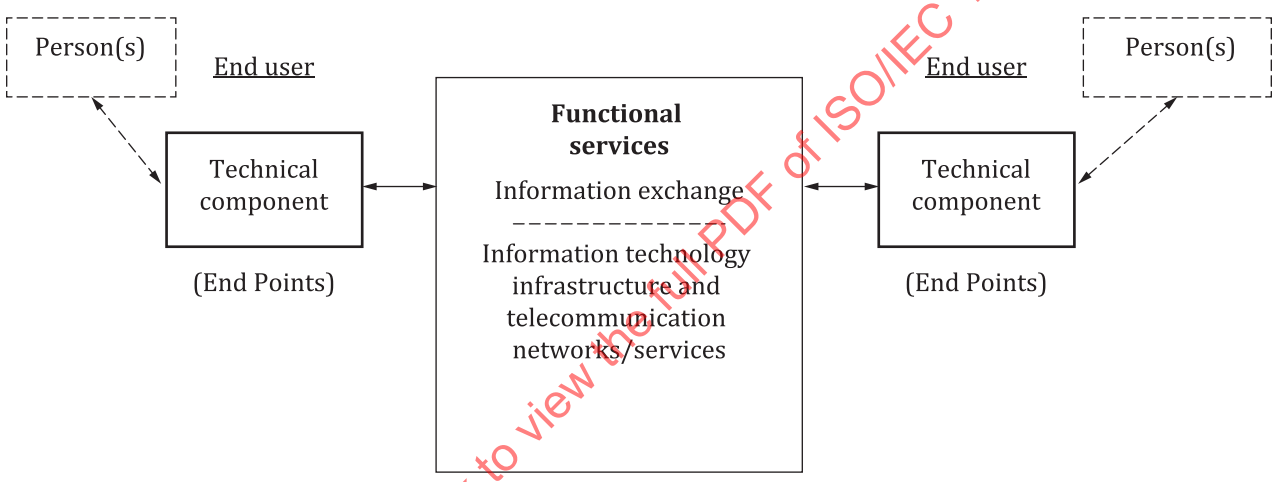


Figure 4 — Illustration of technical components as end users of information exchange(s) in IT Standards — FSV perspective

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Guideline 1G1:

The term "Person" is used to represent the generic use of the term "party" plus the ability of a party to be able to make commitments with respect to a business transaction.

From the perspective of the requirements of commercial and legal frameworks, information exchange is only one element in a business transaction, for which the end points are "Persons" (natural or legal) and not technical components. The two key attributes of a business transaction that differentiate it from (general) information exchange are that business transactions involve:

a) commitment exchange; and

b) "Persons" who are the end users, (the "alpha" and "omega") in their roles as buyers and sellers of goods, services and/or rights.

8) IT and telecommunication standards and their implementation ensure efficient routing and networking among addressees, locating them as end points for a given length of time (or session) via terrestrial and/or wireless networks. The end points referred to in these standards as "user", "end user", or "technical components" can be a terminal device (including hand-held) a token, (e.g., a magnetic stripe card, IC card, etc.), an information system, an application, a directory service, etc. Within the Open System Interconnect (OSI) approach, different layers have their own addressing scheme(s) designed to support the functional services at that level.

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The term commonly used in the context of business transactions is that of “party”. In this document, the term “Person” is used to specify a party which has the ability to make commitments, being held responsible for, having rights and obligations, etc. in the context of a business transactions. Various combinations of information technologies may be used in the establishment of commitments, formation of rights and obligations, and other commitment exchange. This is illustrated in Figure 5.

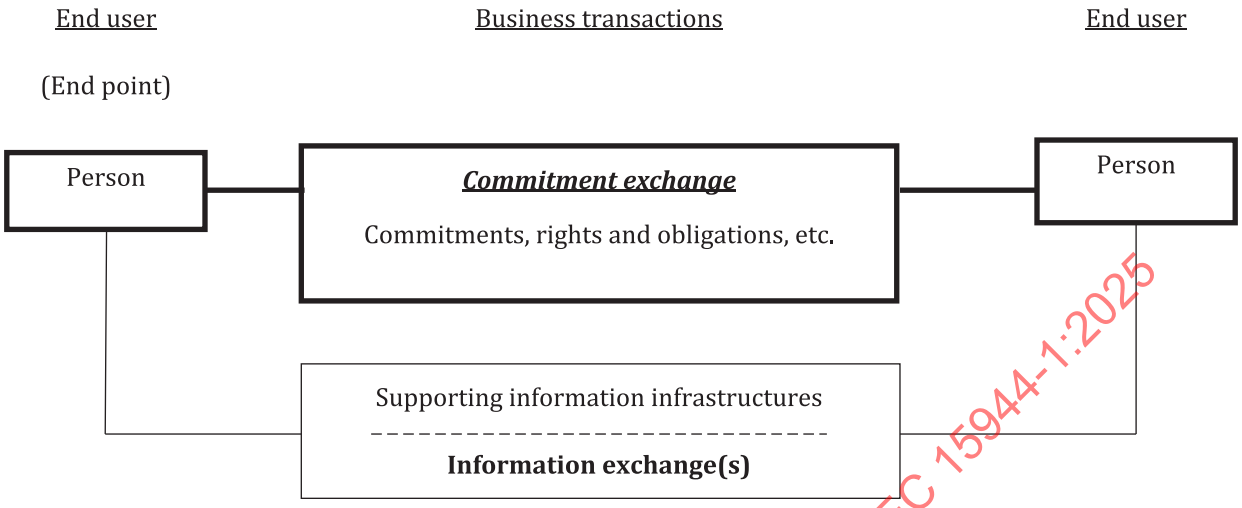


Figure 5 — Illustration of Persons as end users in commitment exchange in business transactions based on existing commercial and legal frameworks — BOV perspective

In Open-edi, a Person:

a) is the only type of entity able to make commitments,

b) is represented in dematerialized form, and,

c) engages in a business transaction via electronic data interchange.[9)]

It is important to note that “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. It is also noted that synonyms for "legal person" include "artificial person", "body corporate", etc., depending on the terminology used in competent jurisdictional domains.

Minimum and common external constraints applicable to a business transaction often require one to differentiate among three common sub-types of Person, namely individual, organization, and public administration.[10)]

A "Person" is defined in 3.47. This definition has been drafted with assistance from lawyers (public and private sector) with international expertise in both common and civil law to cover both the present material world and the emerging dematerialized world. It is independent of any particular information technology, i.e. is medium neutral. See further 6.2 and Annex E.

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9) The Open-edi Reference Model ISO/IEC 14662 defines Open-edi as "*electronic data interchange among multiple autonomous organizations to accomplish an explicit shared business goal according to Open-edi standards*". ISO/IEC 6523 defines "organization" as "*a unique framework of authority within which a person or persons act, or are designed to act, towards some purpose*". The focus and scope of the ISO/IEC 6523 standard is that of "information exchange" only. It is used extensively world-wide and in many sectors including information technologies, telecommunications (including telephony and the Internet), banking, transport, health, education, security services, etc. ISO/IEC 6523, however, does not define "person" nor deal with commitment exchange.

10) The definition of “Person”, with a capital “P”, has been drafted with assistance from lawyers (public and private sector) with international expertise in both common and civil law to cover both the present material world and the emerging dematerialized world. It is independent of any particular information technology, i.e., is medium neutral. This is clearly stated in “Rules governing the Person component”, see further 6.2, and in more detail in “Business Transaction Model: Person component” in Annex E.

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There are three broad categories or sub-types of Persons as players in Open-edi; the Person as "individual", the Person as "organization", and the Person as "public administration". These three sub-types of Person reflect external constraints which often need to be taken into account. See further 6.2 for the rules governing Person components.

Consequently, business transactions executed through Open-edi can support the following business relationships reflecting these three sub-types of Person.

a) individual <-> individual

b) individual <-> organization

c) individual <-> public administration

d) organization <-> organization

e) organization <-> public administration

f) public administration <-> public administration

The term Person therefore represents these business relationships with a specific focus on including the legal and commercial requirements of "commitment exchange" in the business operational view of a business transaction.[11)]

Rule 2:

A Person is the only entity able to make commitments in a business transaction.

A Person is autonomous. However, autonomy is shared through the acceptance of common rules, legal environments, business conventions etc., i.e. coordinated autonomy. These are stated as constraints of a scenario and are accepted limitations of the autonomy of the Person and are specified as commitments among the Persons who are parties to a business transaction.

"Commitment" is defined in 3.9 and only a "Person" is able or capable to be able to make a "commitment" In addition, it is recognized that the enforcement of a commitment is governed by the applicable rules in the jurisdictional domain in which the commitment is made.

Rule 3: In (electronic) business transactions, all commitments shall be stated explicitly and unambiguously and be understood by all Persons involved in a business transaction.

The use of IT requires the capture, through formal description techniques (FDTs), of the commitments made and applicable rules and constraints.

The use of information technology and especially Open-edi, requires a higher order of requirements for rule-based, unambiguity explicitness, etc., than is the case in present day business transactions (whether on a for-profit or not for profit basis). In many cases there will be a challenge transforming commonly known and used business practices into explicitly stated scenarios, scenario attributes and scenario components.

It needs to be noted that meeting the criteria of "explicit" and "unambiguous" in Rule 3 does not preclude the ability to reference and invoke common business processes and default sets of values for terms and conditions in an actual business transaction. On the contrary, the Open-edi Reference Model and this Business Operational View standard is based on the assumption that most real world business transactions are combinations of previously defined common, re-useable components (scenarios and scenario components).

11) At the time that the Open-edi Reference Model was first developed in the 1990s, individuals, on the whole, participated in EDI-based business transactions with each other via organizations. The rapid world-wide development and use of the Internet in support of business transactions has led to individuals engaging in business transactions directly with organizations, i.e., without organizations acting as agents on their behalf, as well as individuals engaging in business transactions directly with each other, i.e., individual <-> individual. At the same time, the Internet has made possible the conduct of business transactions not only among public administrations with other organizations but also of public administrations with individuals. (For further discussion on the entity "Person(s)" and its sub-components, see further 6.2 "*Rules Governing the Person component*".) 6.2.)

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In Open-edi, Person, the only entity able to make commitments, is represented in dematerialized form and engages in business transactions via electronic data interchange. Figure 6 provides an integrated view of the BOV and FSV perspectives of Persons as dematerialized entities in a business transaction.

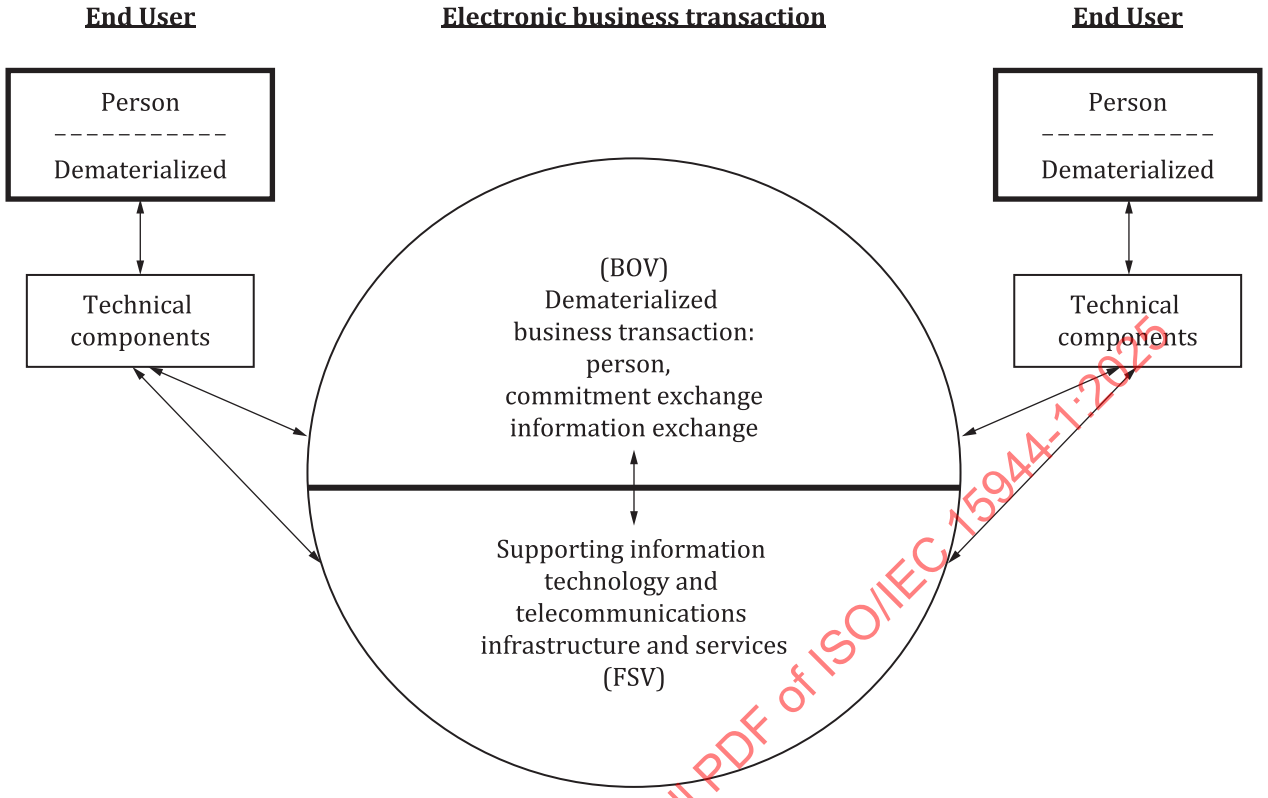


Figure 6 — Integrated View — Commercial/legal and IT perspectives of Persons as "end users" in an electronic business transaction through technical components – incorporating BOV and FSV perspectives

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6.1.4 Business transaction: unambiguous identification of entities

It is essential to have unambiguous identification of all the entities that comprise a business transaction (Person, objects, events, processes, scenarios, scenario components, and constraints). Annex C "Unambiguous identification of entities in a business transaction". Annex C provides the informative and explanatory text for the rules and definitions in 6.1.4. This document provides methods and tools for the specification and identification of Open-edi scenarios and components as re-useable objects for business transactions. ("Unambiguous" is an issue in business transactions because states of ambiguity and uncertainty are not desired from legal, commercial, consumer and information technology perspectives.) Issues of unambiguousness apply to all aspects of a business transaction and even more so to those which are EDI-based. Further, the objectives of interoperability and re-usability of Open-edi scenarios and scenario components for business transactions require their unambiguous identification.

Standards exist for the unambiguous identification of material objects. However, unambiguous identification of Persons (including individuals, organizations, and/or public administrations) in business transactions has always been a difficult issue. These are exacerbated in the dematerialized world of Open-edi. In order to resolve the issue of "unambiguous identification" of entities in a business transaction, (Persons, objects, processes, events, etc.), it has been decomposed into its two key components:

a) "unambiguous"; and,

b) "identification".

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In global business transactions, common business practices and standards exist for the identification of entities comprising a business transaction including Persons[12)].

Rule 4:

Existing standards shall be used to the greatest degree possible in the building and use of scenarios, scenario attributes and scenario components.

Rule 5:

The degree to which ambiguity in (electronic) business transactions can be minimized is directly related to the ability to realize the opportunities in, and potential of, Open-edi as well as its widespread adoption and use.

The term "unambiguous" is defined in 3.66. It recognizes and support the fact that the concept of "unambiguous" is related to the level of certainty and explicitness required in the semantics of recorded information interchanged as required to support the explicitly stated goal of a specified business transaction.

This definition of "unambiguous":

a) applies equally to business transactions which are paper-based and Open-edi based;

b) is a common requirement of all industry sectors;

c) is medium neutral, i.e. applies irrespective of the combination of IT technologies or platforms used; and,

d) applies to all three key components of the business transaction model (BTM), i.e. "Person", "process", and "data".

Guideline 5G1:

The nature and purpose of the business transaction determines the level of certainty (trust, reliability, accountability, etc.), required in the identification of the elements in a business transaction, (e.g. Person, product, service, etc.).

Approaching unambiguity in terms of levels of certainty and explicitness allows for linkage and harmonization with levels of assurance in authentication as part of security services and standards. However, the issue of identification is separate from, and should not be confused with, that of authentication. Identification is required to have been established before authentication can take place.

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12) Key standards for the global unambiguous identification of Persons generally, and organizations and individuals specifically, are identified and summarized from a business transaction perspective in Annex *Existing standards for the identification of Persons (organizations and Individuals) in business transactions".*

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Guideline 5G2:

The process of authentication presupposes the existence of an entity and the completion of the application of a rule-based identification process resulting in the assignment of an "identifier". Thus, the authentication process is a corroboration of an identification process[13]***.***

The definition for identification is given in 3.26. It is based on the approach that the unambigous dentification of any entity is to be based on a rule-based process, explicitly stated, including the use attributes or data elements whose content value (or combination of values which are used to identify the orrucence or existence of a specified entity.

Rule 6:

Any entity relevant to, or used to support a business transaction, shall be assigned a unique and unambiguous identifier based on an identification process.

In the context of a business transaction, "identifier" is defined in 3.27.

Rule 7:

Natural names or natural language identifiers shall not be used as identifiers in business transactions, although they may be associated with them.

The definition of "name" is given in 3.35.

Consequently an "object" will have as many names as there exist linguistic expressions used to designate it. See further C.5

Rule 8:

Open-edi scenarios, scenario attributes, roles, Information Bundles, Semantic Components and other elements shall be identified through unique, unambiguous and linguistically neutral identifiers and with such identifiers may be associated with one or more names as needed for market, legal, localization and/or multilingual requirements.

6.1.5 Business transaction model: key components

Rule 9:

A business transaction requires Person, process and data.

These three fundamental elements of the Business Transaction Model (BTM) are represented graphically in Figure 7.

The essential BOV aspects of this business transaction model, along with associated rules, terms and definitions as well as other attributes, are explained in 6.2, 6.3 and 6.4.

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13) There are multiple "standard" definitions for "identifier". These and the standards in which they are found have been taken into account in the rules and definitions for "identification" and "identifier (business transaction". (See further Annex C, C.4)

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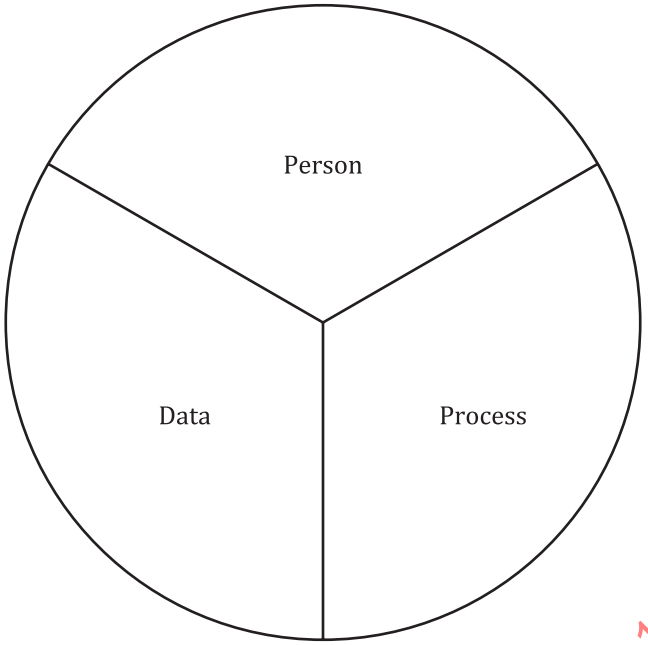


Figure 7 — Business Transaction Model — Fundamental components (Graphic Illustration)

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6.1.6 Business transaction model: classes of constraints

In addition to its three fundamental elements, the Business Transaction Model requires “classes of constraints”. The Business Operational View derived for Open-edi shows that constraints are applied to business transactions.

A "constraint" is defined in 3.11.

It is up to Persons, who are the primary parties to a business transaction, to decide and agree on whether a particular role or function in a business transaction can be delegated to an agent or involve a third party. (See further 6.2.5)

The Open-edi Reference Model identified two basic classes of constraints, namely: “internal constraints” (see 3.33) and “external constraints” (see 3.23) (3.23).

The class of "internal constraints" has been derived to provide a simplified view of business 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 buyer and seller for the explicitly stated goal of the business transaction, ie they are self-imposed. This allows one to build scenarios and scenario components 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 are required to be stated at the time of instantiation but need not exist at the time of registration. (See further, Clause 9, and Annex H.)

However, in most business transactions 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, services, and/or rights delivered do not comprise behaviour of a criminal nature[14]. Whilst laws and regulations exist within and among jurisdictional domains and are the primary source of external constraints on business transactions, categorization and specification of sub-classes of external constraints is not addressed in this document.

14) ISO/IEC 15944-5 was developed to address the issue of jurisdictional domains as they impact the identification and specification of external constraints on business transactions. It is also directed at being able to identify and reference laws and regulations impacting scenarios and scenario components.

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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.).

The imposition of these horizontal external constraints on business transactions is exemplified by the introduction of a third type of role in a business transaction, namely that of “regulator” as a third sub-type of Person as a player in a business transaction 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 business 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.

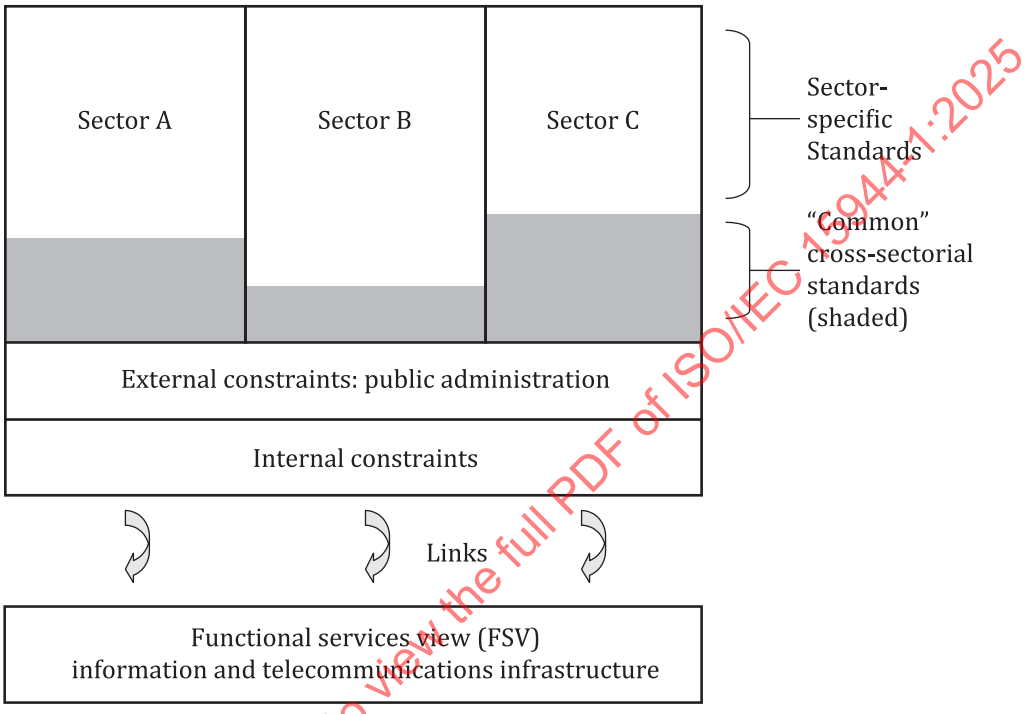


Figure 8 — Business Transaction Model — Classes of constraints

There are also external constraints that are of a sectorial nature. In addition, some external constraints can be common to two or more sectors and supported through common standards. Sectorial constraints are found in telecommunications, transportation and delivery, finance/banking, import/export restrictions specific to a good or service, inter-or intra-state trade, and so on. Where a sector imposes specific ways of conducting business transactions within itself and with other sectors, such sector specific constraints and conditions are required to be identified and specified where applicable, as part of specification of scenarios and scenario components.

NOTE 1 A useful characteristic of external constraints is that at the sectorial level national and international focal points and recognized authorities often already exist. The rules and common business practices in many sectoral areas are already known. Use of this document (and related standards) will facilitate the transformation of these external constraints (business rules) into specified, registered and re-useable scenarios and scenario components.

This allows one to build scenarios and scenario components for referencing, registering and re-use of sets of sectoral external constraints such as “customs clearance”, “transport of dangerous goods”, etc.

NOTE 2 There are also requirements for establishing common rules for interchanges between and among sectors. These rules are normally imposed by a particular sector on the others. For example, the banking sector can impose certain rules for the exchange of financial information between itself and other sectors. Sometimes the rules are established to enhance or facilitate services of a particular sector with others. The transportation sector is a good example. It establishes business rules in conjunction with other sectors for the transport and handling of speciality goods, (e.g. radioactive materials, live animals, etc.).

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These two basic classes of constraints on business transactions are illustrated in Figure 8.

6.2 Rules governing the Person component

6.2.1 Purpose

The purpose of the rules in this subclause includes:

a) incorporating and supporting a key aspect of the BOV, i.e. the making of business decisions and commitments;

b) capturing the unique attributes of Person as the only entity in business transactions able to make commitments; and

c) capturing the business operational requirements from both commercial and legal perspectives.

In addition, some common generic aspects of Person with respect to minimum external constraints for "individual," "organization," and "public administration" are introduced. (See further E.1.)

6.2.2 Person, personae, identification and Person signature

NOTE The need to differentiate among "Person", "personae", "identification" of the same, and then "Person signature" requires additional and explanatory text on identity and authenticity and is linked to "Registration Schema", "Registration Authority", etc. This information is provided in relevant clauses in Annex E, i.e. E.4 and E.5.

Rule 10:

An electronic business transaction, like business transactions in general, requires Persons as decision makers, (as the key real-world entity and point of departure) instead of information technology applications (devices, tokens, information systems, etc.).

Rule 11:

Irrespective of the use of any particular information technology and related devices in Open-edi, Persons are the only entities which are legally recognized as being able to make commitments, agree to the rights and obligations entered into, and can be held accountable for their actions, etc.

The three unique properties of Person already identified include:

a) a human being (natural person) or body corporate (legal or artificial person) has rights and duties recognized by law;

b) the ability to act in some capacity, make commitments and fulfil resulting obligations; and,

c) the ability to be able to be held accountable for actions, behaviours, decisions, etc.

From an (electronic) business transaction perspective, all three properties are required to exist/be present for an entity to be able to be identified and referenced as a Person.

Unlike (material) objects, Persons represent and identify themselves (as well as other Persons) in a variety of ways, i.e. through different personae, depending on the context of the business transaction. The set of rules which follows summarizes the key aspects of personae.

Rule 12:

A Person shall be able to be identified or represented in a variety of ways, and shall be able to have one or more personae.

Persona is identified in 3.48.

Figure 9 provides a graphical representation of the links of a Person (natural or legal) to its possible personae in different contexts and roles.

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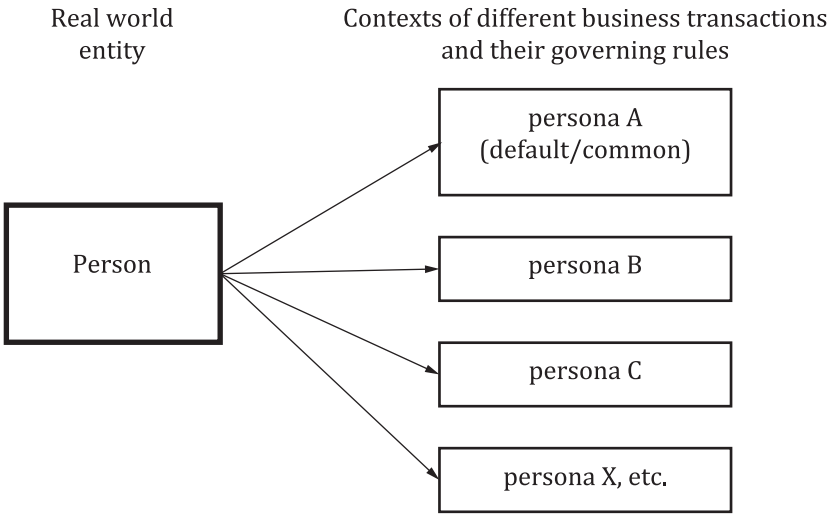


Figure 9 — Links of a Person to its persona(e) in the context of different business transactions and their governing rules

Rule 13:

The level of unambiguity, i.e. certainty/reliability, of a persona and resulting identification of the Person identity used by a Person shall be appropriate to the goal of the business transaction.

This level of certainty/reliability is a question of degree of granularity and level of specificity needed to prevent ambiguity. The accuracy of the identity or the certainty of the authority of an identity is determined by the requirement of the business transaction. It may vary with the potential liability involved.

Rule 14:

The persona used shall be associated with an identity that can be authenticated to the extent required for the goal of the business transaction.

Each business transaction will consider the persona used on its own merits. It is not certain that every business transaction will need to verify a persona before it can proceed.

Rule 15:

Business transactions having different goals may allow a Person to use the same persona and its associated identification schema (including resulting identifiers), while others may prohibit this.

Guideline 15G1:

A party to a business transaction has the option of prescribing the persona (and associated identifiers) acceptable to it for the purpose of establishing commitment, (e.g. as the data elements comprising a persona and rules governing their values in a business transaction are prescribed by the party offering the good, service, and/or right). A systematic approach to describing the persona and associated identifiers is known as a Registration Schema, and the entity registering the persona is known as a Registration Authority (RA). Usually, a Registration Authority assigns an identifier unique within that identification schema to each discrete Person/persona. A RA may use the ID of another Registration Schema if necessary.

Guideline 15G2:

A Person may have multiple names and a Person may change its name.

Guideline 15G3:

Names of natural persons are not unique. Many different discrete real-world natural persons can and do share the same name (and even date of birth or mother's maiden name, etc.).

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Guideline 15G4:

A natural person can and does identify him/herself in a business transaction through a variety of possible data elements comprising a name, (e.g. combination of given names, surname(s), nicknames, titles/qualifications, etc.).

Guideline 15G5:

A legal person can and does have multiple names, (e.g. legal, operating, marketing name, etc.), as well as various linguistic equivalents of the same. For example, a jurisdictional domain may well have more than one official language. Consequently, an organization may well have two or more official names, i.e. a linguistically equivalent name in each official language of that jurisdictional domain. This is especially true for names for public sector organizations in jurisdictional domains having more than one official language.

Guideline 15G6:

A name of a Person (natural or legal) does not, therefore, necessarily provide for unambiguous identification.

Guideline 15G7:

The number of types of (common) data elements pertaining to the name of a Person is finite. A set of standard data elements may serve as a template or catalogue for capturing and exchanging name information on Persons in electronic data interchange.

Guideline 15G8:

Associated with each persona of the same Person can be a single identifier, or several personae can use the same identifier, and/or, two or more identifiers can be associated with a single persona, (e.g. use of exactly the same "name" on multiple credit cards with different identifiers).

Figure 10 illustrates Person to persona(e) to identifier links. In Figure 10, different fonts and representations are used for "identifier" to recognize the wide variety in forms and information technologies used to capture unique identifiers[15)].

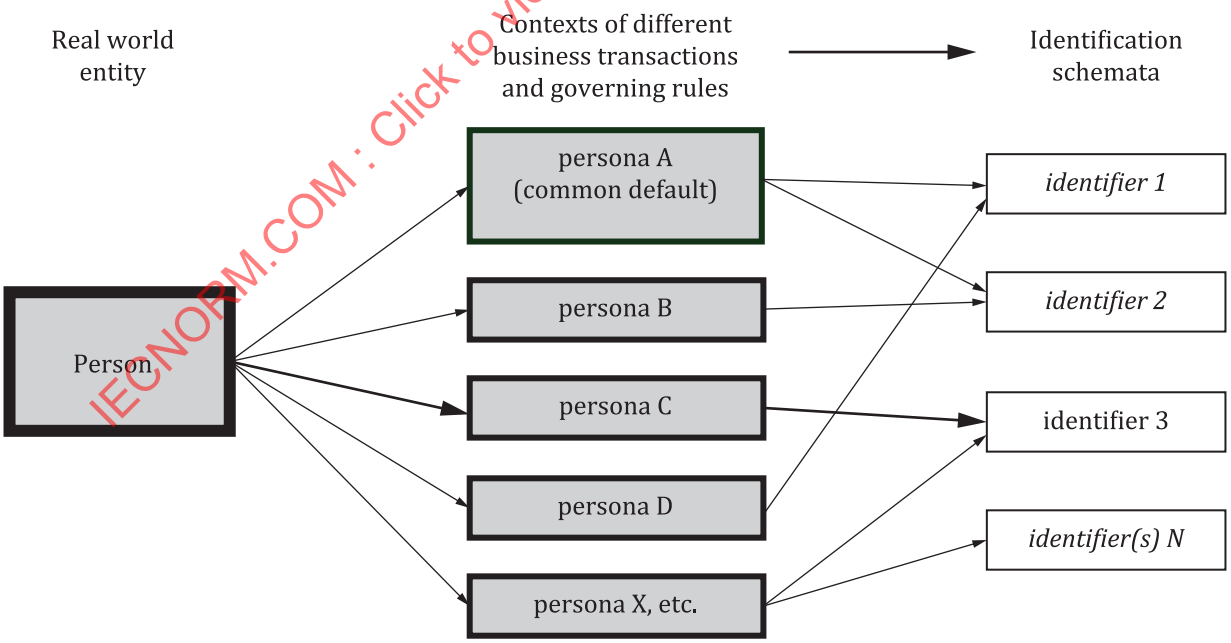


Figure 10 — Illustration of inks of a Person to persona(e) to identifier(s) issued through identification schemata applicable to the contexts of different business transactions

15) Figure 10 is illustrative only. The "thickness" of the lines is used to indicate the use of more common links between the persona of a Person and the use of that "persona" in an Identification Schema.

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Rule 16:

A Person can and does use different signatures and that needs be assumed to continue to be the case in present day business transactions.

A Person may have more than one form of its official signature as well as use of different information technologies in representing or interchanging such official signatures.

Rule 17:

An organization Person as an employee or officer acting on behalf of an organization "signs", i.e. links itself to a business transaction, on behalf of that organization, in a variety of ways.

Rule 18:

A Person controls the use of its signature.

Rule 19:

Depending on the context of the business transaction, a Person signature is used for the purposes of identification, authentication, authorization, and/or witnessing.

The definition of Person signature is given in 3.52**.** It is recognized that a Person signature can be any name reprensentation distinguishing mark or usual mark, which is created by and pertains to a Person, i.e. which that Person wishes to use in a business transaction and is acceptable to the Person providing the good, service, and/or right pertaining to specified business transaction.[16)]

Rule 20:

In an (electronic) business transaction, the end entities are Persons irrespective of the nature and combinations of technical components of the functional (support) services of the information infrastructure involved.

Rule 21:

A signature which is created by and/or pertains to a Person is deemed to be a Person signature.

Guideline 21G1:

Parties making commitments in a business transaction are Persons. However, as stated in 6.2.5 a Person as seller or buyer in a business transaction may delegate all or part of its commitment-making role to an agent and/or a buyer and seller may mutually delegate specified common commitments to a third party. They thus all may be signatories to a business transaction.

Guideline 21G2:

A Person signature may be associated with any information or role in a business transaction.

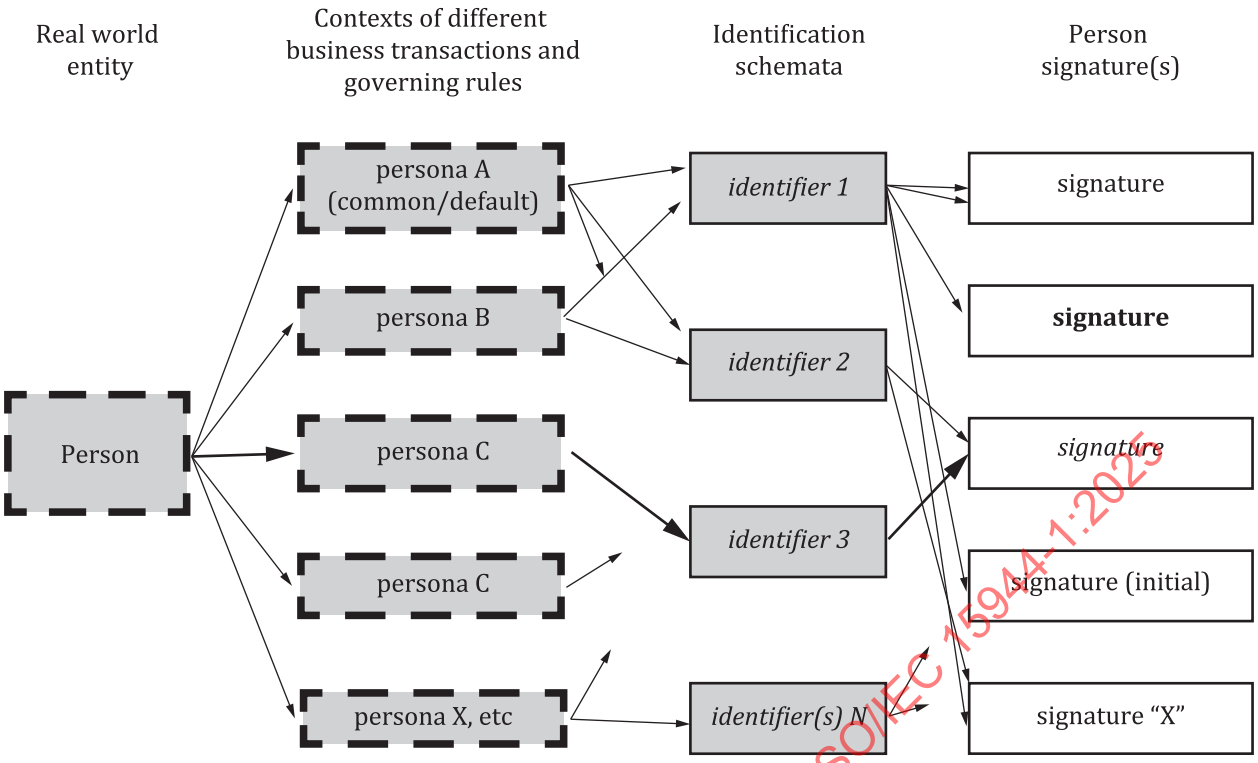
A Person signature can take different forms and be created by different processes, ranging from physical to advanced biometrics. Forms and processes by which Person signatures can be created and have legal status are not addressed in this document.

The interworking of the above rules results in a variety of combinations of linkages currently existing among personae, identifications, and Person signatures for the same single real-world Person. This is illustrated in Figure 11 where different fonts and representations are used for: “Person signature” to recognize the wide variety in forms and information technologies used to capture “Person signatures.”

16) It is a normal practice of a seller to provide more than one payment mechanisms for the instantiation of a business transaction (e.g. debit card, credit card, electronic fund transfers, paper check, etc.), It is likely that each of these payment methods will have their own signature requirements and forms.

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NOTE This figure is illustrative only. The "thickness" of the lines is used to indicate the use of more common links between the persona of a Person and the use of that "persona" in an Identification Schema.

Figure 11 — Illustration of relationships of links of a Person to (its) persona(e) to identification schemas and resulting identifiers to associated Person signatures — In the context of different business transactions and governing rules

6.2.3 Person — Identity and authentication

As determined in 6.2.2, a Person has one or more persona (and associated identifier(s) with each) depending on contexts of different business transactions and governing rules. However, with respect to a role in a specific instance of a particular business transaction, a Person will use a single combination of its persona and the associated identifier, i.e. as a Person identity.

Person identity is defined in 3.51.

Rule 22:

The Person identity, i.e. the persona and the associated identifier, used by a Person in a business transaction, shall be capable of being prescribed depending on the context and goal of the business transaction.

Figure 12 illustrates the range of links between Person and Person identity in the use of various combinations of "personae" and "identifiers".

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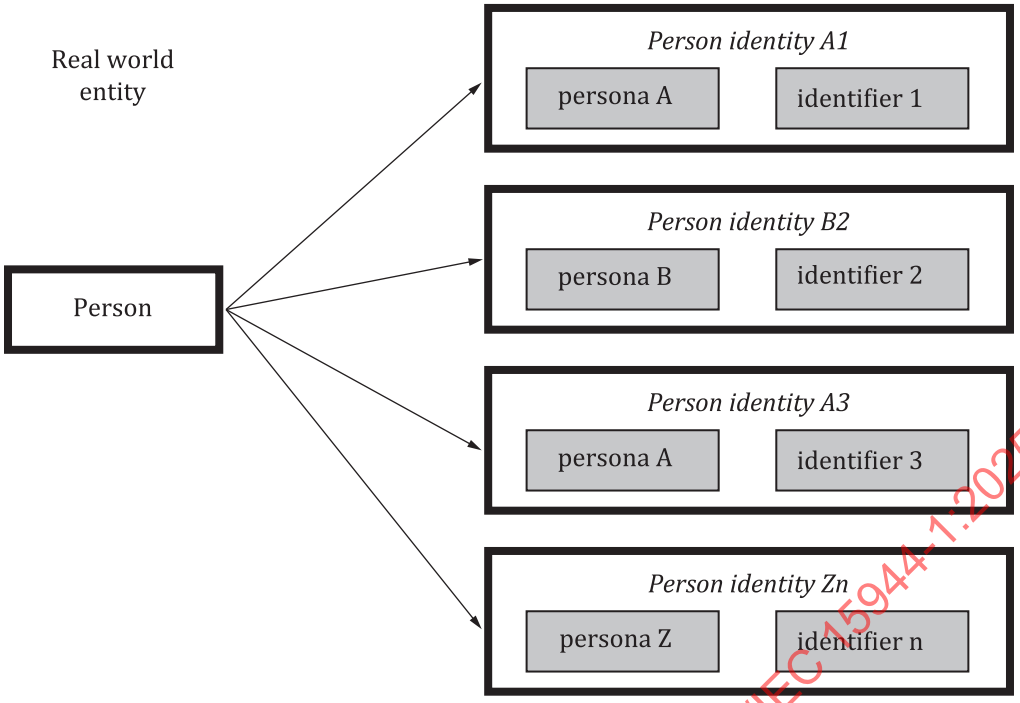


Figure 12 — Illustration of range of links between Person and Person identity(ies)

Business transactions differ in their nature and goals. The rules governing a business transaction, (a) may allow a Person to use one of several Person identities (e.g. one of several different credit cards or debit cards); or, (b) require a Person to have/use a pre-specified Person identity (e.g. a private health insurance card, a national health insurance card, etc.).

When a Person identity is presented for use in a business transaction, it has to be "recognized" by the other parties to the business transaction. Each party to the transaction may have its own rules governing the requirements for establishing a "Recognized Person identity (rPi)."

Recognized Person identity (rPi) is defined in 3.55.

Rule 23:

In a business transaction, a recognized Person identity (rPi) is established by either: (a) mutual recognition and acceptance; or, (b) by referring to an identifier in a Registration Schema of a Registration Authority.

NOTE Depending on the rules governing a business transaction, a Person identity for interchange purposes can be comprised of a small finite set of data elements such as those required for identification systems for Persons based on international standards as found in ISO/IEC 6523, ISO/IEC 7501 or ISO/IEC 7812 (see further Annex C), or the set of data elements required can be more extensive but still is required to be finite and prescribed. These and similar specifications are outside the scope of this document and are expected to be registered as "re-useable" Information Bundles in accordance with ISO/IEC 15944-2.

This is illustrated in Figure 13.

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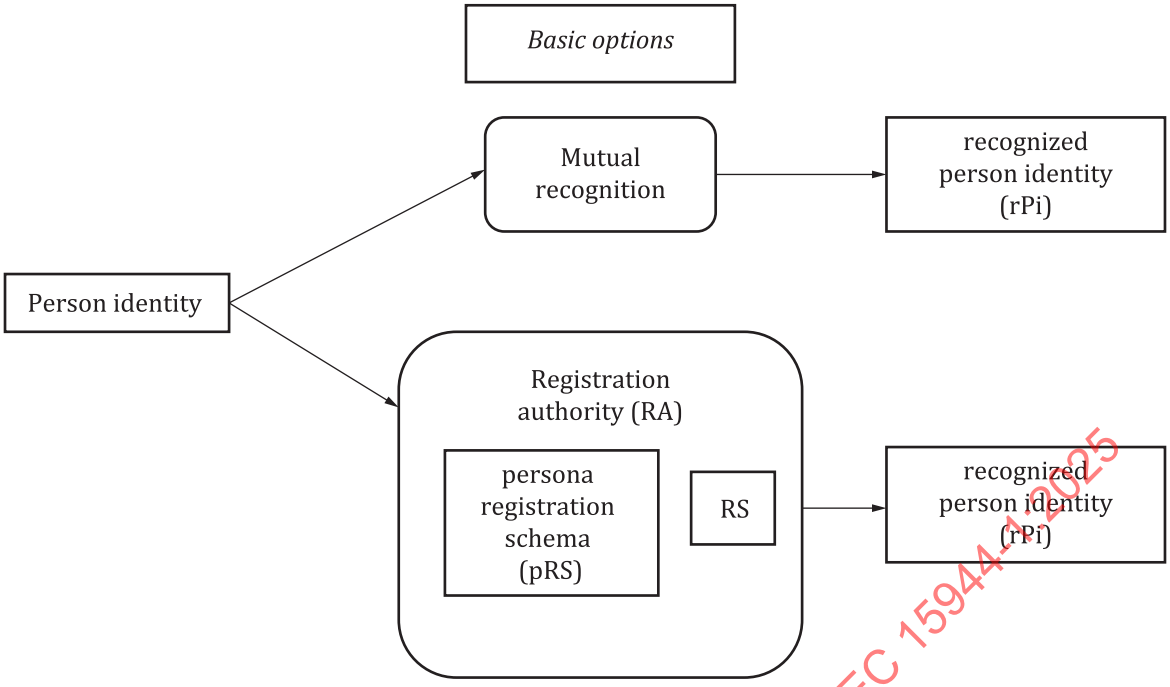


Figure 13 — Illustration of two basic options for the establishment of a recognized Person identity based on a Person identity for use in a business transaction

Guideline 23G1:

A recognized Person identity based on a Registration Schema of a Registration Authority has the added attribute of being re-useable and thus is the preferred approach in support of Open-edi.

In this document, persona Registration Schema is defined in 3.49. It is necessary in the specification of a persona of a Person to have formal definitions of the data fields and the allowable contents of these fields including the rules for the assignment of identifiers in the relevant persona registration schema. Such entries in the pRS may also be referred to as persona profile of a Person.

In this document, Registration Authority is defined in 3.57.

Rule 24:

A Registration Authority (RA) for Persons shall have explicitly stated rules for transforming a Person identity (Pi) into a recognized Person identity (rPi) to meet a stated business requirement.

Guideline 24G1:

The rules governing a business transaction may either require the use of a specified recognized Person identity (rPi) or allow for several of a similar nature. (For example, credit card payment may be acceptable from several credit card issuers).

The establishment or verification of a recognized Person identity will require the capability for authentication, i.e. Person authentication, especially in electronic business transactions.

Person authentication is defined in 3.50.

For Person authentication to be successful, the following actions are required to have already taken place:

a) a Person identity need to have been established; and

b) the Person identity is required to be recognized, i.e. a recognized Person (rPi), identity is required to exist.

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Rule 25:

In a business transaction, Person authentication is established by either: (a) mutual recognition and acceptance; or, (b) referring to predefined Registration Schema and process.

6.2.4 Person and roles — Buyer and seller

Rule 26:

The two most common roles of a Person in a business transaction are those of buyer (3.8) and seller (3.62).

One should note that in the two definitions for buyer and for seller, the phrase “providing an acceptable equivalent value” recognizes that it is for the buyer and the seller to mutually agree to what the “equivalent value” is. A mutually accepted value can be of a monetary nature and defined as such, in a barter arrangement, the value can be of a non-monetary nature, etc. With respect to the phrase "to get possession of" and "to hand over", this may or may not involve full transfer of ownership rights. For example, the buyer may purchase only a "right to use", i.e. the seller retains the intellectual property rights on the good or service bought by the buyer.

Rule 27:

Unless bound by external constraints, buyers and sellers as Persons are free to undertake any business transaction involving any good, service, and/or right they mutually agree to.

Rule 28:

External constraints governing rules and practices of buyers and sellers in business transactions apply either to Persons (undifferentiated) or distinguish among individuals, organizations, and public administrations.

6.2.5 Person and delegation to “agent” and/or “third party"

Rule 29:

Rights or obligations arising from commitments in a business transaction shall be fulfilled either directly by the Person as the end entity or by an agent acting on its behalf.

In the context of this document, "agent" is defined in 3.1.

In a business transaction, agents are those who undertake a specific business process or function on behalf of a buyer or a seller. This basic relationship of an agent to a buyer is illustrated in Figure 14 and the relationship for a seller implied.

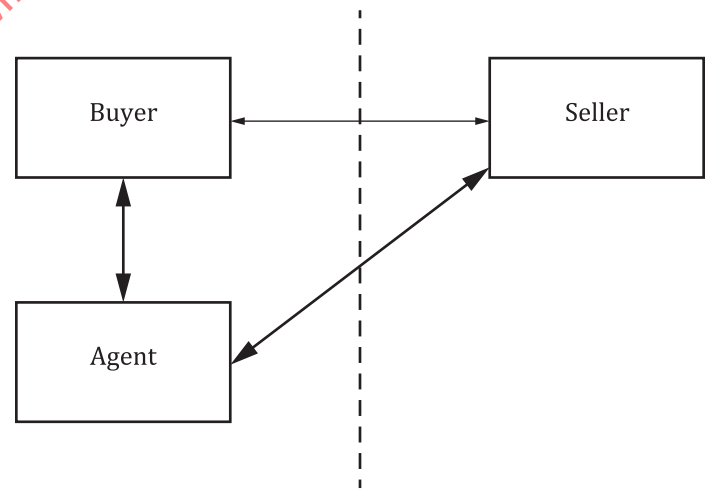


Figure 14 — Illustration of buyer-seller interaction with buyer using an agent

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Rule 30:

The ability to delegate a role to an agent shall be explicitly stated; and if constraints are required to be satisfied before such delegation can take place, they shall be explicitly stated.

Rule 31:

Where delegation of a role cannot take place, this shall be explicitly stated.

Rule 32:

A business transaction takes place primarily between two Persons, i.e. a buyer and a seller. Other Persons, i.e. third parties, may fulfil specified role(s) or functions(s) on mutual agreement of the two primary Persons, or as a result of external constraints.

The generic definition for "third party" is given in 3.65.

In addition to notarial-type functions, clearinghouses and exchanges are examples of third parties. The nature of the linkages between buyer and seller and a common third party is illustrated in Figure 15.

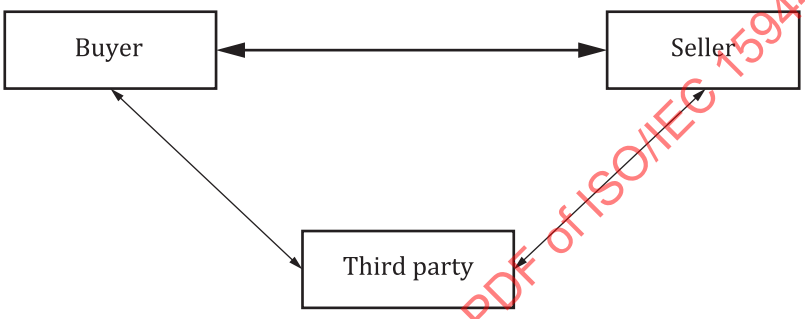


Figure 15 — Illustration of buyer and seller with a third party

6.2.6 Person and external constraints — The "regulator"

Rule 33:

External constraints exist on the provisioning of goods and services and the behaviour of Persons as players in business transactions including those provided via electronic commerce.

The introduction of external constraints on the behaviour of Persons and their roles as buyers or sellers in a business transaction introduces an additional, third role, the regulator.

Entities which impose external constraints on market behaviour and associated business transactions of buyers and sellers are deemed to be "regulators". "Regulator" is defined in 3.59.

6.2.7 Person and external constraints: individual, organization, and public administration

Most business transactions include some minimum external constraints. A common, almost generic requirement of such external constraints requires one to distinguish whether the Persons participating in a business transaction are deemed to be “individuals”, “organizations”, and/or “public administrations.” This subclause focuses on these minimum external constraint requirements. From a legal perspective, generally applicable world-wide, there are basically two kinds of Persons, namely, "natural persons", and "legal persons" (a.k.a. "artificial persons").

It is understood that:

a) a "natural person" can participate in a business transaction as either an individual, organization, and/or public administration; and,

b) a "legal person" participates in business transactions only as an organization.

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Rule 34:

From a minimal external constraints perspective, the three basic sub-types of Persons as role players in any business scenario are: (a) individual, (b) organization, and, (c) public administration.

Consequently, this document uses the terms individual, organization and public administration as the three basic sub-types of Persons as role players in any business transaction involving minimum external constraints. Figure 16 illustrates this perspective.

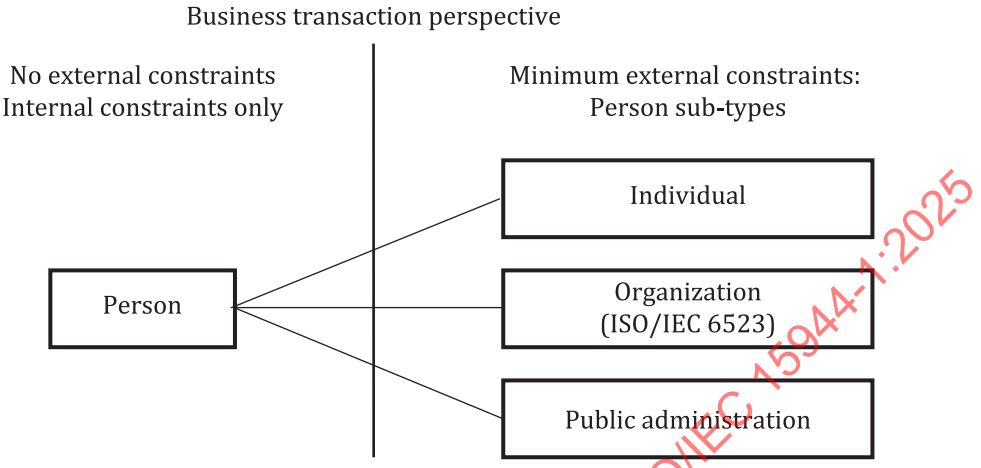


Figure 16 — Integrated business transaction perspective of Person: Minimum external constraints

Individual is defined in 3.28.

With respect to this definition of individual, readers should note the following underlying assumptions:

a) The use of the term Person in the definition of individual means that an individual inherits all the properties and behaviours of Person.

b) The definition of individual is neutral towards and independent of:

   — the manner in which various jurisdictional domains have different rules as to what criteria are required to be met for an entity to be considered/qualify as a "natural person";

   — any qualifications which a jurisdictional domain may place on natural persons with respect to their ability to make commitments, being held responsible/accountable for, etc. (e.g. "minors", "being incapacitated", etc.).

c) This definition is harmonized with basic concepts and requirements underlying Privacy/Data Protection, i.e. personal information, which is defined as "information about an identifiable individual". This includes information provided by an individual about him/herself to another Person in the context of an eventual delivery of a good, service and/or right by that other Person in the role of a seller. On individual, see further E.3.

It is also important to keep in mind that individual is the attribution of the property of indivisibility to a natural person, i.e. in making commitments having rights/obligations, being accountable/responsible for, etc.

Rule 35:

A legal (or artificial) Person consists of one or more natural persons and/or one or more other legal persons.

A unifying term and common concept used internationally is the standard term "organization" as the collective common term for all the different ways legal (or artificial) persons can be composed and be recognized in various jurisdictional domains.

The term “organization” is defined in ISO/IEC 6523-1.

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Rule 36:

An organization, unlike an individual, can have more than one organization parts identified for information exchange pertaining to a business transaction among autonomous parties.

The term “organization part” is also defined in ISO/IEC 6523-1.

Rule 37:

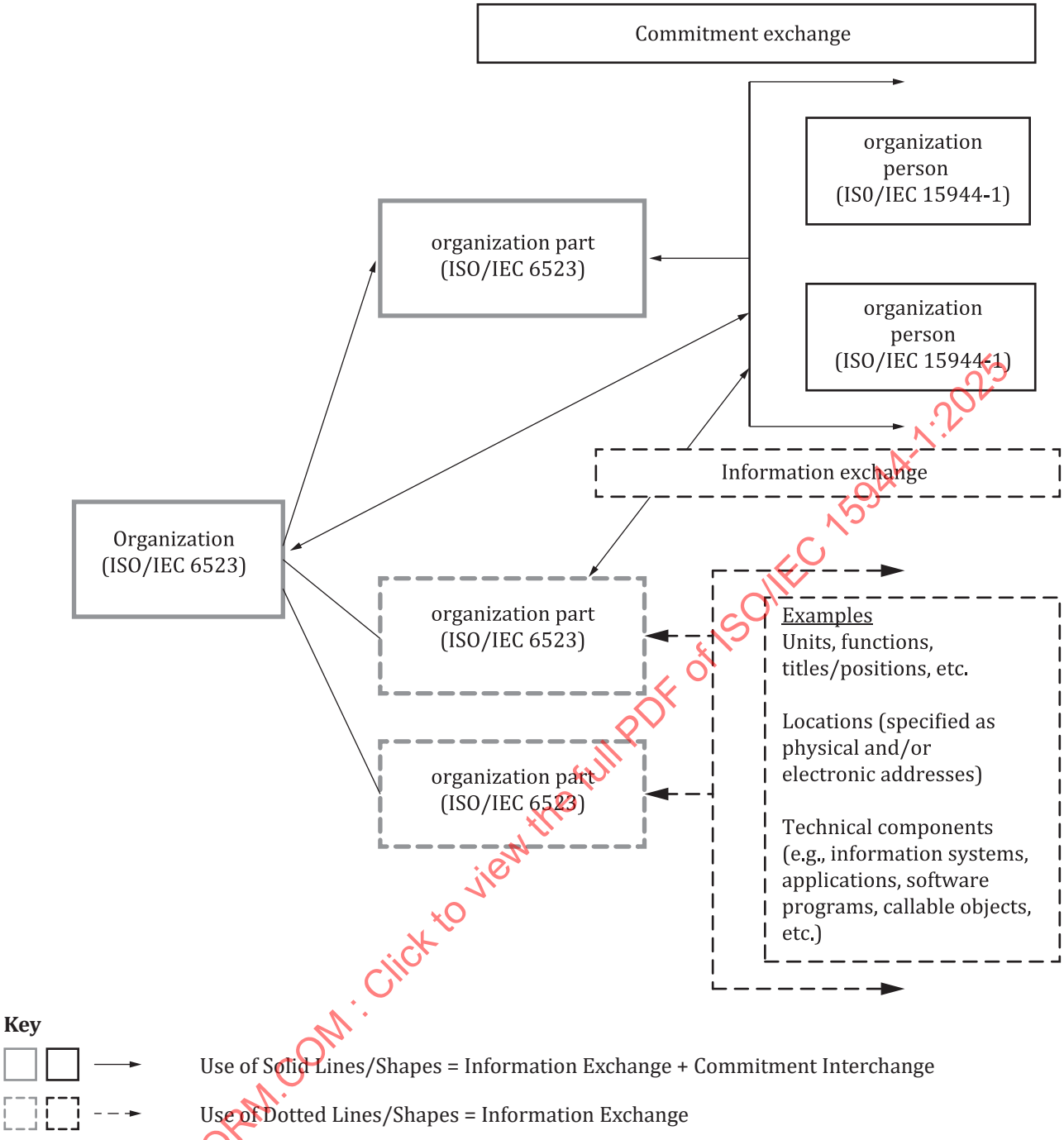
In a business transaction, an organization Person may make commitments for an organization or organization part, i.e. as authorized to do so on behalf of the organization.

An "organization Person" is defined in 3.46.

Figure 17 illustrates the linkages among organization, organization part, and organization Person and does so in the context of commitment exchange versus information exchange. The “(1)” information exchange and organization part aspects are based on ISO/IEC 6523. The added “(2)” commitment exchange and organization Person aspects are based on this document.

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Figure 17 — Illustration of commitment exchange versus information exchange for organization, organization part(s) and organization Person(s)

The third sub-type of Person as party in a business transaction is that of "public administration", i.e. when external constraints apply. A public administration is a Person who is deemed to have all the attributes of an organization plus at least one unique additional attribute, from the perspective of a business transaction. A public administration has the attribute that, in addition to being able to play the roles of an organization, it can also act on behalf of a regulator. This role of acting on behalf of a regulator is unique to public administration and is independent of whether the latter decides to delegate or outsource such a function, i.e. to an agent acting on its behalf. Increasingly, products and services provided by public administrations on behalf of a regulator are being "outsourced" to organizations (e.g. private sector for-profit or not for profit organizations which perform the role of public administration).

The definition of "public administration" is given in 3.54.

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Not all Persons as parties to a business transaction can perform all three roles especially the role of regulator. For the Business Transaction Model with respect to the above noted minimum external constraints, the permitted intersects of the Persons as players and of the three key roles is illustrated in Figure 18, in which dark box represents “Yes”, i.e. applies”, while empty box represents “No”, i.e. does not apply. The “grey” box represents those where the default is “no” but where under specified external constraint conditions, it could be a “Yes”. For example, under some conditions, an individual could act as a seller. However, from an external constraints perspective an individual in the role of seller is viewed as an organization.

From an IT standards perspective (e.g. ISO/IEC 6523), an unincorporated activity providing a good, service, and/or right is deemed to be an organization. However, there may be legal requirements in a jurisdictional domain, where a "natural person" in the role of a seller is deemed to be an individual and not an organization. It is up to such jurisdictional domains to resolve how such an approach is harmonized with privacy/data protection requirements.

In addition, under some conditions, a public administration may delegate a regulatory role to an organization [which is not a public administration. Increasingly products and services provided by public administrations on behalf of a regulator are being "outsourced" to organizations (e.g. private sector for-profit or not-for-profit organizations) which perform the role of public administration].

Table 1 — Business Transaction Model — Basic aspects of Person as players and roles — Public administration external constraints

Persons	Roles in (Electronic) Business Transaction		
	Buyer	Seller	Regulator
Person (no external constraints)	YES	YES	Not applicable
Person – Individual	YES	NO (YES)[a]	NO
Person – Organization	YES	YES	NO (YES)
Person – Public Administration	YES	YES	YES

[a] From an IT standards perspective, (e.g. ISO/IEC 6523), an unincorporated activity providing a good, service, and/or right is deemed to be an organization. However, there may be legal requirements in a jurisdictional domain, where a "natural person" in the role of a seller is deemed to be an individual and not an organization. It is up to such jurisdictional domains to resolve how such an approach is harmonized with privacy/data protection requirements.

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6.2.8 Person and external constraints: consumer and vendor

Another minimum external constraint that needs to be taken into account in business transactions is that commonly known as "consumer protection". This Clause focuses on minimal external constraints of this nature but does so in a very limited manner. This document does not address external constraints on a business transaction of the nature of consumer protection. The sole purpose of this clause is to ensure that when one uses this document to model business transactions or parts of business transactions as scenarios and scenario components, one does note under external constraints whether or not the scenario and/or the scenario component supports external constraints of a consumer protection nature. (See further, E.10 and its footnote #109.)

Rule 38:

From a minimal external constraint perspective, a common set of constraints on a business transaction where the buyer is an individual are those of a consumer protection nature.

A "consumer" is defined in 3.12. Further, a "vendor" is defined in 3.67.

6.3 Rules governing the process component

6.3.1 Overview

For the purposes of this document and in the context of a business transaction, a "process" is defined in 3.53.

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Rule 39:

Conceptually, a business transaction can be considered to be constructed from a set of five fundamental phases, which are planning, identification, negotiation, actualization and post-actualization.

Open-edi based business transactions can be viewed from a process perspective as consisting of five distinct phases, i.e. defined sets of activities. This perspective on the process component is linked to the making of business decisions and commitments in a business transaction. By providing this common view to business transactions, one provides a useful single frame of reference for discussion of many of the diverse issues, as well as putting these issues in a context. For example, in identification, this may be the point to introduce the need for authentication whereas the area of negotiation or actualization may be the point to pursue the issue of non- repudiation using digital signatures.

These five basic phases integrate existing well-known and widely used business models which take the perspective of the seller, the perspective of buyer and that of a combined buyer-seller view as well as that of contract formation. Also incorporated in this document is the approach of "early loose couplings" and "late bindings". The five phases capture common external constraints of the nature of privacy/data protection, consumer protection and similar legal/regulatory requirements as external constraints on business transactions. See further 6.1.6.

This division into five phases facilitates the identification of, and mapping to, existing standards which can be used in support of Open-edi based implementations. Therefore, it not only facilitates specification and re-use of scenarios and scenario components, but reduces their cost of construction by maximizing (re-)use of existing standards and related tools.

Rule 40:

The five fundamental phases may take place in any order.

For example, data that is related to post-actualization aspects, (e.g. warranties, consumer protection requirements, etc.), may well be made available as part of the planning phase or the negotiation phase. Or data pertaining to the choices in methods of payments, which could be decided upon as part of the negotiation phase, may be made known as part of the planning information.

Rule 41:

A Person may terminate a business transaction by any agreed method of conclusion.

Agreed methods may include deciding not to respond, failing to respond within an agreed time period, not sending appropriate information for the next possible entries to the scenario, arriving at a stated termination point in the scenario. A common example is that of one of the parties deciding not to respond at a specific step during a business process, (e.g. a time out).

Rule 42:

The five fundamental phases may be completed in a single continuous interactive dialogue or through multiple sets of interactions among buyer and seller and possibly involve agents or third parties as well.

NOTE Annex F provides informative and explanatory text for 6.3.

6.3.2 Planning

In the planning phase, both the buyer and seller are engaged in a process to decide what action to take for acquiring or selling a good, service, and/or right.

From a seller's perspective, the planning phase relates to all those actions or events whereby data pertaining to the availability of a good, service, and/or right is made available. It is up to the seller to decide how much data to make available and at what level of granularity without having any information on the requirements of a specific buyer. Common examples include advertising, market research, promotions, provision of

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catalogues, direct marketing, product branding and positioning of a good, service, and/or right, auctions, terms and conditions of trade, warranties, etc.

Minimum external constraints which often are included in the planning process include the provision of Information Bundles in support of privacy/data protection, consumer protection, requirements, etc.

From a buyer's perspective, the planning phase covers all those actions or events whereby:

a) the potential buyer searches among potential suppliers of a good, service, and/or right based on information made available by these suppliers of goods, and services and/or rights, i.e. as potential sellers;

b) the potential buyer requests information, product/service literature, etc., from potential sellers; and/or,

c) the potential buyer makes a more explicit statement of needs in the form of a request for proposals (RFP), for quotation (RFQ), price quotes, etc. (It is becoming increasingly common and often required for public sector organization(s) to publicly post (detailed) specifications of the requirements pertaining to a planned purchase of a good, service, and/or right.)

6.3.3 Identification

The identification phase refers to all those actions or events whereby data is interchanged among potential buyers and sellers in order to establish a one-to-one linkage, i.e. in the planning phase a potential buyer will have identified a possible or potential seller(s) and will have identified a buyer with a stated request.

The identification phase also includes the exchanges of Information Bundles required to progress from the planning phase to the negotiation phase as is mutually acceptable. A key result of the Identification phase is the transformation from a loose coupling among potential buyers and sellers to an early one-to-one binding required, and mutually agreed to, for the negotiation phase to begin.

From a seller's perspective, there may well be limits on the nature and level of detail of data a seller is willing to provide on a particular good, service, and/or right, i.e. in the planning phase without identification of the potential buyer.

From a buyer's perspective, there may well be requirements for more detailed data on the prospective seller, especially where the seller is represented to the buyer in electronic form.

A key aspect of the identification phase is to ensure that minimum external constraints of a public administration of the nature of privacy/data protection, consumer protection, etc., can be complied with if required. An example of this is the use of a real estate agent. This is independent of whether these external constraints are of a regulatory or self-regulatory nature. This requires the seller to determine whether the Person as potential buyer is an individual or an organization (a minimum external constraint) or can simply be considered a Person (a no external constraints perspective, i.e. internal constraints only).

NOTE For the purposes of this document, and in conformance with ISO/IEC 6523-1, unincorporated Persons who provide a good, service, and/or right, i.e. natural persons, who as role players are sellers in a business transaction are deemed to be an organization unless their legislation allows otherwise.

6.3.4 Negotiation

The negotiation phase covers all those actions and events involving the exchange of Information Bundles following the Identification phase, i.e. a potential buyer and seller having (1) identified the nature of good(s), etc. to be provided; and, (2) identified each other at the level of certainty, i.e. unambiguity, necessary for their mutual agreement. The process of negotiation is directed at achieving an explicit, mutually understood, and agreed upon goal of a business transaction and associated terms and conditions. This may include such things as the detailed specification of the good, service, and/or right, quantity, pricing, after sales servicing, delivery requirements, financing, use of agents and/or third parties, etc. This is the key to the entire process because it is during the negotiation phase that the direction of the remaining activities in a business transaction will be established.

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The end of the negotiation phase is achieved when the following conditions are met.

a) The particular good, service, and/or right to be provided by the seller to the buyer has been specified at a level of detail, i.e. granularity, mutually accepted by both buyer and seller.

b) The buyer and seller have unambiguously identified each other to their mutual satisfaction.

c) The buyer and seller have agreed to whether or not agents or third parties are to be involved in the business transaction and, if so, have explicitly stated the specified roles or function these Persons are to fulfil.

d) The buyer and seller have agreed to terms and conditions pertaining to:

   — the acceptable equivalent value which the buyer is to provide to the seller in exchange for the latter providing the good, service, and/or right;

   — an acceptable equivalent value is of a monetary nature, this involves agreement on terms of payment, method of payment, financing, etc.;

   — Transfer of property rights including determining, for example: (1) full and complete ownership; or, (2) permanent or short term licence to use, (e.g. as in relation to intellectual property rights).

   — Post-actualization requirements. (See 6.3.6)

All the commitments to be entered into are explicitly stated and agreed to. As such contract formation is deemed to have been concluded. Formation of contract can range from:

a) the seller providing an explicit summary of all the pertinent information exchanged as Information Bundles during the planning, identification and negotiation phases for sign-off by the buyer; to,

b) the totality of the exchanges of Information Bundles among seller and buyer (and/or participating agents and/or third parties) during the planning, identification and negotiation phases resulting in the formation of an implicit contract.

6.3.5 Actualization

The actualization phase includes all activities or events necessary for the execution of the results of the negotiation for an actual business transaction. Normally, the seller produces or assembles the goods, starts providing the services, prepares and completes the delivery of good, service, and/or right, etc., to the buyer as agreed to according to the terms and conditions agreed upon at the termination of the negotiation phase.

The buyer begins the transfer of acceptable equivalent value, usually in money, to the seller providing the good, service, and/or right according to the agreement. Where transfers of value of a monetary nature are involved, these can range from pre-paid (P.P.D) to cash-on-delivery (C.O.D), (as found in common international commercial terms, a.k.a. Incoterms), or for pre-paid deposit or no deposit, to staggered payments, financing, to payment at a mutually agreed to date after delivery of acceptance by the buyer of the product/service/right, (e.g. "no payment/no interest for 90 days").

In addition, it is understood that in the transport of a good/service/right from a seller to a buyer and the transfer of equivalent acceptable value from buyer to seller, there are associated transfers of property rights. It is assumed that unless special conditions apply, where and how such transfer of property rights are to be transferred is governed by international accepted commercial terms, i.e. Incoterms, [e.g. Free-Along Side (FAS), or Free-On-Board (FOB), etc.]. It is assumed that common business practices are followed and that other requirements such as insurance are dealt with by the relevant Persons.

6.3.6 Post-actualization

The post-actualization phase includes all of the activities or events and associated exchanges of Information Bundles that occur between the buyer and the seller after the agreed upon good, service, and/or right is deemed to have been delivered.

These can be activities ranging from warranty coverage, service after sales, post-sales financing such as monthly payments or other financial arrangements, consumer complaint handling and redress to general

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post-actualization relationships between buyer and seller including those arising from minimum external constraints such as those created by privacy/data protection, consumer protection, etc., which have been identified in the planning and identification phases.

The post-actualization phase could include ongoing communications such as product recall or fixes of defects, availability of product replacements, (e.g. new models), or associated product availability, available changes in the services provided (or add-ons), available changes in the terms and conditions pertaining to the good, service, and/or right provided, (e.g. prices/rates, packaging or bundling of services, extensions of warranties, or time period covered, records retention and disposal, etc.).

6.4 Rules governing the data component

NOTE Annex G provides the informative and explanatory text for 6.4.

6.4.1 Recorded information

The context of this subclause on "*Rules Governing the data component*" is that of data in an electronic business transaction. The two key attributes of Open-edi are that it is: (1) business transaction-based; and, (2) takes place through electronic data interchange. These terms are defined in ISO/IEC 14662.

The definition of business transaction is:

a) generic, independent of whether it is executed through electronic or non-electronic means;

b) sector independent, it applies within and among sectors, (e.g. public/private, industrial, geographic, etc.); and,

c) independent of whether the business transaction pertains to "for profit" or "not-for-profit" based exchanges of values.

The term information has already been defined. It is medium neutral. However, this definition (See 3.29) does not require information to be recorded whereas Open-edi has this requirement.

Rule 43:

In a business transaction, information is either recorded or it is not.

Information exists in two states:

a) that which is "known" to a natural person, but is not yet recorded in any form; or,

b) that which is recorded on some medium.

Both states are acceptable in the present legal and commercial frameworks and business practices where business transactions may or may not include recorded information. In everyday commerce, a contractual agreement need not involve any recorded information, i.e. can be a verbal contract, (e.g. based on a handshake).

Rule 44:

Electronic business transactions require recorded information.

Unlike business transactions in general, electronic business transactions are based on and require recorded information which is defined in 3.56. The term "medium" is defined in 3.34.

The relation of information to recorded information and medium to existing legal and commercial frameworks for business transactions is illustrated in Figure 19.

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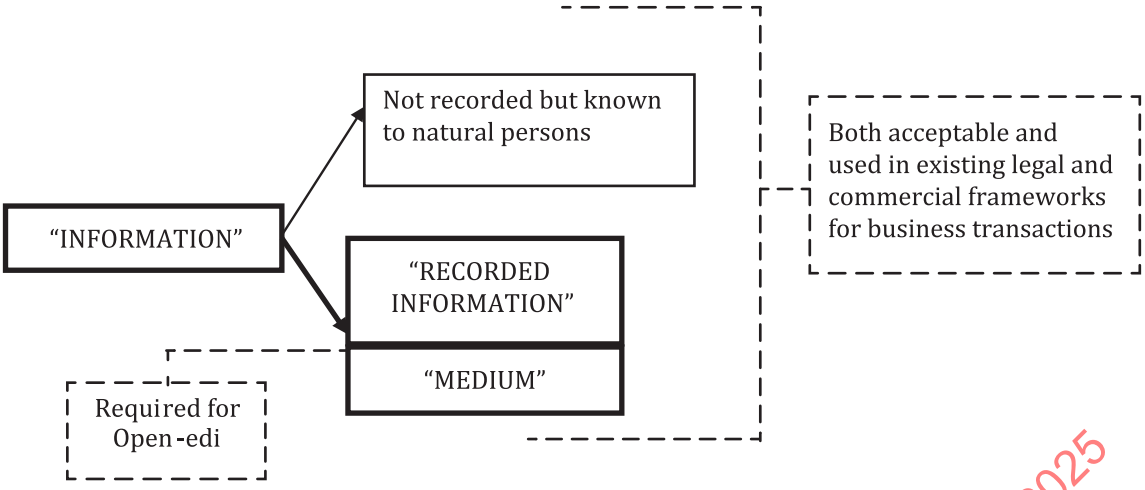


Figure 19 — Relation of "information", recorded information" and "medium" in business transactions — Legal, commercial and Open-edi requirements

6.4.2 Predefined and structured data elements

Rule 45:

Not all recorded information is data, but all data is recorded information.

Not all recorded information is data, but all data is a category of recorded information. Data is a particular category of recorded information which has certain properties. The definition of "data" in the context of an electronic business transaction is given in 3.14.

This definition integrates definitions of data from IT, commercial and legal perspectives. The use of the term computer systems links to the Open-edi Reference Model definitions of Electronic Data Interchange (EDI) in 3.19 and Information Technology System (IT System) in 3.32.

With respect to the definition of data (in a business transaction), users of this document should note the following underlying assumptions.

a) Under this definition of data, software is a sub-set or category of data.

b) This definition of data is presented from the perspectives of both the legal framework and standardization framework and is generic in nature. It is applicable to all categories of information exchanges involving computer systems and telecommunication networks.

c) Use of the term recorded information in this definition means that all attributes of this term are inherited.

Rule 46:

Electronic business transactions require (1) data, and (2) data that is recorded or stored on any medium in or by a computer system.

Electronic business by definition requires the use of information technology and particularly that of a computer system. Any recorded information that does not have the properties of data and cannot be used in a computer system does not form part of an Open-edi business transaction. This is illustrated in Figure 20.

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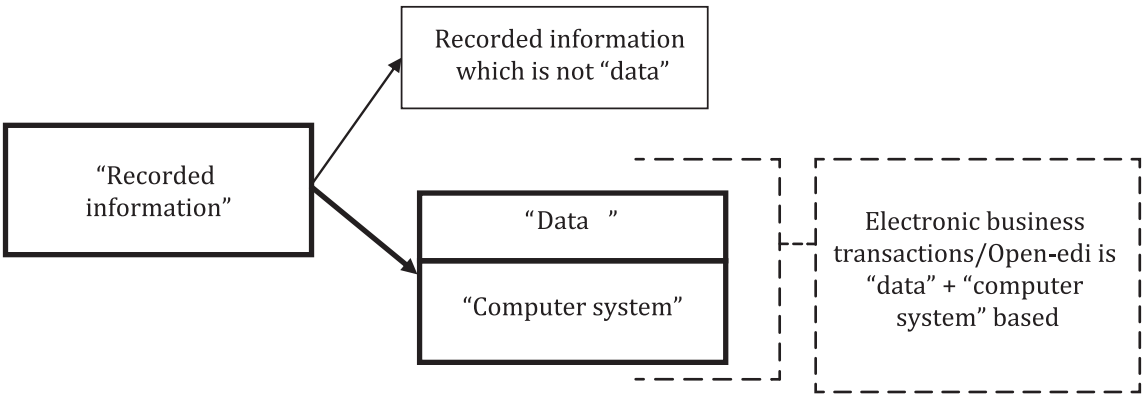


Figure 20 — Relation of "recorded information", "data" and "computer system" in electronic business transactions/Open-edi

Rule 47:

The definition of data, and related information technology terms and definitions found in this document shall be able to be mapped into legal frameworks.

Guideline 47G1:

Business transactions are primarily data element-based.

Figure 21 provides an illustration of this rule.

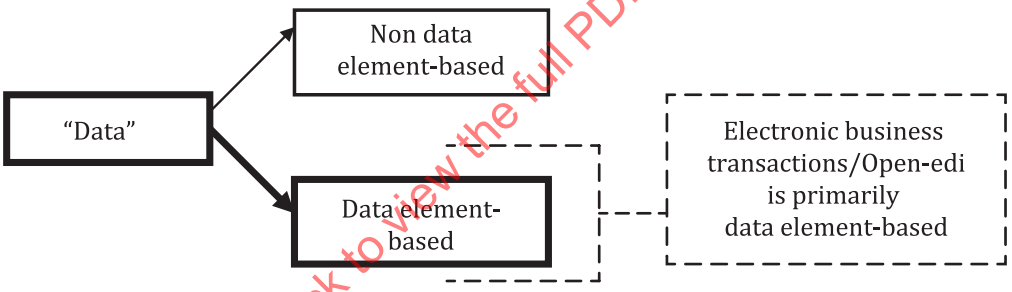


Figure 21 — Relations "data" and "data elements" in electronic business transactions/Open-edi

Guideline 47G2:

Having a standard definition of data element (given in 3.15) supports requirements of unambiguousness in electronic business.

It suffices to note that the more complete and precise the specification of the set of attributes pertaining to a data element, the higher the level of certainty (unambiguousness), of the semantics in the meaning and use of a data element in (electronic) business transactions. See further 8.5.5. In addition, in the context of the business operational view perspective, extensive use is made of coded domains. On rules governing the establishment, maintenance and interchange of coded domains, see ISO/IEC 15944-10.

Rule 48:

Standards development work in support of electronic business transactions shall incorporate and support data granularity requirements.

The level of granularity reflects the degree of detail appropriate to the level of certainty required in the data being interchanged among the parties participating in a business transaction.

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Guideline 48G1:

The greater the degree to which data is structured and predefined, i.e. is data-element-based, the less ambiguity and the higher the degree of cost-effectiveness and efficiencies in the use of information technologies in support of Open-edi.

Guideline 48G2:

The degree to which "ambiguity" in (electronic) business transactions can be minimized is directly related to the ability to re-use Scenario Components reliably, thus realizing the opportunities in and potential of Open-edi as well as its widespread adoption and use in various application areas, (e.g. e-commerce, e-administration, e-government, e-business, e-logistics, etc.).

Guideline 48G3:

With respect to Open-edi standards development pertaining to the data component, the priority is to be placed on data which is of the nature of data elements and within this context, data elements which are (or should be) predefined and structured.

Data of this nature already exists and is used extensively in commerce world-wide and are commonly known as "code sets". (See further ISO/IEC 15944-10 on "Coded Domains".)

Rule 48 and associated guidelines are graphically represented in Figure 22.

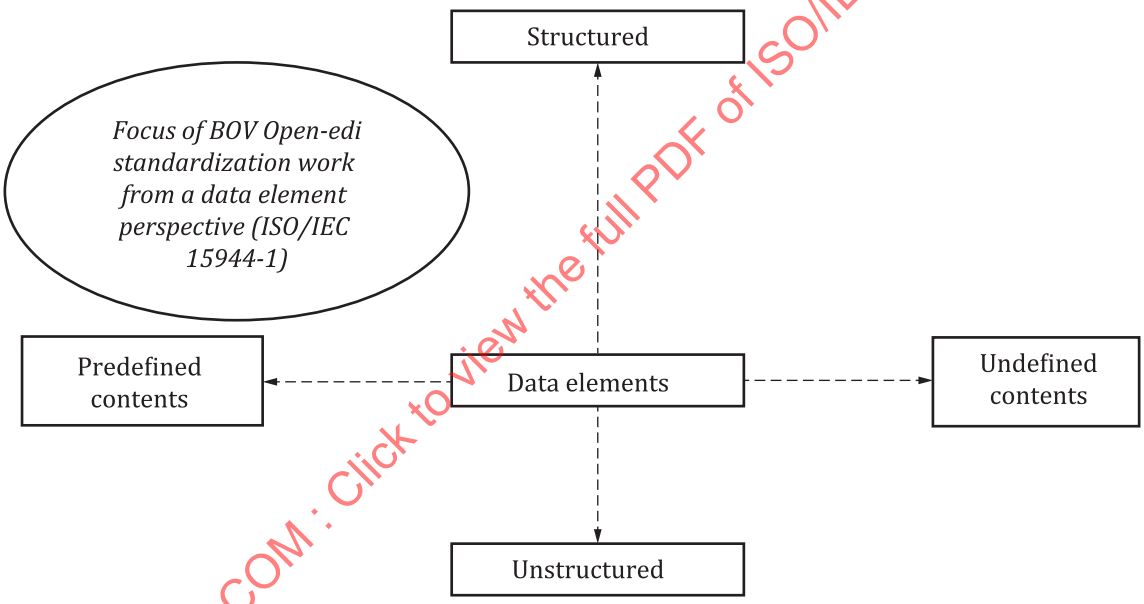


Figure 22 — Focus of BOV Open-edi standardization work from data element perspective — Predefined and structured data elements

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6.5 Business requirements on the FSV (Business demands on Open-Edi Support Infrastructure)

6.5.1 Overview

The transfer of information between and among Open-edi Parties in Open-edi may require the use of electronic security methods and techniques just as in the paper-based world information the transfer could be put in tamper-evident envelopes or sent registered delivery or by courier. Regulators may control the use of electronic systems for the transfer of information. Regulators may restrict information from being sent by parties subject to their control to parties domiciled in other jurisdictional domains, or may regulate in specific ways the application or use of security methods and techniques. On the role and purpose of the Open-edi Support Infrastructure (OeSI), see further ISO/IEC 14662:2010, 5.2 and Annex D.

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Rule 49:

Open-edi scenarios and Information Bundles shall therefore be capable of reflecting constraints to be applied which may be as a result of (a) commitments among parties, i.e. as (a) internal constraints; or, (b) external constraints.

These requirements (constraints) are not usually captured by traditional modelling methods because these concentrate on identifying the flows of internal information required and the triggers that cause its movement. As a result, scenario and Information Bundle designers are required to ensure that both internal and external constraints are correctly captured and recorded and included with scenario and Information Bundle definitions.

6.5.2 Internal constraints (self-imposed)

Generic services required by businesses in support of self-imposed constraints, i.e. internal constraints, include:

a) certainty of the accuracy of the Information Bundle (also referred to as Information Bundle integrity);

b) knowledge of the authorization of the Information Bundle (also referred to as non-repudiation of source);

c) confidentiality of the Information Bundle contents;

d) certainty of the sending of an Information Bundle (also referred to as non-repudiation of despatch);

e) certainty that an Information Bundle has been received (also referred to as non-repudiation of receipt);

f) proof of the time at which an Information Bundle was created or sent (also referred to as time-stamping services);

g) notarization of an Information Bundle; and,

h) quality of service.

A further generic requirement may be to have explicit knowledge of the progress of an Information Bundle that has been despatched prior to its final receipt.

Any or all of these services may be specified by any of the parties involved as BOV aspects in a scenario. However, at each stage in a scenario, only the party sending an Information Bundle is able to implement those requirements. It is not possible for any receiving party to affect the decision made by the sending party in terms of the functions implemented. However, it is possible that a receiving party could refuse to accept the Information Bundle because its security treatment by the sender was not acceptable.

Security-type requirements listed above are those which may be agreed contractually between parties.

There are several ways in which quality of service can be considered a requirement. In terms of the FSV the parameters of QeS communication quality of service (QoS) requirements are of a series of clearly defined types:

a) the ability of the infrastructure in use to carry out its defined task within a specific timescale. This may be considered to be a Mean Time To Respond (MTTR), the Mean Time Between Failures (MTBF) or the ability to convey a specific volume of information inside a specific timescale.

b) the requirement to have processing equipment with a specific ability or capability in order to process the data to provide a specific result (streaming video, X-ray processing etc.).

c) the requirement that equipment being used in support of the processing activity(ies) has been developed in accordance with a particular quality standard or has been accredited against a particular standard and has achieved some specified level of compliance.

d) that the party(ies) achieves the criteria of one or more particular quality standards in the operation of their processes. (See further 8.3.2.10 and 8.4.2.9.)

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Other internal requirements or constraints may be created as a result of the business transaction itself, such as terms of payment, delivery requirements are expected to be captured and represented as scenario components since they are business information rather than generic constraints.

6.5.3 External constraints

6.5.3.1 The majority of business transactions will be subject to constraints applied by outside parties such as regulators, as external constraints. On the whole, jurisdictional domains are the primary source of these external constraints.[17] These external constraints may vary according to the nature of the business transaction, the role being played by one of the parties or the nature of the information being sent. Sources of such external constraints include:

a) national law;

b) national regulation;

c) trade body regulation;

d) codes of practice;

e) treaties;

f) international agreements;

g) memoranda of understanding;

h) international conventions;

i) international protocols;

j) international law.

6.5.3.2 The effects of these external constraints may be to require that a specific security service is used, that the service is performed in a specific manner, or that the scenario is performed in a specific manner and using specified Information Bundles.

Examples of these external constraints include:

a) confidentiality of a part or the whole of a specific Information Bundle is required to be applied by the competent authority at the origination or the destination;

b) the mechanism used to obtain confidentiality may need to be constrained to operate in a particular manner such as the use of a specific algorithm or maximum or minimum key length;

c) the mechanism used to obtain confidentiality are required to be able to support specific additional services such as the facility to allow authorised third parties to be able to read the content of the Information Bundle;

d) the mechanism(s) used to provide integrity or non-repudiation services may be constrained to use specific algorithms or methods of computation together with particular key lengths;

e) the transmission of some Information Bundles to specified jurisdictional domain destinations may be constrained;

f) there may be a mandatory requirement to use a specific notary or third party as a part of the scenario or to provide information to them in a specified form or to obtain commitment from them;

g) the information may have to be reproducible in a specified format and/or may readable or perceivable by any Person;

17) External constraints are the focus of ISO/IEC 15944-5.

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h) there may be a mandatory requirement to use an Information Bundle specified by a regulator;

i) with respect to the any of the above, there may be retention requirements for a specified time period for defined sets of recorded information, i.e. one or more predefined groupings of Information Bundles.

6.5.3.3 Where parties to an Open-edi transaction are domiciled in different jurisdictional domains there may be conflict between applicable external constraints. Such conflicts should be detected during the building of or playing of the scenario, and may require methods of resolution that cannot be achieved within the Open-edi scenario. On this and related matters, see further ISO/IEC 15944-5.

6.5.4 BOV requirements on the FSV for security methods and techniques

In order to cater for these requirements, scenario descriptions and Information Bundle descriptions are required to include fields or labels that indicate the security functional requirements available with them.

Fields or labels are required to be able to allow a party to identify any constraints that have been applied. However, when a scenario or Information Bundle does not indicate that a security constraint is mandatory for the scenario or the Information Bundle, there has to be an indicator determining if the security constraint is mandatory, conditional, mandatory subject to a conditional, optional or not applicable on allparticipating parties. (See further Annex B.)

Fields or labels are also required to be able to provide for constraints applied by outside parties such as regulators or similar bodies. These constraints need to be explicitly stated and need to identify the applicability of the constraint. For instance, if the constraint is only binding for a scenario where a party is domiciled in a specific jurisdictional domain or is only binding where the party is supervised or regulated by a specific authority, then these limitations are also required to be listed.

Scenarios, roles and/or Information Bundles may be declared as mandatory for use in specific circumstances (customs reporting to a jurisdictional domain or designated authority, taxation recording, international carnet documentation and so on). Scenario designers may have to give consideration to the effect of the determination of the proper law governing a business transaction as well as the domicile of the parties sending and receiving Information Bundles or taking part in scenarios.

6.5.5 Liability of repositories

Repositories containing scenarios and Information Bundles may be required to demonstrate to the users of their services that the information disclosed is properly registered and that it is authentic. To discharge this requirement, repositories will require the use of security services to give users confidence that the scenario and Information Bundle definitions downloaded are valid and can be relied upon for their purpose. In this respect, scenario and Information Bundle repositories may need to be considered in two groups.

The first group is to provide registration facilities on a best effort basis. That is, that scenarios or Information Bundles registered there have been done so with reasonable diligence and skill, but no guarantee as to their accuracy is given and no liability is accepted for their inaccuracies.

The second group is to provide registration facilities where the items to be registered are checked for their correctness and, where a jurisdictional domain is involved, the information is officially approved. This group will accept liability for the information that they provide to users.

NOTE This clause is a summary only and the topic is addressed in detail in both ISO/IEC 15944-2 and ISO/IEC TR 15944-6.

7 Basic principles, rules and guidelines for scoping Open-edi scenarios

7.1 Basic principles

NOTE Clause 7 and the resulting template are meant to complement Clauses 8 and 9 which contain the primitive specification requirements for Open-edi scenarios and their components. ISO/IEC 15944-2 adds more detailed requirements from both a scenario analysis and a registration need perspective.

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This clause builds on the structure developed in Clauses 1 through 6. Together with rules, it provides the user with a preliminary template or checklist for scoping Open-edi scenarios.

While Clauses 8 and 9 provide detailed rules for the specification of Open-edi scenarios and their components, Clause 7 focuses on scoping the business environment of the business transaction modelled through an Open-edi scenario.

The approach taken is that of identifying the most primitive common components of a business transaction and then moving from the general to the more detailed, the simplest aspects to the more complex, from no external constraints on a business transaction to those which incorporate external constraints, from no special requirements on functional services to specific requirements, and so on.

The basic principles for scoping Open-edi scenarios include:

a) as a first priority, identifying the most primitive (generic and common) components of a business transaction;

b) determining at the outset whether the business transaction to be modelled is of a simple, generic nature, there are no external constraints on the business transaction and it does not include parties other than a buyer and seller;

c) establishing whether the parties making commitments with respect to their roles in a business transaction, are the Persons undifferentiated, or is the business relationship of a more granular nature (does it incorporate the three categories of Person, namely individual, organization, and public administration?);

d) noting whether or not the scenario provides for delegation of commitment to agents or third parties;

e) with respect to the process in a business transaction, establishing whether the scenario focuses on all five phases, i.e. planning, identification, negotiation, actualization and post-actualization, one or any combination of them;

f) establishing the degree to which the recorded information is of the nature of predefined and structured data elements;

g) serving as a checklist for identifying criteria of a YES/NO nature. This facilitates registration of scenario and scenario components in repositories for their re-use;

h) facilitating users of such repositories to see if a "best fit" is available, and if necessary, build additional components for existing scenarios to create a best fit rather than developing “ground-up”;

i) ensuring that the criteria for scoping an Open-edi scenario are able to be used to avoid/prevent "scope creep" of scenario definition;

j) identifying whether and which kinds of generic functional services are required to support the scenario.

7.2 Rules for scoping Open-edi scenarios

The rules which follow focus, first of all, on scoping Open-edi scenarios from the BOV perspective, as found in 6.1 through 6.4 (As well as in ISO/IEC TR 15944-6.), and then, on business requirements on the Functional Services View (FSV), i.e. as found in 6.5.

Completion of the associated template in 7.3 will facilitate completion of the more detailed Open-edi scenario template found in Clause 9. For example, if the Open-edi scenario is scoped as being applicable to modelling business transactions as having no external constraints, i.e. internal constraints only, all the attributes for "Open-edi scenario (OeS) attributes, "role attributes", "role demands on Open-edi Parties", and "Information Bundle (IB)" attributes, pertaining to "external constraints on business requirements, i.e. laws and regulations", would be specified as "Not Applicable". On the other hand, if (minimum) external constraints apply as applicable to the modelling of a business transaction, these are required to be specified in the scoping of a scenario, its attributes and components.

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Rule 50:

The requirement for an Open-edi scenario to incorporate external constraints on a business transaction shall be stated at the outset.[18)]

NOTE 1 Many of the elements of a business transaction are generic, i.e. independent of the good, service, and/or right provided, (e.g. planning including making known availability of goods, services and/or rights via a catalogue, terms of payment, methods of delivery, including modes of transport for physical goods or via telecommunications for "virtual" goods, services, and/or rights post-actualization including warranties, etc.).

NOTE 2 It is anticipated that many re-useable Open-edi scenarios and scenario components will be developed and registered which model common elements of global/international business transactions, which can later be particularized by external constraints.

Rule 51:

It is necessary to state whether the Open-edi Parties in the business transaction being modelled are (a) Persons in general, i.e. undifferentiated; or (b) differentiated among categories of Persons, i.e. sub-types, as individuals, organizations and public administration.

NOTE 1 From a generic perspective, one can model a business transaction as re-useable Open-edi scenarios and scenario components based on the assumption that the Open-edi Party has the properties and behaviours of a "Person", i.e. ability to commit, being held accountable, etc., without needing to further differentiate as to the category of "Person".

NOTE 2 On the other hand, business transactions being modelled through Open-edi scenarios and scenario components can well focus on "organization to organization" only (colloquially labelled "B2B") or on "organization to individual" (colloquially known as "B2C"). They can also have specific requirements where one Person is public administration.

NOTE 3 Further, business transactions involving public administration as the buyer are different in that the "buyer" as a public administration will likely impose predefined external constraints.

NOTE 4 Finally, "individual to individual" business transactions are most likely to be mediated via a third party such as a credit card or e-cash provider.

Rule 52:

It is necessary to specify whether or not any of the commitments among the primary parties involved in a business transaction, i.e. the seller and buyer, can be delegated to an agent and/or a third party.

NOTE 1 Roles of Open-edi Parties in a business transaction can or can not be delegate-able. In addition, from a re-usability perspective, one can well want to register an Open-edi scenario or scenario component at a very generic level, i.e. without any delegation of commitments.

NOTE 2 On the other hand, users of this document can well want to take such a generic re-usable component and add to it the allow-ability:

a) for a seller to use an agent;

b) for a buyer to use an agent;

c) for buyers and sellers to mutually agree to use a third party;

d) for a third party to offer services as a "mediating party" facilitating prospective buyers and sellers to come together. (See further ISO/IEC TR 15944-6)

Rule 53:

A business transaction consists of a predefined phases and/or processes. It is necessary to state whether an Open-edi scenario: (a) covers the five identified phases of the business process; planning,

18) ISO/IEC 15944-5 provides the rules for incorporating external constraints in the modelling of an Open-edi scenario.

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identification, negotiation, (actualization, and, post-actualization); or covers only one or a specific combination of these sets of activities.

NOTE 1 A seller having available a predefined catalogue of goods, services, and/or rights will benefit from having a generic Open-edi scenario scoped at providing this generic function.

NOTE 2 Unambiguous identification is a major issue in e-commerce (and e-business, etc.). Availability of a generic Open-edi scenario focusing on identification of Persons specifying the WHATs independent of the HOWs, will benefit all parties.

NOTE 3 Terms of payment are a generic requirement to most business transactions. An Open-edi scenario focusing on "terms of payment", would: (1) assume that the Identification process has already been completed; and, (2) cover the negotiation, actualization and post-actualization aspects.

Rule 54:

When scoping Open-edi scenarios or any of their components, the presence or absence of coded domains or reference sets of predefined and structured data, shall be specified.

Guideline 54G1:

If a set of predefined and structured data elements, (e.g. a coded domain), is used it shall be explicitly referenced. It is recommended that such referenced coded domains are conformant with ISO/IEC 15944-10.

Rule 55:

As part of the scoping of Open-edi scenarios, it is necessary to identify: (1) which of the three factors for classification of Open-edi scenarios apply, i.e. (a) market type, (b) settlement type, and (c) primitive or complex roles; and, (2) which of the two basic, mutually exclusive options applies for each of these three factors.

NOTE This rule captures the key elements to be captured in the template (See 7.3) in support of the requirements arising from ISO/IEC TR 15944-6.

Rule 56:

It is necessary to state for Open-edi scenarios, whether or not the business transaction being modelled places demands on the Open-edi Support Infrastructure, i.e. in support of those commitments mutually agreed to by the Persons involved.

NOTE This rule captures the key elements to be captured in the template (see 7.3) in support of the requirements arising from self-imposed internal constraints (see 6.5.2).

Rule 57:

If the business transaction being modelled through an Open-edi scenario incorporates external constraints which impact FSV demands on Open-edi Support Infrastructure (OeSI), these shall be specified.

NOTE Not all external constraints on a business transaction place FSV demands on the OeSI (e.g. the use of a particular coded domain (CD) and permitted values of codes within a CD).

7.3 Template for specifying scope of an Open-edi scenario

7.3.1 Introduction to template

This template serves to identify mandatory attributes to be specified in registering the scope of a scenario. The purpose of this template is to capture in systematic, i.e. coded, form, key aspects for the scoping of an Open-edi scenario and scenario components for their registration and re-use.

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Rule 57a

Each scenario scoping attribute shall be specified as "applicable or "not applicable". These two conditions are to be coded as "1" = Yes (applicable) and code "2" = No (not applicable).

Guideline 57aG1:

When developing an Open-edi scenario specification, a temporary code "3" may be used to indicate a condition of "not yet determined' during the development of the Open-edi scenario specification. However, in a completed Open-edi scenario specification only codes "1" or "2" are allowed.

This will allow one:

a) support the ISO/IEC JTC1 strategic direction of "cultural adaptability" by allowing for multilingual equivalents of these two codes from a global perspective; and

b) facilitate computer processability, search-ability and reference-ability of these scoping attributes of Open-edi scenarios.

The assignment of "Scope Tag ID Code" numbers is of a block-numeric nature. For the "Scope Tag ID Codes" the block numeric numbers 1000 to 1999 are reserved. For the "Component ID Code" numbers, (See 9.2.3) the block numeric 2000+ has been reserved, i.e. up to "9999".

The purpose is to ensure that all the numeric identifiers for attributes for:

— scoping Open-edi scenarios; and

— specifying Open-edi scenarios and their components

will be unique, unambiguous and linguistically neutral within ISO/IEC 15944-1 as well as within their use in registration of the same using ISO/IEC 15944-2.

This approach will facilitate unambiguous referencing and registration necessary for re-usability and interoperability of Open-edi scenarios and their components. It will also facilitate support of localization requirements and use of multiple linguistic equivalencies for these numeric tags, i.e. as multiple equivalent human interface equivalencies.

7.3.2 Template for specifying the scope of an Open-edi scenario

NOTE 1 The physical appearance of the matrix of the Template is of an illustrative nature. (See further ISO/IEC 15944-2.) The purpose of the Template is to ensure that all the specification requirements identified in Clause 6 and 7.2 are captured in a systematic manner. The template structure demonstrates the ability to support multiple human interface linguistic equivalents.

NOTE 2 It is important in scoping an Open-edi scenario to specify at the outset whether or not external constraints apply to the business transaction being modelled. If there are no external constraints, i.e. the only constraints are those which the buyer and seller mutually agree to, then such an Open-edi scenario can often serve as a generic re-useable "lego" block in support of those Open-edi scenarios which do include external constraints.

Table 2 identifies all the (meta) data element to be specified in the scoping of an Open-edi scenario.

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Table 2 — Template for specifying scope of an Open-edi scenario

IT-Interface		Linguistic Human-Interface Equivalents (HIEs) [a]			Spare
Scope Tag ID Code	Decision Code[b]	Name (English)	Name (French)	Name (Other)	
(1)	(2)	(3)	(4)	(5)	(6)
1000		**BUSINESS GOAL OF BUSINESS TRANSACTION - NO EXTERNAL CONSTRAINTS**			
1010		**Business goal of business transaction includes external constraints** [c]			
1040		Persons (no external constraint)			
1041		Persons: Individual <-> Individual			
1042		Persons: Individual <-> Organization [d]			
1043		Persons: Individual <-> Public Administration			
1044		Persons: Organization <-> Organizations			
1045		Persons: Organization <-> Public Administration			
1046		Persons: Public Administration <-> Public Administration			
1060		Bilateral Transaction Model [e]			
1061		Mediated Business Transaction Model [f]			
1065		Defined Market Model			
1066		Undefined Market Model			
1070		Immediate Settlement Model			
1071		Separate Settlement Model			

[a] The concept of "human interface equivalents (HIEs) is defined in ISO/IEC 15944-2:2015, 3.35.

[b] The decision codes for presence-type attributes and assoiciated rules for use of the same are presented in Annex B.

[c] ISO/IEC 15944-5 assists with the development of standard template attributes for identification of external constraints.

[d] Often referred to as "B2C", i.e. as in "business to consumer". It is understood that a consumer is an individual and not an organization.

[e] See further ISO/IEC TR 15944-6.

[f] Primitive means that the business transaction is to be modelled as an Open-edi scenario involving only buyers and sellers.

[g] It is assumed that business rules and constraints relevant to the ability of the two primary parties (the seller and buyer), to be able to delegate all or part(s) of their role and associated commitment(s) to an agent(s) will be specified as part of "Role Attributes", see further 8.4.2.5.

[h] It is assumed that business rules and constraints pertaining to the ability of the two primary parties (the seller and buyer), to agree to delegate all or part(s) of their role(s) and associated commitment(s) to a third party(ies) will be specified as part of "Role Attributes", see further 8.4.2.5.

[i] For the definition and relevance of "predefined market model", see ISO/IEC TR 15944-6.

[j] A typical example is an e-mail address or a P.O. Box address.

[k] This is usually required for the negotiation step and certainly for actualization.

[l] With respect to "coded domains", see further ISO/IEC 15944-2 and ISO/IEC 15944-10.

[m] See further 6.5.2.

[n] This is often referred to as time-stamping services.

[o] The issue of jurisdictional domains as it impacts specification of external constraints on business transactions (being able to identify and reference laws and regulations impacting scenarios and scenario components) is addressed in ISO/IEC 15944-5.

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Table 2 *(continued)*

IT-Interface		Linguistic Human-Interface Equivalents (HIEs) [a]			Spare
Scope Tag ID Code	**Decision Code[b]**	**Name (English)**	**Name (French)**	**Name (Other)**	
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
1100		**AGENTS AND THIRD PARTIES**			
1110		**Business Transaction allows for Agents** [g]			
1111		Buyer Agent			
1112		Seller Agent			
1130		**Business Transaction allows for Third** [h] **Parties**			
1131		By mutual agreement of buyer and seller (as internal constraints only)			
1132		external constraint(s) Mandated			
1200		**PROCESS COMPONENT: All five phases covered**			
1210		**Planning**			
1215		Public information on goods, services and/or rights provided by a seller			
1220		Public information on goods, services and/or rights needed by buyer			
1225		Predefined/referencable Catalog			
1230		Buyer initiated goods, services and/or rights request			
1235		Seller initiated goods, services and/or rights offer			
1240		Predefined Market Model [i]			

[a] The concept of "human interface equivalents (HIEs) is defined in ISO/IEC 15944-2:2015, 3.35.

[b] The decision codes for presence-type attributes and assoiciated rules for use of the same are presented in Annex B.

[c] ISO/IEC 15944-5 assists with the development of standard template attributes for identification of external constraints.

[d] Often referred to as "B2C", i.e. as in "business to consumer". It is understood that a consumer is an individual and not an organization.

[e] See further ISO/IEC TR 15944-6.

[f] Primitive means that the business transaction is to be modelled as an Open-edi scenario involving only buyers and sellers.

[g] It is assumed that business rules and constraints relevant to the ability of the two primary parties (the seller and buyer), to be able to delegate all or part(s) of their role and associated commitment(s) to an agent(s) will be specified as part of "Role Attributes", see further 8.4.2.5.

[h] It is assumed that business rules and constraints pertaining to the ability of the two primary parties (the seller and buyer), to agree to delegate all or part(s) of their role(s) and associated commitment(s) to a third party(ies) will be specified as part of "Role Attributes", see further 8.4.2.5.

[i] For the definition and relevance of "predefined market model", see ISO/IEC TR 15944-6.

[j] A typical example is an e-mail address or a P.O. Box address.

[k] This is usually required for the negotiation step and certainly for actualization.

[l] With respect to "coded domains", see further ISO/IEC 15944-2 and ISO/IEC 15944-10.

[m] See further 6.5.2.

[n] This is often referred to as time-stamping services.

[o] The issue of jurisdictional domains as it impacts specification of external constraints on business transactions (being able to identify and reference laws and regulations impacting scenarios and scenario components) is addressed in ISO/IEC 15944-5.

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Table 2 *(continued)*

IT-Interface		Linguistic Human-Interface Equivalents (HIEs) [a]			Spare
Scope Tag ID Code	Decision Code[b]	Name (English)	Name (French)	Name (Other)	
(1)	(2)	(3)	(4)	(5)	(6)
1250		**Identification**			
1255		Identification for information exchange purposes only, (e.g. an address) [j]			
1260		Identification of Person able to make commitment [k]			
1265		Identification of Person as "individual"			
1270		Identification of Person as "consumer"			
1300		**Negotiation**			
1305		Monetary Payment Involved			
1310		Immediate Settlement Model			
1315		Separate Settlement Model payment			
1350		**Actualization**			
1355		**Immediate Settlement**			
1360		Separate Settlement			
1400		**Post-actualization**			
1405		Includes warranties			
1410		Includes records retention			
1415		Includes staying in contact with buyer, (e.g. defect and recall notification)			

[a] The concept of "human interface equivalents (HIEs) is defined in ISO/IEC 15944-2:2015, 3.35.

[b] The decision codes for presence-type attributes and assoiciated rules for use of the same are presented in Annex B.

[c] ISO/IEC 15944-5 assists with the development of standard template attributes for identification of external constraints.

[d] Often referred to as "B2C", i.e. as in "business to consumer". It is understood that a consumer is an individual and not an organization.

[e] See further ISO/IEC TR 15944-6.

[f] Primitive means that the business transaction is to be modelled as an Open-edi scenario involving only buyers and sellers.

[g] It is assumed that business rules and constraints relevant to the ability of the two primary parties (the seller and buyer), to be able to delegate all or part(s) of their role and associated commitment(s) to an agent(s) will be specified as part of "Role Attributes", see further 8.4.2.5.

[h] It is assumed that business rules and constraints pertaining to the ability of the two primary parties (the seller and buyer), to agree to delegate all or part(s) of their role(s) and associated commitment(s) to a third party(ies) will be specified as part of "Role Attributes", see further 8.4.2.5.

[i] For the definition and relevance of "predefined market model", see ISO/IEC TR 15944-6.

[j] A typical example is an e-mail address or a P.O. Box address.

[k] This is usually required for the negotiation step and certainly for actualization.

[l] With respect to "coded domains", see further ISO/IEC 15944-2 and ISO/IEC 15944-10.

[m] See further 6.5.2.

[n] This is often referred to as time-stamping services.

[o] The issue of jurisdictional domains as it impacts specification of external constraints on business transactions (being able to identify and reference laws and regulations impacting scenarios and scenario components) is addressed in ISO/IEC 15944-5.

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Table 2 *(continued)*

IT-Interface		Linguistic Human-Interface Equivalents (HIEs) [a]			Spare
Scope Tag ID Code	Decision Code[b]	Name (English)	Name (French)	Name (Other)	
(1)	(2)	(3)	(4)	(5)	(6)
1500		**DATA COMPONENT**			
1505		Predefined and Structured, i.e. code sets, (as coded domains) [l]			
1520		Data integrity of any IB			
1525		Retention /latency of any IBs			
1600		**Business requirements on FSV – No external constraints** [m]			
1610		Service: Information Bundle Integrity			
1615		Service: Non-repudiation of source			
1620		Service: Confidentiality of IB contents			
1645		Service: Non-repudiation of despatch			
1625		Service: Non-repudiation of receipt			
1630		Service: Proof of Time IB creation [n]			
1635		Service: Notarization of IBs			
1640		Service: Quality of Service (QoS)			
1650		Time-stamping services			
1700		**EXTERNAL CONSTRAINTS** [o]			

[a] The concept of "human interface equivalents (HIEs) is defined in ISO/IEC 15944-2:2015, 3.35.

[b] The decision codes for presence-type attributes and associated rules for use of the same are presented in Annex B.

[c] ISO/IEC 15944-5 assists with the development of standard template attributes for identification of external constraints.

[d] Often referred to as "B2C", i.e. as in "business to consumer". It is understood that a consumer is an individual and not an organization.

[e] See further ISO/IEC TR 15944-6.

[f] Primitive means that the business transaction is to be modelled as an Open-edi scenario involving only buyers and sellers.

[g] It is assumed that business rules and constraints relevant to the ability of the two primary parties (the seller and buyer), to be able to delegate all or part(s) of their role and associated commitment(s) to an agent(s) will be specified as part of "Role Attributes", see further 8.4.2.5.

[h] It is assumed that business rules and constraints pertaining to the ability of the two primary parties (the seller and buyer), to agree to delegate all or part(s) of their role(s) and associated commitment(s) to a third party(ies) will be specified as part of "Role Attributes", see further 8.4.2.5.

[i] For the definition and relevance of "predefined market model", see ISO/IEC TR 15944-6.

[j] A typical example is an e-mail address or a P.O. Box address.

[k] This is usually required for the negotiation step and certainly for actualization.

[l] With respect to "coded domains", see further ISO/IEC 15944-2 and ISO/IEC 15944-10.

[m] See further 6.5.2.

[n] This is often referred to as time-stamping services.

[o] The issue of jurisdictional domains as it impacts specification of external constraints on business transactions (being able to identify and reference laws and regulations impacting scenarios and scenario components) is addressed in ISO/IEC 15944-5.

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8 Rules for specification of Open-edi scenarios and their components

8.1 Basic principles

This clause presents the rules for specification for Open-edi scenario attributes and attributes of scenario components, i.e. roles and Information Bundles (IBs) and Semantic Components.

A key thrust of the Open-edi approach is to enable Persons to participate in EDI with minimal prior agreement about the way that the data is to be exchanged among them.[19] In contrast with current forms of electronic data and document interchange, this means that both the data and the contexts have to be predefined, structured and standardized. More precisely the computer systems of Open-edi partners need to be able to handle incoming messages[20] as Information Bundles (or sets of Information Bundles) automatically. Specification of the "message handling" process is a key element of an Open-edi scenario. The key difference with present day EDI (and EDI message handling) is that Open-edi not only (1) describes how a single message needs to be interpreted as well as describing how several messages relate with each other; but also, (2) specifies the same in a standardized and computer interpretable manner.

It is not the purpose of this document to develop the scenarios themselves. However, electronic data interchanges representing commitment and information exchange in a business transaction among autonomous parties to be computer interpretable and interoperable are required to:

a) have explicitly stated and defined business requirements; and,

b) state the specification of these business operational requirements in a formal way which can "be understood" by an automated information technology system. This includes ensuring that the requirements of OeDTs are also defined. (See 6.5)

Open-edi scenarios are composed of several building blocks. They specify the information exchanges and commitments made that govern a business transaction conducted among a set of Persons (also referred to as Open-edi Parties). Roles and Information Bundles have been introduced in the Open-edi Reference Model (ISO/IEC 14662). Roles specify the behaviour of the Open-edi Parties, whereas the Information Bundles specify the semantics of the information exchanged, including the commitments made. In order to connect the roles and Information Bundles together, attributes at the Open-edi Scenario level are defined as well. In this Clause, the structure of these concepts is further defined in terms of the attributes that need to be defined and the formal specifications of some of the components. This will lead to a stipulation of the requirements on Formal Description Techniques (FDTs) that are to be used for the formal specification of roles and Information Bundles.

Although all the attributes are required to be specified, the presence and conditions of each attribute may vary depending on: (1) the classes of constraints of the business transaction, (see 6.1.6), the scenario and its components; (2) the agreed upon business requirements and rules; and/or, (3) the applicability of external constraints on business requirements, i.e. laws and regulations. The rules and codes for specifying the presence and condition of the attributes of scenario components and their attributes are stated in Clauses 9 and 10.

It is important to note that roles model the externally visible behavior among Open-edi Parties.

Rule 58:

It is up to users to determine and define the boundary between the internal and external behaviour associated with a role.

The modelling of roles in a scenario should allow for an Open-edi Party to be seen as a single entity regardless of whether it has small or huge internal processes. Thus, if the Person is an organization or public administration a number of organization parts or organization Persons within an organization or public

19) This includes EDI-based applications popularly known as e-commerce, e-business, e-travel, e-government, e-logistics, e-learning, e-medicine, etc.

20) The term "message" is currently defined with many different meanings and uses within ISO and ISO/IEC ranging from "message" EDI message in (ISO 9735 EDIFACT and its "Implementation Guidelines") to "message" as in message handling (ISO/IEC 78498, ISO/IEC 9594 and ISO/IEC 10021 series of standards and their equivalent ITU X400 and X.500 series of Recommendations).

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administration, each with a smaller internal process, it will still be seen as a single entity. Roles in scenarios involving public sector (and associated Information Bundles) tend to have more extensive externally visible behaviour than those among private sector organizations. Among private sector organizations, the boundary between externally visible and internal behaviour is often determined by factors of degree of commonality in (international) business practices, industry sector conventions, degree of trust in business relations, etc.

The concept of external visible behaviour is related to business processes necessary to achieve the mutually agreed upon goal of the business transaction and the associated incoming and outgoing Information Bundles. This is illustrated in Figure 23.

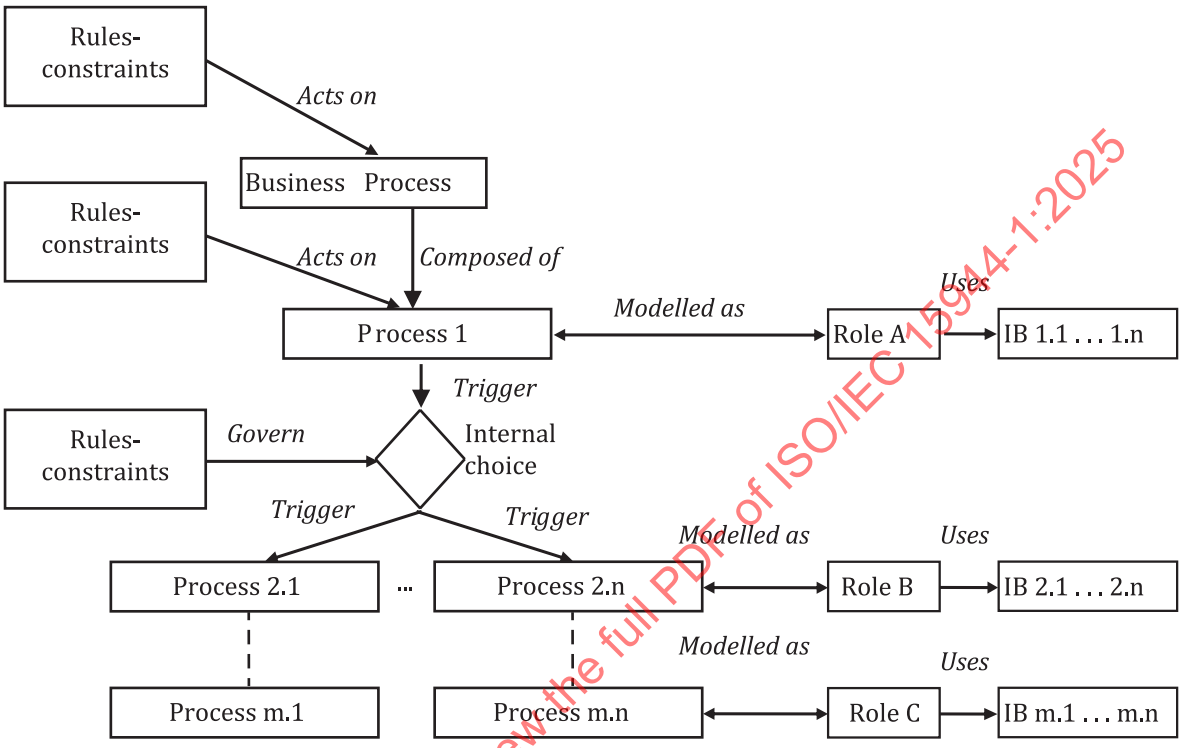


Figure 23 — Illustration of operation of Open-edi from the point of view of an autonomous organization in terms of the operation of rules, constraints and scenario components

Figure 23 represents an operation of Open-edi from the point of view of an autonomous Person, who wants to use it to support a particular business process. The outside world may have constraints on this process (for instance particular jurisdictional domains may regulate certain activities or require information to be exchanged). Also, the Person may have internal rules governing their business processes in general. Both types of constraints are represented in the boxes labelled "Rules-Constraints".

The business process itself may consist of a number of processes. After the completion of each process, a new state is reached and some internal choice will be made to decide which process will be executed next. This decision is based on the result of the previous process using an internal rule base. The choice can result in multiple processes being executed in parallel or in a number of alternative processes being selected and executed in series.

The Open-edi scenario is only concerned with those parts of these processes that are related to the exchange of IBs among roles. This particular information will be specified in the role description. Thus, the role description contains the knowledge or information required to determine the inter-dependencies of the Information Bundle exchanges. This also means that the entire specification of the Open-edi relevant part of the business process will be done by multiple roles which are inter-connected within a scenario (using scenario attributes). A different valid approach that can be implemented is to define the role as the combination of all these processes, and call the different sub-sets differently, for instance episodes or activity units.

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Although it seems that this is a rather fundamental decision to make, the view can also be taken that this is only an identification (and naming) issue if it is assumed that multiple levels of decomposition and types of inheritance can take place at the role level. From a modelling perspective, it is not really relevant whether something is designated a role, sub-scenario or episode, since the information that is captured in the models is the same (sending-receiving of IBs). The relationships among all these models must be defined unambiguously where modularity, inheritance or hierarchical decomposition is required.

Although Figure 23 shows that a specific process is implemented by a specific role, it may be the case that actually several alternative processes can be used for this purpose. For instance, the process "get product information" can be implemented by a single IB exchange of a prospective buyer with the seller or by multiple exchanges of smaller IBs as part of a session (or sets of sessions as a dialogue). These two cases would probably be covered by different role descriptions with the same purpose.

The resulting scenario will consist of models for each Open-edi Party involved in the business transaction, thus specifying the overall exchange of Information Bundles. (The processes in one organization should have "mirror" processes in the other organization to make the entire business transaction work. If one party sends an IB but another party does not know about it, the scenario definition is clearly incorrect).

This introduction concludes by noting the important issue of the reusability of Open-edi scenarios and their components. Since all these components must be provided with unique, unambiguous and linguistically neutral identifiers, reusability is created by the design. Reusability of Open-edi scenarios is facilitated through the reusability of its components. If a new Open-edi scenario is to be developed using an existing scenario, scenario developers can simply reuse the components of the existing scenario.

Reusability of scenarios, as well as scenario components, is embedded in:

a) the specification of scenarios and scenario components from a BOV perspective at a level of granularity appropriate to the goal of the business transaction and with the degree of explicitness required to transform these business requirements into a model using formal description techniques, i.e. using an OeDT; and,

b) the OeDT model serving a two-fold purpose/goal; namely:

   — ensuring that all the business requirements pertaining to a scenario and scenario components (a) are unambiguous and conform to the level of certainty and completeness required by the goal of the business transaction being modelled; and, (b) can interwork, i.e. there are no logical inconsistencies or gaps.

   — ensuring that: (a) all the information of the nature of demands on the Functional Service View (FSV) is specified in the BOV aspects of a scenario and its components and modelled in the associated OeDT; and, (b) from a FSV perspective, the BOV requirements are unambiguous, i.e. the level of certainty is appropriate to the goal of the business transaction and resulting demands on the FSV result in no logical inconsistencies or gaps.

Reusability of scenarios and scenario components is an achievable objective because existing (global) business transactions, whether of a verbal or paper-based nature, already consist of "standard" reusable components unambiguously understood among participating existing parties (even though such "standard" components are not yet specified through the use of FDTs). Similarly, earlier and present experience with syntaxes for electronic data interchange whether ISO 9735 (EDIFACT) or ANS X.12-based and now “XML” have demonstrated the need for, and feasibility of, reusable components.

Use of this document will ensure that such reusability is embedded in the Formal Description Techniques used for specifying the components.

8.2 OES demands on interoperability

The term interoperability is used in the context of this document to mean the ability for all the parties using a scenario or any of its components to be able to understand the meaning of those components. Further, if one of the potential parties to the scenario takes part in the scenario, in doing so it needs to be able to carry out the minimum functional requirements as specified by the scenario or any of its components.

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These requirements need to be considered, therefore, at several levels. It is therefore necessary to ask the following questions:

a) are the contents of a scenario component represented in a format that can be understood by the recipient such that they can be converted into any necessary internal format for the purpose of internal processing?

NOTE This can include being able to represent the information in a human readable format.

b) are the semantics of the scenario component clear? (A field with a description of 'DATE' would not be considered clear since it is not possible from that information alone to know if the format of date is Julian, Gregorian, or following another allowable representation. Even if the format is known, is it the date of an event that has happened or is yet to take place?) In registering scenario components it is essential to include sufficient descriptive information about the semantic meaning of the information content such that the meaning for a recipient is clear?

c) are the technical contents of a scenario component formatted or represented according to a recognized standard for encoding (a currency table, international country code, registered cryptographic algorithm)?

d) are the security requirements expressed in a form and format that can be complied with?

e) are the constraints that are specified acceptable?

8.3 Rules for specification of Open-edi scenarios and scenario attributes

8.3.1 Open-edi scenario rules

The definition of "Open-edi scenario" is given in 3.40.

Rule 59:

An Open-edi scenario is specified through roles, Information Bundles and scenario attributes.

Rule 60:

An Open-edi scenario is composed of two or more roles.

NOTE In the planning phase of a business transaction (See 6.3.2), the second role is often assumed to be played by a responding Open-edi Party, i.e. as provided for as an expected role. For example, the posting of an electronic catalogue by a seller assumes the existence of prospective buyers. The posting of a request for quotation by a buyer assume the existence of prospective sellers. In either case, an agreed upon termination of a business transaction can be the expiry of a specified date/time (e.g. offer or request valid until YYYY-DD-MM)[21].

Rule 61:

A business transaction may be specified as one or more Open-edi scenarios.

NOTE For example, a model of a business transaction spanning several jurisdictional domains involving customs clearance, multi-modal transport, and several banks that are involved in financial transfers can be specified through several inter-linked scenarios.

Rule 62:

Aspects related to a business transaction which are not covered in rules and specifications of a role or an Information Bundle (and their attributes) shall be specified through Open-edi scenario attributes and one shall state the presence type of each attribute, i.e. mandatory, conditional, mandatory subject to a conditional, optional, or not applicable (using Annex B).

21) For more detailed information and rules governing date/time referencing, i.e. temporal referencing, see ISO/IEC 15944-5:2008, 6.6.4.5.

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8.3.2 Open-edi scenario (OeS) attributes and associated rules

8.3.2.1 List of the Open-edi scenario attributes

a) OeS identifier

b) OeS name(s)

c) OeS purpose

d) OeS set of roles

e) OeS set of Information Bundles

f) OeS set of requirements on Open-edi Parties

g) OeS set of external constraints on business requirements, i.e. laws and regulations

h) OeS inheritance identifier(s) and cross-references

i) OeS security service requirements

j) OeS communication – quality of service requirements

k) OeS role requirements and constraints

l) OeS dependency among roles in a scenario

m) OeS dependency among Information Bundles in a scenario

n) OeS dependency among Semantic Components of different Information Bundles

o) OeS demands on Open-edi Parties

p) OeS demands on Open-edi Support Infrastructure.

With respect to these Open-edi scenario (OeS) attributes the following rules apply.

8.3.2.2 Scenario attribute: OeS identifier

Rule 63:

The Open-edi scenario Identifier shall be unique, linguistically neutral, unambiguous and referenceable. It is a mandatory attribute.

8.3.2.3 Scenario attribute: OeS name(s)

Rule 64:

OeS name is the designation of the Open-edi scenario Identifier by a linguistic expression. More than one OeS name as equivalent linguistic expressions may be associated with an OeS identifier.

NOTE 1 It is necessary to be able to support localization, multilingualism, cross-sectoral and cultural adaptability requirements. An Open-edi scenario formally specified and identified through its OeS identifier will likely have associated with it one or more designated equivalent linguistic expressions, i.e. names, labels, etc., from a human interface equivalent perspective (e.g. as "aliases").

NOTE 2 The use of a specific linguistic human interface equivalent expression as a name for an OeS attribute can be prescribed in a jurisdictional domain, i.e. as a predefined HIE.

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8.3.2.4 Scenario attribute: OeS purpose

Rule 65:

The OeS purpose attribute specifies the scope of the Open-edi scenario.

NOTE 1 The use of the term "scope" indicates the need for preciseness and specificity.

NOTE 2 The focus and boundaries of the OeS purpose can be defined using inclusionary rules and definitional statements as well as exclusionary rules.

8.3.2.5 Scenario attribute: OeS set of roles

Rule 66:

The OeS set of roles attribute applicable to the scenario shall be specified and referenced through their role identifiers.

Rule 67:

One shall state which roles of the OeS are mandatory, conditional, or mandatory subject to a conditional. (See further Annex B)

Rule 68:

Where applicable, constraints on the same Open-edi Party playing more than one of the roles in the set of roles applicable to the OeS shall be specified.

8.3.2.6 Scenario attribute: OeS set of Information Bundles

Rule 69:

The set of IBs applicable to the scenario shall be specified through the unique identifiers of the IBs.

Rule 70:

If applicable, one should state which IBs are mandatory, conditional, or mandatory subject to a conditional.

Rule 71:

Where applicable, constraints on IBs pertaining to roles in the OeS shall be specified.

8.3.2.7 Scenario attribute: OeS set of requirements on Open-edi Parties

Rule 72:

The business requirements, rules and practices applicable at the scenario level: (1) shall be specified; and, (2) shall be stated at a level of detail to ensure that there is no ambiguity in the commitments among Open-edi Parties at the scenario level.

Rule 73:

Business constraints, if any at the scenario level, pertaining to Open-edi Parties and scenario components shall be specified, and all of these shall be accounted for in scenario components, i.e. roles and/or Information Bundles.

NOTE 1 Business constraints are those which Persons, as individuals and/or organizations, mutually agree to impose upon themselves (as an exercise in "coordinated autonomy").

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NOTE 2 External constraints are those which are imposed on aspects of a business transaction. A primary source of external constraints are jurisdictional domains, (e.g. those of a geopolitical nature, category of services, types of commodities, etc.).

8.3.2.8 Scenario attribute: OeS set of external constraints on business requirements, i.e. laws and regulations

Rule 74:

Requirements or constraints arising from applicable laws or regulations at the scenario level shall be explicitly stated including the source jurisdictional domain(s).[22)]

Rule 75:

Where multiple laws and regulations apply at the scenario level, the constraint applicable shall be integrated.

NOTE 1 For scenarios developed only at the internal constraints level of the business transaction model, these scenario attributes will not apply.

NOTE 2 Where a scenario incorporates external constraints the designer can consider modelling these using an OeDT and having the results reviewed by the relevant jurisdictional domain(s).

8.3.2.9 Scenario attribute: OeS inheritance identifier(s) and cross-references

Rule 76:

A scenario attribute shall be used when: (a) a scenario is a customized version of a more generic scenario; and/or, (b) a scenario is built using other scenarios as parts of its scenario.

NOTE 1 An example of Rule 76(a) would be where a generic (general) multi-modal transport logistic scenario is used as the basis for a transport scenario customized for a specific mode of transport.

NOTE 2 An example of Rule 76(b) would be where a transport delivery scenario is combined with a (terms of) payment scenario, (e.g. for C.O.D. where the transporter also is responsible for the role involving collection of payment).

8.3.2.10 Scenario attribute: OeS security service requirements

Rule 77:

Security service requirements that have to be satisfied at the scenario level shall be stated including non-applicability. (See further Annex B)

Examples of security service requirements in relation to the scenario include:

EXAMPLE 1 Compliance – "What security policy is required to be complied with?",

EXAMPLE 2 Standards required – "What standards are being implemented in support of compliance?",

EXAMPLE 3 Actual mechanisms – "Which specific methods and techniques are being invoked/supported in support of the requirements?".

8.3.2.11 Scenario attribute: OeS communication - quality of service requirements

Rule 78:

22) It is important that both the modelling of business transactions and their instantiations are structured to be able to support legal and regulatory requirements of applicable jurisdictional domains. Here JTC1/SC32 has addressed the issue of jurisdictional domains and their impacts on the specification of external constraints on business transactions, through the development of ISO/IEC 15944-5. ISO/IEC 15944-5 addresses laws and regulations of jurisdictional domains and their impact on the specification of external constraints on business transactions.

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Quality of service requirements for telecommunication services, if applicable, at the scenario level should be stated here.

This attribute is required when a specific quality of service is required to be available to the role of an Open-edi Party to carry out the specified function. Examples include:

EXAMPLE 1 Having the ability to receive information sent at a minimum speed for the transfer to be possible/ reasonable (broad band streaming where real-time video is to be transmitted).

EXAMPLE 2 Possessing a specific device (such as an iris scanner, a fingerprint reader, a graphics tablet, a photographic negative scanner, etc.).

EXAMPLE 3 Having a specific human authentication form of connection (real time or store-and-forward) in order to provide the speed of response required for the scenario (or scenario component).

8.3.2.12 Scenario attribute: OeS role requirements and constraints

Rule 79:

This OES role requirement attribute shall be used to identify requested and/or undesirable configurations of Open-edi Parties playing roles (or combinations of roles) within a scenario.

8.3.2.13 Scenario attribute: OeS dependency among roles in a scenario

Rule 80:

Dependency(ies) among roles (including sequencing) in a scenario, if any, shall be specified.

8.3.2.14 Scenario attribute: OeS dependency among Information Bundles in a scenario

Rule 81:

Dependency(ies) among Information Bundles (including sequencing) in a scenario, if any, shall be specified. (See further Annex B).

8.3.2.15 Scenario attribute: OeS dependency among Semantic Components of different Information Bundles

Rule 82:

Dependency(ies) among Semantic Components (including sequencing) among Information Bundles in a scenario, if any, shall be specified. (See further Annex B)

8.3.2.16 Scenario attribute: OeS demands on Open-edi Parties

Rule 83:

OeS demands on Open-edi Parties which are in addition to those specified for the roles and/or Information Bundles comprising an OeS are required to be specified.

NOTE 1 It is assumed that OeS demands on Open-edi Parties are the sum of the demands of the roles and IBs comprising an OeS.

NOTE 2 It could well be that the required inter-working of the demands of the roles and IBs comprising an OeS result in added demands which are required to be specified at the OeS level.

Rule 84:

Where a specific trade scenario or settlement scenario is mandatory to taking part in the scenario it shall be specified as a demand upon Open-edi Parties.

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8.3.2.17 Scenario attribute: OeS demands on Open-edi infrastructure

Rule 85:

OeS demands on Open-edi infrastructure which are in addition to those specified for the roles and/or Information Bundles comprising an OeS must be specified.

NOTE 1 It is assumed that OeS demands on Open-edi infrastructure are the sum of the demands of the roles and IBs comprising an OeS.

NOTE 2 It could well be that the required inter-working of the demands of the roles and IBs comprising an OeS result in added demands which are required to be specified at the OeS level.

8.4 Rules for specification of Open-edi roles and role attributes

8.4.1 Rules governing roles

A "role" is defined in 3.60.

A role contains the formal description of this behaviour, (e.g. business process), as well as the list and specification of the associated attributes.

A role usually represents a business function and associated commitments, obligations and responsibilities of a Person (individual, organization, or public administration) as well as associated common business processes. An Open-edi role is the (re-useable) computer interpretable and processable specification of the same instantiated by a Person as an Open-edi Party.

The BOV rules governing role include those listed below.

Rule 86:

Open-edi Parties take on commitments based on role commitment.

Rule 87:

An Open-edi Party may play one or more roles and a role may be played by one or more Open-edi Party.

Rule 88:

Internal and external behaviour shall be associated with a role.

NOTE The concept of role is related to specifying business processes and Information Bundles. (See Figure 23.)

Guideline 88G1:

It is up to users to determine and define the boundary between internal and external behaviour associated with a role.

Guideline 88G2:

Modelling of roles should allow for an Open-edi Party to be seen as a single entity with a huge internal process or as a number of distinct entities, i.e. as organization parts and organization Persons, each with a smaller internal process.

Rule 89:

A role shall be a component of one or more scenarios.

NOTE A role can only exist within the context of a scenario.

Rule 90:

The behaviour of a role shall be specified by states, transitions, events, actions and/or internal functions.

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Rule 91:

The role attributes shall be clearly defined and specified to complete a role specification using plain text.

NOTE The "using plain text" requirement has a three-fold purpose; namely:

— to ensure that the Business Operational View of the Open-edi scenario is clearly expressed and understood by Persons representing user requirements and/or Open-edi Parties;

— to ensure that business requirements are stated independently of any modelling techniques or modelling language. (The formal specification of a role via an OeDT ensures computer process-ability);

— to ensure that commitments and obligations associated with a role are fully and clearly understood by persons undertaking a role as an Open-edi Party in an instantiation of a scenario.

Rule 92:

The formal specification of a role is to be defined using an Open-edi Description Technique (OeDT).

NOTE In the informative Annexes of this document, the FDT used as part of the OeDT is Universal Modelling Language (UML) is ISO/IEC 19501.

8.4.2 Role attributes and associated rules

8.4.2.1 List of Role attributes

Role attributes are:

a) Role identifier

b) Role name(s)

c) Role purpose

d) Role business goal(s)

e) Role business rules and constraints

f) Role inheritance identifiers and cross-references

g) Role external constraints on business requirements, i.e. laws and regulations

h) Role security service constraints

i) Role communications and quality of service requirements

j) role demands on OeP

k) Role demands on Open-edi Support Infrastructure

8.4.2.2 Role attribute: role identifier (ID)

Rule 93:

Each role shall have an identifier and the role identifier shall be unique, linguistically neutral, unambiguous and referenceable.

Rule 94:

The role ID shall include the OeS identifier of the scenario to which the role is a part.

NOTE This has implications on registration of roles.

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8.4.2.3 Role attribute: role name(s)

Rule 95:

A role may have one or more names; a role name is the designation of role ID by a linguistic expression, and more than one role name (as human interface equivalent linguistic expressions) may be associated with a role ID (e.g. as "aliases").

The specific linguistic expression used to designate a role ID can be:

a) the results of an agreed upon common business convention a practice (internationally or by business sector); or,

b) prescribed by laws and regulations of a jurisdictional domain (at international, regional, or national level, industry sector, etc.).

NOTE This is developed further in ISO/IEC 15944-2 as part of scenario registration procedures.

8.4.2.4 Role attribute: role purpose

Rule 96:

The objective(s) of the business function shall be specified as the role purpose.

8.4.2.5 Role attribute: role business goal(s)

Rule 97:

The role business goal shall explicitly state the business process(es) of the role including the agreed upon conclusion(s) of the role.

Rule 98:

The role business goal attribute shall specify the rights and duties, commitments, resulting obligations, and accountabilities of the Open-edi Parties participating in the role.

The specification of the role business goal is required to be stated at a level of detail to ensure that there is no ambiguity in the commitments, rights and obligations as well as accountabilities among the Open-edi Parties at the role level.

8.4.2.6 Role attribute: role business rules and constraints

Rule 99:

Predefined and accepted business rules and associated practices applicable to a role shall be specified as role business rules and be appropriately referenced.

NOTE 1 Existing world trade among private sector entities, most public/private sector business transactions, etc., are based on known common business practices. Primary examples are the International Commercial Terms (INCOTERMS) of the International Chamber of Commerce, that of an IATA qualified/certified freight forwarder or a financial institution which is a member of SWIFT.

NOTE 2 Such commonly known and accepted business practices or roles need only to be specified once using OeDT to be able to serve as referenceable and reusable Open-edi roles.

Rule 100:

Additional business practices pertinent to a role shall also be specified as role business rules.

Rule 101:

Constraints, if any, on an Open-edi Party being able to play a role shall be specified.

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The condition of there being (a) no constraints, (b) specified internal constraints, and/or (c) external constraints on a role shall be explicitly stated. (See further Annex B)

NOTE 1 A common constraint of an internal constraint nature, herein the modelling of a purchase transaction is that the Person in the role of seller is required to be able to receive payment via an acceptable credit/debit card and the Person in the role of buyer is required to be able to make payment using a credit/debit card acceptable to the buyer.

NOTE 2 ISO/IEC 14662 includes the example of a human organ transplant scenario. The example identified constraints on an Open-edi Party being able to play, i.e. instantiate, a specific role. Not any Open-edi Party can take the role of a medical doctor, a licensed bank, an insurance broker, an air mode transporter, a telecommunications carrier, etc.

8.4.2.7 Role attribute: role inheritance identifiers and cross-references

Rule 102:

Use of a role as part of a role shall be specified by a cross-reference to the used role and inherits the attributes of the used role.

The attribute is to be used when:

a) a role is a customized version of a more generic role; and/or,

b) a role is built using other roles as parts of its role.

An example of Rule 102(a) would be where a generic role is used as the basis for a customized role, (e.g. a generic transport role customized for transport of materials of a radioactive nature, or of a perishable commodity, etc.).

Another example of Rule 102(a) would be where a (generic) role developed at Level 0 of the Business Transaction Model is used as the basis for specifying the same role involving public administration constraints of a regulatory nature.

An example of Rule 102(b) would be where a role combines/integrates two or more "granular" roles. This is a matter of business needs and perspectives.

8.4.2.8 Role attribute: role external constraints on business requirements

Rule 103:

Any external constraints arising from laws or regulations to any aspect of the role and its attributes shall be identified and stated including the reference/source of the applicable law or regulation, i.e. qualifications for a role, prescribed behaviour, restrictions on the delegation of a role, etc.

For (generic) roles development of the business transaction model with no external constraints, i.e. internal constraints only, this attribute will not be applicable. (See Annex B)

Roles whose existence are due to meet requirements of external constraints of the nature of laws and regulations should be so identified, the requirements stated explicitly (so that these can be formally specified using an OeDT) and source referenced.

Where multiple laws and regulations serve as external constraints or requirements on a role, the role specification is deemed to be an integration of such a combination of external constraints and requirements.

8.4.2.9 Role attribute: role security service requirements

Rule 104:

Security service requirements at the role level shall be stated as one of: (a) Shall not be applied; (b) May be applied if available, or, (c) Are mandatory.

In cases b) and c), the specific security functions shall be specified. Annex E is applicable here.

NOTE The rules of 6.5 are applicable here.

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Examples of role-based security requirements of an Open-edi Party include:

a) having access to specific cryptographic algorithms to enable the receipt of information to be of value;

b) having a role authorized by an appropriate regulator and required for the performance of the specified function(s);

c) having a specific human authentication characteristic, i.e. that of a natural person irrespective of its role in a business transaction, (e.g. as an individual or organization Person), available for checking (such as a registered fingerprint, voice print, or other biometric-based identification technique for a natural person).

Security service requirements can depend on the content or data values of the IBs associated with a role. This rule requires that such conditional dependencies shall be explicitly stated. (See Annex B)

8.4.2.10 Role attribute: role communications and quality of service requirements

Rule 105:

Quality of service applicable at the role level shall be stated under this attribute, (e.g. availability, equipment that can process at the proper rate or in the required manner).

8.4.2.11 Role attribute: Role demands on Open-edi Support Infrastructure (OeSI)

Rule 106:

Role demands on Open-edi Support Infrastructure applicable at the role level shall be stated under this attribute.

Role demands may include:

a) method of authenticating identity; and,

b) technical method for compliance with constraints.

8.4.3 Role demands on Open-edi Parties

Annex B is applicable here.

Rule 107:

Restrictions on how roles may be assumed by OePs shall be stated.

Examples include (a) minors who cannot purchase alcohol; and, (b) residency requirements to undertake certain business activities.

Role demands on Open-edi Parties represent a set of role attributes which require the following to be specified:

a) IDs for these demands stated as constraints on role behaviour;

b) constraints on OeP characteristics;

c) constraints on maximum number of OePs playing a role;

d) constraints imposing a role to be conditional;

e) constraints on differing OePs playing this role;

f) interdependencies of roles (e.g. Role 10A5 requires Role "B15" to be present).

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8.4.4 Interoperability demands among roles

Interoperability demands among roles shall be specified. Annex B is applicable here. The following are required to be specified:

a) IDs for role demands on interoperability;

b) IBs for the role;

c) IB sequences/dependencies;

d) Timer expiration;

e) Error conditions.

8.4.5 Role states

States of a role shall be specified. Annex B is applicable here. States are required to conform to the following rules:

Rule 108:

A role state specifies the state(s) of a role.

Rule 109:

A role state shall belong to only one role.

Rule 110:

A role state changes upon the occurrence of an event.

Rule 111:

A state may be a current state to one or more transitions.

Rule 112:

A state may be the next state to one or more transitions.

Rule 113:

A state is specified by the following role state attribute types:

a) Role state identifier (mandatory)

The role state identifier shall be unique, linguistically neutral, unambiguous and referenceable.

b) Role state name(s) (conditional or optional)

c) Role state definition (mandatory)

8.4.6 Role transitions

A role transition is defined "as the process of changing from one state to another within a given role".

Rule 114:

Within an Open-edi scenario, a role transition is defined by: (a) the current state of the role; (b) the event which triggers the transition; (c) the actions started by this transition; and, (d) the next state of the role of this transition.

Rule 115:

A transition shall belong to only one role.

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Rule 116:

A transition may be triggered by only one event.

Rule 117:

A transition may start one or more actions.

Rule 118:

A transition may have one current state and may have one next state.

Rule 119:

A role transition is specified by the following attribute types: (a) state/transition matrix row number of a state/transition table; (b) user specified sequence number of an Information Bundle sequence chart; and, (c) other.

8.4.7 Role events

A role event is a stimulus for a role to take action (e.g. receipt of an Information Bundle).

Annex B is applicable here.

Rule 120:

A role event triggers a transition.

Rule 121:

A role event is triggered by only one Information Bundle or by only one internal behaviour/function of a role.

Rule 122:

A role event is specified by the following role event attribute types:

a) **role event identifier (mandatory)**

   The role event identifier shall be unique, linguistically neutral, unambiguous and referenceable.

b) **role event name(s): (conditional or optional)**

c) **role event definition: (mandatory)**

8.4.8 Role actions

Rule 123:

A role action is started by a transition.

Rule 124:

A role action sends one or more Information Bundles and/or triggers one or more internal functions.

Rule 125:

A role action is specified by the following role action attribute types:

a) **role action identifier: (mandatory)**

   The role action identifier shall be unique, linguistically neutral, unambiguous and referenceable.

b) **role action name(s): (conditional or optional)**

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c) **role action definition: (mandatory)**

8.4.9 Role internal function

An internal function is a procedure which describes the internal behaviour of a role, i.e. behaviour deemed to be internal behaviour in the context of the business transaction as specified in a scenario.

Rule 126:

An internal function may trigger one event and may be triggered by one or more actions.

NOTE 1 It could well be that business functions which are considered external behaviour of roles in one Open-edi scenario can in another scenario be considered internal functions.

NOTE 2 An internal function can be used to describe the "WHATs" of the internal behaviour of a role without specifying the "HOWs", i.e. as a set of requirements one party expects another party to undertake prior to the transmission of an Information Bundle to note that the required business function has been completed.

NOTE 3 It is up to those modelling a role (and then registering it for re-use) to decide whether internal functions need to be included.

EXAMPLE In a simple example, an Information Bundle can be found only between a role and an internal function (e.g. an "order timeout"). A more advanced example is a buyer role which accepts a list of alternative sellers from the buyer internal function. The buyer role can send order requests to the sellers in the list and accept the first one which can deliver the order. In this case, different Information Bundles can exist between role and internal functions.

8.4.10 Role demand on Open-edi Support Infrastructure (OeSI)

Rule 127:

Role demand(s) on Open-edi support infrastructure, if any, shall be specified.

8.5 Rules for specification of Open-edi Information Bundles (IBs) and IB attributes

8.5.1 Rules governing Information Bundles (IBs)

An Information Bundle (IB) is defined in 3.30.

Persons (as individual, organizations, or public administrations) that have to process Information Bundles they have never dealt with before need, therefore, to be able to determine the meaning of them. The key criteria for this process is that the sender and the receiver of such IBs have the same understanding about the semantics of the data they have exchanged. For this purpose, the Open-edi Reference Model notes that a SC may be atomic or composed of other SCs.

Furthermore, the function of the Information Bundle as a whole, needs to be completely understood and representable as well. For instance, depending on the context in which it is sent, a purchase order may have the function of an offer or an acceptance. The semantics of the underlying data is the same in both these cases. It seems that two options exist to solve this. The first option assumes that this knowledge can be represented as state changes inside the role description. Another approach would be to model these functions explicitly and associate this information with the Information Bundle instead of the role. The latter could be done by using a theory from linguistic philosophy (the so-called Speech Acts) which identifies some basic functions of utterances (such as request, confirm, order, etc.). This is an open issue.

Whatever the approach, it is necessary that the Open-edi Description Technique include a formal way to describe the semantics of the content of Information Bundle. For example, the role will need, in some cases, to refer to some values of instances of Semantic Components.

EXAMPLE Take the example of insurance, an Information Bundle which is an accident report and Semantic Components thereof which describe damages. These damages can be car damages or physical injuries. Let us suppose that when there is an accident report to an insurance company, if there are some human beings injured, then an expert is required to be involved; if not no expert is required. Where an expert is required the description of the role will require reference to a value of a Semantic Component of the Information Bundle.

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It is therefore necessary to document the requirements on the OeDT to describe Information Bundles. A second advantage of this approach is that at the Open-edi scenario level, the only information that may be needed is the identification of the Information Bundles and a reference to the repository(ies) where the formal specification of the semantics can be found.

Rule 128:

A formal description of Information Bundle is used to model the semantic aspects of the business information to be exchanged and are constructed using Semantic Components.

Rule 129:

An Information Bundle consists of one or more Semantic Components and/or other Information Bundles.

Rule 130:

Information Bundles are the bindings between Semantic Components and the roles.

The sender binds the role to the Information Bundle for the scenario.

The semantic aspects of the business information to be exchanged are best understood by first specifying them in plain text, followed by specification in Formal Description Techniques. (Refer to Guidelines for Rule 88)

8.5.2 Information Bundle (IB) attributes and associated rules

8.5.2.1 List of Information Bundle Attributes

The attributes of an Information Bundle need to be clearly specified (in plain text). Annex B is applicable here. The attribute types of an Information Bundles include the following (and are further explained in the Clauses which follow):

a) IB identifier (mandatory)

b) IB name(s) (conditional or optional)

c) IB purpose (mandatory)

d) Business rules controlling content of IBs (mandatory)

e) IB external constraints on business requirements governing content of an IB, i.e. laws and regulations (mandatory)

f) IB contents (mandatory)

g) IB security service requirements

h) IB recorded information retention – business rules and constraints (optional)

i) IB recorded information retention - external constraints on business requirements, i.e. laws and regulations (optional, i.e. as applicable)

j) IB validity characteristic (optional)

k) IB dependency among SCs of the same Information Bundle (as applicable)

In addition, there are also requirements for the specification of:

l) IB information for interoperability

m) IB Demands on Open-edi support infrastructure.

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8.5.2.2 Information Bundle attribute: IB identifier

Rule 131:

Each IB shall have an Identifier, and the IB identifier shall be unique, linguistically neutral, unambiguous and referenceable.

Rule 132:

The IB Identifier shall be constructed autonomously.

NOTE An IB is composed of one or more Semantic Components and thus can have a different meaning and use in the context of one role than in the context of another role.

8.5.2.3 Information Bundle attribute: IB name(s)

Rule 133:

An IB may have one or more names: an IB name is the designation of the IB ID by a human interface equivalent linguistic expression, and more than one IB name as human interface equivalent linguistic expressions may be associated with an IB ID, (e.g. as "aliases").

The specific human interface equivalent linguistic expression used to designate an IB ID can be:

a) the results of an agreed common business convention or practice (internally or by business sector), i.e. internal constraints only; or,

b) prescribed by laws and regulations of a jurisdictional domain (at the international, regional, national, etc., levels, or for an industry sector, etc.), i.e. including external constraints.

8.5.2.4 Information Bundle attribute: IB purpose

Rule 134:

The IB purpose shall be to specify the nature of the contents or concepts of the IB.

As defined in ISO/IEC 14662, an Information Bundle is the formal description of the semantics of the information to be exchanged by Open-edi Parties playing roles in an Open-edi scenario. The IB is used to model the semantic aspects of the business information. Information Bundles are constructed using Semantic Components.

8.5.2.5 Information Bundle attribute: business rules controlling content of IBs

Rule 135:

Any business rules controlling the content of an IB shall be identified and the nature and functioning of these rules explicitly stated, and the source of such business rules shall also be referenced.

8.5.2.6 Information Bundle attribute: IB external constraints on business requirements governing content or concept(s) of an IB

Rule 136:

Any external constraints arising from laws and regulations governing the content of an IB shall be identified, the requirements explicitly stated and the source referenced.

Rule 137:

Any IB created to meet a requirement of external constraints of the nature of laws and regulations should be so identified, the contents of the IB explicitly defined, at the level of granularity required, and the source law/regulation referenced.

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8.5.2.7 Information Bundle attribute: IB contents

Rule 138:

Semantic Component IDs, and/or IB IDs contained in an IB, shall be specified.

For example, IB 25F6 can consist of IB 25F plus one added SC. In a logistics chain, the completion of a role often results in the addition of an IB to the set of IB(s) received and the sending out/forwarding of the IB(s) received with the added SC(s) as a new IB. For example, in the clearance of goods at customs the key IB that a custom broker needs to complete an instantiation of the customs clearance process is the "release number" from the Customs authority. This “release number” would be the added SC.

8.5.2.8 Information Bundle attribute: IB security service requirements

Rule 139:

Security service requirements that have to be satisfied pertaining to IBs shall be stated including non-applicability. (See further Annex B)

EXAMPLE An IB can be required to be kept confidential when exchanged among Open-edi Parties playing roles in an Open-edi scenario. Or authentication can be required.

8.5.2.9 Information Bundle attribute: IB recorded information retention – business rules and constraints

Rule 140:

Requirements for retention of recorded information for an IB, if any, shall be specified as well as which OePs involved in the associated role(s) have the primary responsibility for retaining this recorded information.

EXAMPLE A seller can require a buyer to retain the ID of an IB and its recorded information contents issued by the seller to the buyer in relation to a specific good, service, and/or right for the period of time associated with post-actualization aspects of a business transaction. This can be the ID number of the business transaction issued by the seller with respect to the seller’s “return of good policy” which the seller requires the buyer to retain, or a recorded information retention requirement(s) arising from various post-actualization requirements between a buyer and seller (as well as agents or third parties) as applicable, (e.g. warranties).

NOTE Buyer and seller can agree to use a third party to retain a records retention/archiving service, (e.g. as part of a notarial-type service).

8.5.2.10 Information Bundle attribute: IB recorded information retention - external constraints on business requirements

Rule 141:

Requirements arising from laws or regulations for the retention of recorded information applicable to the IB, if any, shall be explicitly stated and the source(s) referenced.

8.5.2.11 Information Bundle attribute: IB time validity characteristics

Rule 142:

IB time validity characteristics shall be explicitly specified.[23)]

Guideline 142G1:

When an IB time validity character attribute is specified the temporal schema referenced should be specified.

23) Temporal referencing is addressed in ISO/IEC 15944-2. See further ISO 19108.

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The other definition of latency supported by the IB is the time by which the intended recipient(s) of the IB is required to make the response by the scenario definition to comply with the scenario constraints.

When this use of latency is selected, the time for the scenario defined response is required to be specified, either as the time period following the sending of the relevant IB, or as the time, as specified by Universal Coordinated Time (UTC) or GPS time, by which the scenario defined response is required to have taken place.

Other examples of time validity characteristics include response date, delivery date, due date, expiry date, etc.

8.5.3 IB information for interoperability

Rule 143:

Interoperability requirements for IBs shall be specified.

Interoperability requirements for IBs already identified include:

a) relationship of SC(s) with IB(s), including specification of dependencies and interdependencies (See further Annex B); and,

b) list of SCs and their attributes including definitions.

NOTE This is where the OeS template is filled out with the IDs of the Semantic Components. (See further ISO/IEC 15944-2).

8.5.4 IB demands on Open-edi Support Infrastructure (OeSI)

Rule 144:

IB demands on the Open-edi Support Infrastructure shall be specified.

NOTE The minimum data elements needed to be specified as IB demands on Open-edi infrastructure are provided in the ISO/IEC 15944-2.

The Open-edi Reference Model specifies that the set of functional capabilities modelled in the OeSI provides for initiating, operating, and tracking the progress of Open-edi transactions. The set of functional capabilities of the Open-edi support infrastructure shall implement a catalogue of predefined demands on the Open-edi support infrastructure include:

a) handling of DMA requests;

b) negotiation of role playing;

c) specification of the Open-edi configuration;

d) interpreting and processing of a role;

e) making available the data values received from Information Bundles from Open-edi systems;

f) capture of the data values provided as a result of behaviour choice;

g) provision of security services and auditing services;

h) tracking and notification of Open-edi transaction status and progress across applications;

i) management of error reporting;

j) management of communications.

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8.5.5 Rules for the specification of Semantic Components and Semantic Component attributes

8.5.5.1 Rules governing Semantic Components

A Semantic Component (SC) is defined as "a unit of recorded information unambiguously defined in the context of the business goal of the business transaction".

Rule 145:

A Semantic Component may be atomic or composefd of other SCs.

NOTE Within one business context and associated goal of a business transaction, a Semantic Component can be considered to be atomic in electronic data interchanges among participating Open-edi Parties. Within another business transaction, this "atomic" Semantic Component can be considered to be composed of several other SCs. "Atomicity" of Semantic Components is thus a matter of granularity and is context dependent on the business requirements.

What is an atomic component, i.e. an indivisible data element, is dependent on the context. Within one business context and associated goal of a business transaction, a Semantic Component may be considered to be atomic in electronic data interchanges among participating Open-edi Parties. Within another business transaction, this "atomic" Semantic Component may well be considered to be composed of several other SCs. "Atomicity" of Semantic Components is thus a matter of granularity and is context dependent on the business requirements. For example, in one business transaction, an IB pertaining to a client name or a street name address can be represented by a single SC. In another business transaction an IB pertaining to a client name is composed of several SCs, one of which may in turn be composed of several SCs. Similarly, an IB pertaining to the information pertaining to a street number address is composed of many SCs, several of which in turn are composites, i.e. data structures containing multiple more discrete and granular SCs.

Rule 146:

A Semantic Component can be a single (simple) data element, a composite data element, or a data structure, (e.g. a set of data elements which interwork in order to ensure semantic completeness and ensure the required unambiguousness).

Rule 147:

A Semantic Component shall be a component of at least one Information Bundle when exchanged among Open-edi Parties.

Rule 148:

A Semantic Component shall be specified using Semantic Component attributes.

The attributes of a Semantic Component are required to be clearly specified (in plain text). The attribute types of a Semantic Component include the following (and are further explained in the Clauses which follow).

Rule 149:

Where the set of permitted values of the Semantic Component is governed by a code set, the code set used shall be identified and referenced. By using such code sets Open-edi Parties agree to the business practice(s) and rule set(s) of which the code set referenced forms part.[24)]

NOTE 1 For example, if an amount of payment is specified by a SC through the use of a type of currency or fund-based on code for ISO 4217 standard of *"Codes representing Currencies and Funds*", Open-edi Parties by using a SC which references ISO 4217 agree to be bound by the rules and conditions governing ISO 4217. Also, the Open-edi Information System has to have the facilities to support ISO 4217.

NOTE 2 Another common example in business transactions is the use of codes representing International Commercial Terms, (e.g. C.O.D., F.O.B., etc.). A Semantic Component which references a code set used by Open-edi Parties in (as part of) an Information Bundle exchanged among roles means that such Open-edi Parties agree to be bound by and accept the rules and obligations of which the code set referenced of which it forms part.

24) See further the ISO/IEC 15944 standards which introduce and use the concept of “coded domain”; namely, ISO/IEC 15944-2, ISO/IEC 15944-4, ISO/IEC 15944-5, ISO/IEC 15944-7, ISO/IEC 15944-8 and ISO/IEC 15944-10.

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8.5.5.2 Rules governing Semantic Component attributes

8.5.5.2.1 List of the Semantic Component attributes

The attributes of a Semantic Component are required to be clearly specified. The attribute types of a SC include the following:

a) SC identifier (mandatory)

b) SC name(s) (optional)

c) SC definition (mandatory)

d) SC security service requirements (mandatory)

8.5.5.2.2 Semantic Component attribute: SC identifier

Rule 150:

Each Semantic Component shall have an identifier, and the SC identifier shall be unique, linguistically neutral, unambiguous and referenceable.

The key purpose is to ensure IT-enabled unambiguous referencing required to maximize re-use of SCs.

Rule 151:

The SC identifier shall be constructed autonomously.

8.5.5.2.3 Semantic Component attribute: SC name(s)

Rule 152:

A SC may have one or many names.

The name for a single SC should be as unique as possible and help the understanding of the purpose and the contents of a SC.

Rule 153:

A SC name is the designation of the SC ID by a linguistic expression., and thus more than one SC name as human interface equivalent linguistic expressions may be associated with an SC ID, (e.g. as "aliases").

8.5.5.2.4 Semantic Component attribute: SC definition

Rule 154:

A Semantic Component shall be fully defined.

In addition to a unique ID, the mandatory attributes of a semantic component include name(s), definition, data type, and obligation.

8.5.5.2.5 Semantic Component attribute: SC security service requirements

Rule 155:

Security service requirements that have to be satisfied pertaining to SCs shall be stated including non-applicability.

For example, an Open-edi Party can require that one or more of the SCs comprising an IB when exchanged among Open-edi Parties be kept confidential by the other parties.

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8.6 Business requirements on FSV (business demands on Open-edi Support Infrastructure)

The BOV is intended to capture the requirements placed upon the FSV by the business process. However, there are a number of requirements of a technical nature which would be assumed in the BOV to have been addressed elsewhere or may not be obvious from the analysis of the business process and there is no mechanism in BOV for capturing them.

These may be identified by the following categories:

a) identification, naming and addressing requirements for clear and unambiguous identification of FSV components, as well as associated identification, naming and addressing information as required to ensure that all parties processing those components are able to derive the same meaning from them;

b) quality of service of the network or value added service used to support the exchange of information between Open-edi Parties in terms of reliability, availability;

c) security techniques to be applied to the information to be exchanged in compliance with general business requirements of one or more of the parties, or in order to meet legal requirements or trade or other sectoral demands;

d) requirements for logging, journalising or otherwise recording information in order to meet general legal, commercial, contractual or accounting/auditing purposes as well as for the purposes of obtaining or maintaining statistical or other reporting information;

e) determination of the syntax or other encoding technique to be applied to the information for the purpose of exchange.

These are captured as a catalogue of demands which can be imposed on a scenario or any of its components. The catalogue identifies all the capabilities that are available to the user.

The catalogue of demands is used following the BOV modelling work to ensure that the requirements have been captured even if they were not addressed by the FDT that was used, and that they are included in the requirements to be met by the FSV. These requirements are a further dimension of the capabilities of the FSV which may cause a specific role or Information Bundle to be inappropriate for use with a particular BOV model.

The following relationships exist between BOV and FSV:

a) an Open-edi scenario may be implemented by one or more Open-edi configurations;

b) an Open-edi configuration may support one or more Open-edi scenarios;

c) a role may be played by one or more DMAs;

d) a DMA may play one or more roles;

e) an Information Bundle may be mapped to one or more Open-edi user data; and,

f) an Open-edi user data may be mapped to one or more Information Bundles.

The interaction between internal functions and roles may be mapped to one or more implementation models in the FSV. Such implementation models can include such concepts as: (a) an IT System as an implementation of an internal function; or, (b) relationships between IT Systems and Open-edi user data.

Such concepts are needed if the interface between information systems and a DMA are modelled as an application program interface (API), as a client/server connection, etc. FSV models shall be traceable to a corresponding BOV model. The BOV model defines the semantic and IT platform independent specification of the possible interfaces in the FSV.

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9 Primitive Open-edi scenario template

9.1 Purpose

The purpose of an Open-edi scenario template is to ensure that all the information required for the Business Operational View (BOV) of an Open-edi scenario, its components and all attributes required to be specified, (see Clause 8), (and registered for re-use) are captured in a systematic and explicit manner.

The primitive template is based on an initial set of requirements already identified in ISO/IEC 14662:2010, 5.1 to which are added the results of standards development work on the BOV. The order and grouping of the items in the BOV Template are based on that of Clause 8 itself which in turn is based on development of Open-edi scenarios based on actual business cases.

A "Decision Code" [in Col. (2)] is required to be entered to indicate whether or not an attribute is required when completion a primitive Open-edi scenario template for a particular scenario. Rule 57a and Guideline 57aG1 apply here (See 7.3.1) and provide instructions on the use of Decision Codes. (For an example of the application of the use of Decision Codes as applied to Scenario Scope Attributes, see H.2.1.

The use of Decision Codes:

a) support the ISO/IEC JTC1 strategic direction of "cultural adaptability" by allowing for multilingual equivalents of these two codes from a global perspective; and,

b) facilitate computer processability, search-ability and reference-ability of these scoping attributes of Open-edi scenarios.

The assignment of "Open-edi Scenario Component ID Code" numbers is of a block-numeric nature. For the "Scope TAG ID Codes" the block numeric numbers 1000 to 1999 are reserved. (See 7.3) For the "Component ID Code" numbers, the block numeric 2000+ has been reserved, i.e. up to "9999".

The purpose is to ensure that all the numeric identifiers for attributes will be unique, unambiguous and linguistically neutral within ISO/IEC 15944-1 as well as in their use in ISO/IEC 15944-2.

This approach will facilitate unambiguous referencing and registration necessary for re-usability and interoperability of Open-edi scenarios and their components. It will also facilitate support of localization requirements and use of multiple human interface linguistic equivalencies for these numeric tags. In addition, the presence-type attributes defined in Annex B shall be accounted for in OeDT representations of an Open-edi scenario.

NOTE Registration of Open-edi scenarios and scenario components is addressed in ISO/IEC 15944-2.

See Annex H for an example of the scenario descriptions using the Open-edi scenario template.

9.2 Consolidated template for specifying attributes of Oen-edi scenario, roles and Information Bundles (IBs)

NOTE The primitive Open-edi scenario template is more fully addressed in ISO/IEC 15944-2 which focuses on registration of scenarios and their components as business objects. This includes scenario components, roles and information bundles (IBs).

The purpose of the Template is to ensure that all the specification requirements identified in Clause 8 are captured in a systematic manner. The Open-edi Scenario Template is structured in matrix form and consists of two distinct parts, namely:

a) those focused on the IT-interface perspective; and,

b) those focused on the human-interface perspective.

NOTE The physical appearance of the matrix of the template is of an illustrative nature. (See further ISO/IEC 15944-2)

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9.2.1 IT-interface needs perspective

From an IT-interface needs perspective, all that is required is that of a unique, linguistically neutral and unambiguous identifier for scenario attributes, and scenario components and their attributes is provided.

NOTE The introduction of the concept and role of "IT-interface" is important in eBusiness and Open-edi. It is formally developed in ISO/IEC 15944-2 along with its definition as well the use of IT-interface equivalents.

In order to facilitate use and management, a block numeric numbering scheme is used to assign these identifiers as follows:

— Scenario attributes	2000 through 2999
— Role attributes	3000 through 3999
— Information Bundle attributes	4000 through 4999
— Semantic Component attributes	5000 through 5999

Within each of these major blocks there are sub-blocks of numbers reflecting the hierarchy and relationships of sets of attributes.

Implementers of Open-edi scenarios are free to map these identifiers to non-intelligent identifiers in their internal applications, (e.g. as part of their internal behaviour).

9.2.2 Human Interface Equivalent (HIE) needs perspective

Human interface needs perspectives are on the whole of a linguistic nature. Natural language(s) are used to provide equivalent linguistic expressions understandable for use by human beings. Since human beings use multiple natural languages, the Template matrix is structured to allow for expandability into as many HIE terms as may be required by users of this document.

The introduction of the concept and role of "Human Interface Equivalent (HIE) is important in eBusiness and Open-edi. It also is necessary to be able to support cultural adaptability as well as legal/regulatory requirements. This concept is formally developed and defined in ISO/IEC a. As such, with respect to HIEs, the Open-edi implementations shall also meet the requirements of ISO/IEC 15944-2.

9.2.3 Consolidated template of attributes of Open-edi scenarios, roles and Information Bundles

See Table 3 for the consolidated template of attributes of Open-edi scenarios, roles and information Bundles.

Table 3 — Consolidated template of attributes of Open-edi scenarios, roles and Information Bundles

IT-Interface		Human-Interface Equivalents (HIEs)			Spare
Open-edi Scenario Component ID Code	**Decision Code**	**Name (English in the IT standardization context)**	**Name (French in the IT standardization context)**	**Name (Other)**	
(1)	(2)	(3)	(4)	(5)	(6)
2000		**OPEN-EDI SCENARIO ATTRIBUTES**			
2010		OeS Identifier			
2020		OeS Name(s)			
2030		OeS Purpose			
2040		OeS Set of Roles OeS Business Requirements, Rules and Constraints			
2050		OeS Set of Information Bundles OeS Scenario Inheritance Identifier(s) and Cross-References			
2060		OeS Set of Requirements on Open-edi Parties			

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Table 3 *(continued)*

IT-Interface		Human-Interface Equivalents (HIEs)			Spare
Open-edi Scenario Component ID Code	**Decision Code**	**Name (English in the IT standardization context)**	**Name (French in the IT standardization context)**	**Name (Other)**	
(1)	(2)	(3)	(4)	(5)	(6)
2070		OeS Set of external constraints on Business Requirements, i.e. Laws and Regulations			
2080		OeS Inheritance Identifier(s) and Cross References			
2090		OeS Security Service Requirements			
2100		OeS Communication - Quality of Service Requirements			
2120		OeS Role Requirements and Constraints			
2130		OeS Dependency among Roles in a Scenario			
2140		OeS Dependency among Information Bundles in a Scenario			
2150		OeS Dependency among Semantic Components of different Information Bundles			
2500		OeS DEMANDS ON OPEN-EDI PARTIES			
2600		OeS DEMANDS ON OPEN-EDI INFRASTRUCTURE			
3000		**ROLE ATTRIBUTES**			
3005		Role Identifier			
3010		Role Name(s)			
3015		Role Purpose			
3020		Role Business Goal(s)			
3025		Role Business Rules and Constraints			
3030		Role Inheritance Identifiers and Cross-References			
3035		Role external constraints on Business Requirements, i.e. Laws and Regulations			
3040		Role Security Service Requirements			
3045		Role Communications and Quality of Service Requirements			
3050		ROLE DEMANDS ON OPEN-EDI PARTIES			
3060		INTEROPERABILITY DEMANDS AMONG ROLES			
3065		Role States			
3070		ROLE TRANSITIONS			
3075		ROLE EVENTS			
3080		ROLE ACTIONS			
3085		ROLE INTERNAL FUNCTION			
3090		ROLE DEMANDS ON OPEN-EDI SUPPORT INFRASTRUCTURE			
4000		**INFORMATION BUNDLE ATTRIBUTES**			
4010		IB Identifier			

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Table 3 *(continued)*

IT-Interface		Human-Interface Equivalents (HIEs)			Spare
Open-edi Scenario Component ID Code	**Decision Code**	**Name (English in the IT standardization context)**	**Name (French in the IT standardization context)**	**Name (Other)**	
(1)	(2)	(3)	(4)	(5)	(6)
4020		IB Name(s)			
4030		IB Purpose			
4040		Business Rules Controlling Content of IBs			
4050		IB external constraints on Business Requirements, Governing Content of an IB, i.e. Laws and Regulations			
4060		IB contents			
4070		IB recorded information retention – business rules and constraints			
4080		IB recorded information retention – external constraints on business requirements, i.e. laws and regulations			
4085		IB time validity characteristics			
4090		Relationship of Semantic Components within an IB			
4100		IB security service requirements			
4200		IB INFORMATION FOR INTEROPERABILITY			
4300		IB DEMANDS ON OPEN-EDI SUPPORT INFRASTRUCTURE			
5000		**SEMANTIC COMPONENT ATTRIBUTES**			
5010		SC Identifier			
5020		SC Name(s)			
5030		SC Definition			
5040		SC Security service requirements			

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10 Requirements on Open-edi description techniques

10.1 Overview

The requirements that candidate Open-edi Descriptive Techniques should support are listed in this clause; 10.1 lists a set of general requirements, while 10.2 and 10.3 list the specific requirements for roles and Information Bundles respectively. The main assumptions that serve as the basis for these requirements are found in the preceding clauses of this Clause.

10.2 General requirements on Open-edi description techniques

Open-edi scenarios will be written by different user communities and shall be compliant with the BOV related standards.

Moreover, it is highly desirable that several tools exist on the market and that the standards of the OeDTs provide for a neutral format of exchange between the tools in order that specifications produced on one tool

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of the market can be re-used and modified on another modelling tool of the market as is already the case with some computerized workflow tools.

Rule 156:

OeDTs should provide both for (1) computer interpretability and process-ability at the IT interface among heterogeneous information systems; and, (2) a human understandable (interpretable) linguistic equivalent(s) at the human interface level.

NOTE The use of unique, linguistically neutral, and unambiguous identifiers for all scenario and scenario components, facilitates mapping the computer interpretable formal specification into one (or more) human understandable linguistically based equivalents.

Rule 157:

Every OeDT shall allow for the verification whether all possible initiation paths of a scenario lead to allowable termination.

Rule 158:

OeDT properties which shall be supported include finitude, comprehensiveness, completeness, independence and canonicality.

The following properties will be used as a yardstick to measure if a certain representation is primitive, in the sense that it has the sufficient and necessary modelling constructs to represent phenomena from a certain domain (in the case of Open-edi this domain is the exchange of data among parties).[25)]

Finitude: the number of modelling constructs are required to be smaller than the number of real-world phenomena these constructs can represent.

Comprehensiveness: every phenomenon within the boundaries of the domain to be modelled can be expressed as a structure of modelling constructs.

Completeness: describes a phenomenon in terms of modelling constructs which reveal all the necessary information about this phenomenon.

Independence: no modelling construct is definable in terms of another construct.

Canonicality: no two unique phenomena are definable by the same structure of modelling constructs.

10.3 Requirements on OeDTs for roles

The behaviour to be performed by the Open-edi Party playing the role has to be modelled and interrelated. This means that a process modelling technique has to be chosen for modelling activities and role interaction, in addition to a data modelling technique capabilities.[26)] An OeDT need also have the ability to support a hierarchical decomposition of the roles as well as inheritance and cross-referencing.

The state of each Open-edi Party playing a role should be represented in order to be able to analyse the dynamic properties of a scenario. A state describes the status of a role, and may be changed when one or more events have occurred. The initial state (starting point) and the final state(s) (termination point(s)) of each Open-edi Party should be unambiguously stated. Each role shall have only one initial state, but may have one or more alternative final states. A state is required to belong to only one role. The overall status of the transaction, governed by the Open-edi scenario, is composed of the states of each of the roles.

A transition between states within a given role is triggered by events and results in actions. A state may be a current state to one or more transitions, and may be the next state to one or more transitions. Three kinds of events are to be represented: (1) the receiving of Information Bundles, (2) external choices; and (3) time-outs. Where Information Bundles are received, a reference to the unique identifier of this Information Bundle

25) This list is based on a study by Winograd (1978) on typical features of semantic primitives.

26) Several classes of such techniques and given specific examples of existing FDTs for each of these classes (for instance IDEF, Petri Nets, Data Flow Diagrams, etc.) were developed in ISO/IEC 14662:2010, Annex C. Currently UML is being used.

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(see 8.5.2.1) are required to be present, as well as the requirements from the BOV resulting set or catalogue of demands posed on the FSV level for the exchange of this Information Bundle. External choices should be represented to allow the specification of alternative ways of proceeding, depending on events beyond the control of the Open-edi Party playing the role. This includes the handling of error messages coming out of the FSV. Finally, it should be possible to explicitly model time-outs in order to be able to model deadlines and to detect if an expected Information Bundle has not been received from another Open-edi Party.

Two kinds of actions are to be represented: (1) the sending of Information Bundles; and, (2) the making of (internal) decisions. Where Information Bundles are sent, a reference to the unique identifier of this Information Bundle (see 8.5.2.1) is required to be present, as well as the requirements from the BOV resulting in a set or catalogue of demands posed on the FSV level for the exchange of this Information Bundle. Internal choices made by the Open-edi Parties playing the roles need to be represented (referenced), although the actual internal rules on which these choices are based need not be modelled. These internal rules are usually confidential to the Person. Thus, only the fact that a choice is made is represented, not how this choice is made.

The ordering of the exchanges of Information Bundles may have strict temporal specifications, for instance in a business transaction conducted as a series of dialogues interactively. Hence, both absolute and relative temporal constraints have to be expressible in the OeDT as well. Also, the specification of concurrent events/actions has to be supported.

It should be noted that it is not trivial to represent choices and concurrency with a single FDT, since many techniques are only strong in one area. For instance, state transition diagrams or networks are weak in the expression of concurrency but strong in choice. Program Evaluation Review Technique (PERT) diagrams are exactly the inverse. However, FDTs do exist that are capable of doing this.

The requirement to be able to model internal and external choices, the events that influence the execution of a role, the inclusion of timers, as well as their concurrent interoperation, guarantees that all common forms of exception handling can be modelled.

10.4 Requirements on OeDTs for Information Bundles

An OeDT are required to have the ability to support a hierarchical decomposition of the Information Bundle into the Semantic Components it consists of.

The OeDT for Information Bundles needs to represent the inter-working between Semantic Components, both within an Information Bundle and between Semantic Components in different Information Bundles. This means that the following aspects have to be explicitly covered:

a) the representation of the cardinality of these relationships;

b) the representation of the composition of Information Bundles in terms of Semantic Components;

c) the representation of the dependency between Semantic Components within an Information Bundle; and,

d) the representation of the dependency between Semantic Components in different Information Bundles.

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Annex A
(normative)

Consolidated controlled vocabulary definitions and associated terms, as human interface equivalents (HIEs), English and French language equivalency in the IT standardization context

A.1 Purpose

All parts of the ISO/IEC 15944 series of eBusiness standards maximize the use of existing standards, where and whenever possible, and in particular relevant and applicable existing terms and definitions of concepts as found existing ISO/IEC, ISO, or IEC existing standards. They are re-used either "as is" or as "adapted". These are many examples of the application of this rule found in Clause 3.

In addition, since the inception of the development multipart ISO/IEC 15944 eBusiness standard, back in 2000, the need for unambiguous definitions was recognized to minimize possible ambiguities in the same, as well as, to facilitate their implementations by users in an international and multilingual eBusiness context.

NOTE For the 1st edition of ISO/IEC 15944 in 2002, as well as for the 2nd edition in 2011, the Annex A titled *Consolidated list of terms and definitions with cultural adaptability: ISO English and ISO French language equvalancy*, contained a number of important sub-clauses, namely:

— A.4 *"Organization of Annex A — Consolidated List in Matrix Form"; and,*

— A.5 "Consolidated List of *ISO/IEC 15944-1* Terms and Definitions"

The 1st or 2nd editions of ISO/IEC 15944-2, ISO/IEC 15944-4, ISO/IEC TR 15944-6, ISO/IEC 15944-8, ISO/IEC 15944-9, ISO/IEC 15944-10, and ISO/IEC 15944-12 contain a similar approach to Annex A as well as these two detailed subclauses.

In the meantime, ISO/IEC JTC1/SC32 eBusiness developed a new standard ISO/IEC 15944-7. Subsequently, the contents and tables of subclauses A.4 and A.5 were transferred to ISO/IEC 15944-7:2009, D.2.

Therefore, in this document, the remaining text of Annex A has been reorganized accordingly. This includes orienting its focus in a HIEs context (a very useful concept introduced in the 1st edition of ISO/IEC 15944-2, and subsequestly used in all parts of the ISO/IEC 15944 series).

A.2 Maximizing unambiguity and quality control

In order to maximize unambiguity and ensure necessary quality in the ISO/IEC 15944 series of eBusiness standards, as well to facilitate multilingual and international interoperability of key eBusiness definitions and their associated terms, the concept and definition of "human interface equivalencies (HIEs)[27)] was developed for several reasons, the four primary reasons being that:

a) international standards development, by its very nature, focuses on identifying new issues, needs and resolving them. This includes identification of new concepts, developing an "international standard" definition for the same, and then deciding on the label, i.e. term, to be assigned to the definition of this new concept. Here it is most likely that the "term" assigned to the definition of the new concept will be, as what is known in terminology work as an invented, i.e. "coined" term[28)]. This means that such new English language "coined" terms in an international standard are not found in exiting English language

27) SeeISO/IEC 15944-2:2015, 3.35 for the definition of the concept of "Human Interface Equivalent" (HIE).

28) Regarding the rules governing the assignment of a term to a new concept, and the introduction of a new, i.e., "coined term" in an international standard, see ISO/IEC 15944-7:2009, 5.3.2.

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dictionaries, i.e. they are first introduced into the English language via an ISO/IEC (as well as ISO or IEC) standard.

In order, to ensure that there is no ambiguity in the definition of a new concept. Thus, it is very likely that the introduction of these new concepts, the development of their definitions and assignment of a label, i.e. "term" to the same in an international standard will not have a semantic equivalent in another language. As such it is unlikely that equivalent translation exists. Instead, one needs to view this as a challenge of developing a human interface equivalent (HIE) in another language.

As such, it is the approach of this document and other parts of the ISO/IEC 15944 series, as well as ISO/IEC 14662 to use HIEs (see ISO/IEC 15944-2:2015, 3.35 for its definition) in English and French in the IT standardization context.

b) Where the use any part ISO/IEC 15944 of the multipart series of eBusiness standard (as well as any other ISO/IEC. ISO, IEC, ITU, etc.), involves, or impacts, an individual as the "buyer" of any good, service and/or right of any nature (including those provided to individuals by private or public sector organizations, including public administrations, then international, regional and national public policy requirements of a legal/and regulatory requirements apply).

The most common of the international legal/regulatory requirement of a "public policy" nature already identified and supported in the multipart series of ISO/IEC 15944 series of eBusiness standards as defined set of rights of an include "consumer protection[29)], privacy protection[30)], individual accessibility[31)], human rights[32)], etc. [33)].

c) ISO/IEC JTC1 has "cultural adaptability" as the third strategic direction which all standards development should support, where applicable. The other two strategic directions of ISO/IEC JTC1 standards development are "portability" and "interoperability". Here it is noted that ISO Technical Management Board (TMB) has permitted ISO/IEC JTC1 to issue its standards in the English language only, instead of in the three official languages ISO, i.e. English, French and Russian[34)].

Therefore, when a new concept, its definition and associated term is developed, it is necessary at the same time to develop HIEs for the same in one or more other languages. This approach:

— adds a level of "quality control check" as developing an equivalency in another language identifies ambiguities in the source language;

— recognizes that in languages other than English, specifying the grammatical gender of the term is essential (since the same word, i.e. character string, may well have a completely different meaning depending on its grammatical gender (see ISO/IEC 15944-5:2008, 6.2.6);

— enhances the widespread adoption and use of eBusiness standards world-wide, especially users of this document who include various industry sectors, different legal perspectives, policymakers and consumer representatives, other standard developers, IT hardware and service providers, etc.; and

— takes an IT-enabled approach which promotes interoperability from both IT interface and human interface perspective (see ISO/IEC 15944-5). An essential aspect of this approach is to assign and use the unique and unambiguous composite identifier of each term/definition pair as the ID code with which are associated multiple bilingual/multilingual semantically HIE representations.

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29) See ISO/IEC 15944-5:2008, 3.33 for the definition of the concept of "consumer protection"

30) For the ISO/IEC definition of "privacy protection", see ISO/IEC 15944-5:2008, 3.50

31) See ISO/IEC 15944-5:2008, 3.60 the definition of the concept of "individual accessibility"

32) Article 19, of the UN Charter of Universal Declaration of Human Rights specify what these are.

33) These important legal/regulatory requirements as public policy rights of an individual are introduced, explained, fully supported and defined in ISO/IEC 15944-5.

34) A primary reason here is that many ISO/IEC JTC1 standards introduce an artificial language, (e.g., a i.e., "programming language", a "database language", etc.) and thus do not use a "natural", i.e., human, language.

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d) in 2006, the United Nations adopted the UN Convention of rights of persons with disabilities (CRPD)[35]. It is noted that the concept and definition of HIE (developed as part of the 1st edition of ISO/IEC 15944-2 (i.e. 2006) was developed in support of the UN CRPD. It is noted that ISO/IEC JTC 1/SC 36 developed ISO/IEC 20016-1. Significant normative elements in the development of the ISO/IEC 20016-1, i.e. definitions, rules, etc., are based on ISO/IEC 15944 eBusiness standards.

e) The subsequent development by ISO/IEC JTC1 SC32 with the introduction of the concept and controlled vocabulary of ISO/IEC 15944 eBusiness standards. with associated principles and rules in ISO/IEC 15944-7 addresses and implements these requirements.

A.3 Role and importance of ISO/IEC 15944-7

Based on the need to maximize unambiguity and quality control in the development of an HIE approach to entries in Clause 3, ISO/IEC 15944-7 was developed to capture in a formalized manner.

— applicable international standards in the fields of terminology and vocabulary (These are primarily those of ISO/TC 37 and ISO/TC 46); and,

— apply them in a practical, IT-enabled and cost-efficient manner in a multilingual eBusiness requirements context. (Initially based on the lessons learned in the development of ISO/IEC 14662 and 1st editions of ISO/IEC 15944-1, ISO/IEC 15944-2, ISO/IEC 15944-4, ISO/IEC 15944-5 and ISO/IEC TR 15944-6.)

The fundamental principles and associated rules for the development of a definition are formalized in ISO/IEC 15944-7:2009, Clause 5 and, in particular, ISO/IEC 15944-7:2009, 5.2.

An important result is that when and wherever in the development a new part of the ISO/IEC 15944 series involves the identification of a new concept and the development of a definition (as well as assignment of a term for a new concept), the rules found in ISO/IEC 15944-7:2009, Clause 5 apply, including the requirements to provide an HIE in at least one other language.

This requirement has been met in the development of this document. For the English and French HIEs in this document, see ISO/IEC 15944-7:2009, Annex D.

ISO/IEC 15944-7 provides rules and procedures for creating and maintaining a (consolidated) "controlled vocabulary" and, basically, ISO/IEC 15944-7:2009, Annex D provides a list of HIEs that provides the minimum level of unambiguity in ISO/IEC 15944 eBusiness standards as stated in A.1.

A.4 List of terms and definition with cultural adaptability: English and French language equivalency in the IT standardization context

For English and French HIEs in this document, see ISO/IEC 15944-7:2009, Annex D.

NOTE For Russian and Chinese HIEs of the eBusiness Vocabulary terms and defintions, see in ISO/IEC 15944-7:2009, Anexes E and F, respectively.

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35) Currently, all countries who are P-members of ISO/IEC JTC1 are also signatories to the CRPD.
The development of this document had, as its primary requirement, to implement CRDP requirements in an eLearning context. In addition, its development was based on the assumption that a "requirements pertaining to a "learning transaction" were very similar to those already addressed in a "business transaction", i.e. including the need to identify where in a learning transaction the "buyer", i.e. "learner", in an JTC1/SC36 eLearning standards context was an "individual" or not (e.g. "organizations" providing eLearning services to other).
ISO/IEC 20016-1 was also found to be a base foundational "Framework" standards freely available ISO/IEC JTC standard.

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Annex B
(normative)

Codes representing presence-type attributes: mandatory, conditional, mandatory subject to a conditional, optional and not applicable

Open-edi scenarios are composed of several building blocks including Open-edi scenario attributes, and role attributes, information bundles (IBs) [as well as attributes of Semantic Components (SCs)]. All attributes are required to be specified at all times, i.e. in order to ensure explicitness and unambiguousness in the formal specification of Open-edi scenarios and scenario components. However, the nature and function of these attributes will differ depending on its context, i.e. the goal of the business transaction. And although all attributes need be specified, the actual values assigned to these attributes may contain statements ranging from "mandatory" to "not applicable" (N/A). Further, at times there are inter-workings and dependencies among attributes within each scenario component as well as among the scenario components themselves, i.e. Conditionals.

The five basic presence-type attribute types are:

a) Mandatory

b) Conditional

c) mandatory subject to a Conditional

d) Optional; and,

e) Not Applicable.

Rule B-1:

These presence-type attributes shall be accounted for in OeDT representations of an Open-edi scenario.

The coding convention for "presence" is presented in Table B.1.

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Table B.1 — Codes representing presence-type attributes: Mandatory, conditionals, optional and not applicable[a]

IT Interface		Human Interface Equivalent (Linguistic) Expressions					
		English (eng) (In the IT standardization context)		French (fra) (In the IT standardization context)		Spanish (spa) (In the IT standardization context)	
Table ID	Code	Mnemonic	Expression	Mnemonic	Expression	Mnemonic	Expression
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
15944-1:01	1	M	Mandatory	O	Obligatoire	O	Obligatorio
15944-1:01	2	C	Conditional	C	Conditionnel	C	Condicional
15944-1:01	3	m	mandatory subject to a Conditional	o	obligatoire en fonction d'un Conditionnel	o	obligatorio sujeto a un Condicional
15944-1:01	4	O	Optional	F	Facultatif	F	Facultativo
15944-1:01	9	N	Not Applicable	S	Sans objet	N	No aplica

NOTE 1 The "(eng)", "(fra)", and "(spa)" are taken from ISO 639-2.

NOTE 2 The unique and unambiguous Table Identifier is composed of the number and part of this standard, i.e. "15499-1", and the table number within that standard, i.e. "01" using the colon (:) as the separator.

NOTE 3 The columns for mnemonic, i.e. Columns "3", "4", "5", and "7" represent (1) present linguistic-based characters in use; and, (2) assist in mapping to linguistic neutral codes in Column "2". (Mnemonics are "memory aids/aides-mémoire").

[a] In this table, only the equivalent linguistic expressions in the English, French language and Spanish language equivalents in the IT standardization context are provided. This table is expandable to cover any number of equivalent linguistic expressions (and their mnemonics), (e.g. German, Russian, Chinese, Japanese, etc.), especially if one uses ISO/IEC 10646.

Rule B-2:

For all attributes of Open-edi scenarios and scenario components, the presence-type attribute shall be specified by one of the codes of Table B.1.

Rule B-3: Assignment of Codes[36)]

Table ID 15944-1:01 is meant to be exhaustive meaning all the identified business requirements are included.

If business requirements, within the scope of Table B.1, be identified which require additional conditions, these can be added. Should the number of required added codes necessitate migrating to double-digit codes, this possibility is foreseen. Change from a single-digit to a double-digit code will require change of "9" to "99" for "Not Applicable". The highest possible digit in a numeric code set, i.e. "9", "99", "999", etc., is a reserved code for "Not Applicable".

Addition of any other presence-type codes are considered user extensions and should be registered, i.e. via use of ISO/IEC 15944-2.

Rule B-4:

Code 1 = (Mandatory/Obligatoire/Obligatorio) is deemed to be self-explanatory, i.e. the attribute shall have a value.

Rule B-5:

If Code 2 = (Conditional/Conditionnel/Condicional) is used, the condition shall be specified in the form of one or more rules which shall include the provisions to be met for the value for the attribute.

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36) Table B.1 incorporates some of the elements in support of ISO/IEC JTC 1 SC3 2 standards development work pertaining to "coded domains", i.e. as introduced in ISO/IEC 15944-2, and then used in ISO/IEC 15944-4, ISO/IEC 15944-5, ISO/IEC 15944-7, ISO/IEC 15944-8 and ISO/IEC 15944-10. In ISO/IEC 15944-10, requirements pertaining to coded domains are being consolidated.

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Rule B-6:

If Code 3 = (mandatory subject to a Conditional/obligatoire en fonction d'un Conditionnel/obligatorio sujeto a un Condicional) is used, the conditional to which the attribute is related shall be specified and referenced including dependencies.

Rule B-7:

Code 4 = (Optional/Optionnel/Facultativo) is exactly that, no conditions of any kind apply.

Whether or not an actual value is assigned to an attribute with a Code 4 is completely discretionary.

Rule B-8:

Code 5 = (Not Applicable/Sans objet/No aplica) is used to state explicitly that the attribute is not applicable and there thus are no values to be found in any instantiation of the attribute.

Examples include those pertaining to there not being any external constraints, specific security or communications service requirements, etc. It is expected that in scenarios developed involving internal constraints only as well as in "simple" scenarios, the Code 5 will be used frequently with respect to the specification of scenarios, scenario attributes and/or scenario components as stated in Clauses 8 and 9.

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Annex C
(informative)

Unambiguous identification of entities in (electronic) business transactions

C.1 Overview

Annex C provides necessary informative and explanatory text for: (1) the rules and guidelines; and, (2) the terms discussed in 6.1.4. The rules and guidelines stated in bold are the same as those stated in 6.1.4, i.e. rules 4 through 8 and associated guidelines even though they have been re-numbered in this annex as Rules C.1+.

This annex maximizes use of existing ISO and ISO/IEC standards. The source of the contents of this annex is the need to respond, in a pragmatic manner, to existing real-world issues of the ability to be able to identify and reference with an acceptable level or trust and certainty all the entities which comprise parts of a business transaction (e.g. persons, objects, events, processes, etc.). Added are the challenges of doing the same or better in the dematerialized world of electronic business transactions, (e.g. as in e-commerce, e-business, e-government, e-tailing, etc.).

This annex is also meant to assist users of this document who are either not familiar with Open-edi standards in general or whose main focus to date has been on Functional Services View (FSV) standards only.

C.2 Key issues

"Unambiguous" is an issue in business transactions[37] because states of ambiguity and uncertainty are not desired from commercial, legal, consumer, and information technology perspectives. Issues of unambiguousness apply to all aspects of a business transaction and even more so to those which are EDI-based.

A key objective of this document from a business operational view is to serve as a methodology and tool for the specification and unambiguous identification of Open-edi scenarios, scenario attributes, and scenario components as re-useable elements in support of common business transactions. These and the related objectives of interoperability and re-usability of Open-edi scenarios and scenario components for business transactions require their unambiguous identification.

Unambiguous identification is required for the registration, referencing, cross-referencing, and especially re-use of scenarios, scenario attributes and scenario components.

C.3 Basic assumptions: Entities, objects and Persons

In global business transactions, common business practices and standards exist for the identification of entities comprising a business transaction including Persons. See further Annexes D and E.

Rule C-1:

Existing standards shall be used to the greatest degree possible in the building and use of scenarios, scenario attributes and scenario components[38]**.**

Even prior to the use of computer-based technologies, business practices were developed and put into place which assisted in the unambiguous identification of goods being traded worldwide and for people when

37) The terms “business” and “business transaction” are used in this annex as defined in the ISO/IEC 14662 Open-edi reference model. For the definitions of these terms, see 3.5 and 3.7, respectively.

38) Key standards for the global unambiguous identification of Persons generally, and organizations and individuals specifically, are identified and summarized from a business transaction perspective in Annex D.

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they travelled to and from various countries. Within existing business practices and information technology standards, there exist standards for the unambiguous identification of entities as material objects in the real world. It is assumed that these existing business practices, standards and techniques in support of common business functions and practices form a useful basis for finding solutions to the issues of unambiguous identification in electronic business transactions not only for goods and services but especially for “Persons” in the dematerialized world of Open-edi.

That is, in existing business transactions, and now even more so in electronic business transactions, there exists a need for the unambiguous identification of all entities which comprise a business transaction.

Information technology standards exist for the unambiguous identification of entities as parts of the global information technology/telecommunications infrastructure.

The term "entity" is defined in 3.20.

Entities in a business transaction are not only "objects" but also "Persons", "events", and "processes".

The term "object" is defined in 3.36.

Standards exist for the unambiguous identification of entities as material objects (or for things viewed as material objects). An example of assignment of unique and unambiguous identifiers to material objects are those represented in both visual and machine-readable form through ubiquitous use of bar code symbology. Another family of standards exist for the unambiguous identification of objects as locations (specified as physical and/or electronic address).[39)]

Unambiguous identification of Persons (individuals, organizations and/or public administration) in business transactions has always had peculiar issues to be addressed. These are exacerbated in the dematerialized world of Open-edi. See further 6.2 and Annex D

In order to resolve the issue of "unambiguous identification" of entities in a business transaction, i.e. Persons, objects, processes, events, etc., the issue has been decomposed into its two key components:

a) unambiguous; and,

b) identification.

C.4 Unambiguous

Rule C-2:

The degree to which ambiguity in (electronic) business transactions can be minimized is directly related to the ability to realize the opportunities in, and potential of, Open-edi as well as its widespread adoption and use.

C.4.1 The term "unambiguous" is defined in 3.66.

C.4.2 This definition of "unambiguous":

a) applies equally to business transactions which are paper-based and Open-edi based;

b) is a common requirement of all industry sectors;

c) is medium neutral, i.e. applies irrespective of the combination of IT technologies or platforms used; and

d) applies to all three components of the Business Transaction Model (BTM), i.e. "Person", "process", and "data".

39) ISO/IEC 9594 (also published by the ITU as X.500 Directory Services, X.509 Authentication Framework, etc.) provides various approaches, service solutions, for the unambiguous identification of electronic objects with as primary focus the binding of these objects to locations via a unique electronic address.

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C.4.3 With respect to the definition for the concept of "unambiguous, it is noted that:

a) the term "unambiguous" is not adequately defined in Oxford, Webster, Random House, Larousse, etc., dictionaries nor in international or national standards (including those pertaining to information technology, security services, etc.[40]);

b) the dictionaries noted define the prefix "un-" as expressing negation which when affixed to an adjective such as "ambiguous" provides the purely negative form;

c) the word "ambiguous" (or "ambiguity") is defined in a number of ways as "representing state(s) of uncertainty capable of being understood or interpreted in two or more ways"; "a lack of distinctiveness", "a level of doubt", "not clearly defined", "insecure in its indications and thus not to be relied upon", "d'une situation dont le sens est incertain", etc.; and

d) that, based on the results of these key dictionary definitions and other vocabulary tools in the context of the need for "unambiguous identification" in (electronic) business transactions, the key properties of "unambiguous" are "the state of being absolutely certain", "a state not capable of being misinterpreted", "a state to be relied upon", etc.

Guideline C-2G1:

The nature and purpose of the business transaction determines the level of certainty required, i.e. trust, reliability, accountability, etc., in the identification of the elements in a business transaction, (e.g. Person, product, service, etc.).

C.4.4 That is the goal, i.e. the nature and purpose, of a business transaction to determine the level of certainty, i.e. unambiguity, required in the identification of a Person (as well as all the other entities in a business transaction such as the goods, services, financials, etc.).

Approaching unambiguity in terms of levels of certainty allows the linkage into, and harmonization with, levels of assurance in authentication as part of security services and standards.

C.5 Identification

The issue of "identification" is separate from, and should not be confused with, that of "authentication".[41] Authentication assumes that identification has already occurred.

C.5.1 Standard definitions pertaining to authentication include those given in 3.4 (authenticity), 3.22 [(entity) identification], 3.3 (authentication) and 3.18 (distinguishing identifier).

The following guideline provides a summary of the above:

Guideline C-2G2:

The process of authentication presupposes the existence of an entity and the completion of the application of a rule-based identification process resulting in the assignment of an identifier, i.e. the authentication process is a corroboration of an identification process.

C.5.2 The term "identification" is not defined in international standards. The term "(entity) identification" is defined in 3.22.

40) In 2000, when the 1st edition of this document was developed, the term "unambiguous" could not be found in any dictionary. Consequently, the concept was defined in a business transaction context.

41) In electronic business transactions, two priority questions often asked; namely: (1) "How do I know who I am dealing with?"; and, (2) "How do I know you are who you say you are?". The first question pertains to "identification". The second question is one of "authentication". All too often one either (1) fails to distinguish between identification and authentication, and/or (2) starts with authentication and security services assuming that "unambiguous identification" has already occurred.

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C.5.3 Identification consists of a process using one or more attributes, i.e. data elements, whose value or combination of values together uniquely identify each occurrence for a "specified entity".

C.5.5 The Oxford and Webster dictionaries have definitions for "identification" as both:

a) a "process": the action or process of determining what a thing is; to recognize or establish as being a particular Person or thing; the action of identifying.

b) a "state": the recognition of a thing as being what it is.

C.5.6 Further, both the Oxford and Webster dictionaries define "identity" as:

a) the quality or condition of being the same in substance, composition, nature, properties or in particular qualities under consideration (Oxford);

b) the state or fact of remaining the same one, under varying aspects or conditions (Webster).

C.5.7 If "identification" can be assumed to be a process, one key result of such a process is the creation of an identifier. Several international standard definitions exist for "identifier".

ISO/IEC 9594 (also published by the ITU X.500 Directory Services) has the concept/term as "distinguishing identifier" which is defined in 3.18.

C.5.8 The response to the question "What is meant by identification?" can be summarized as follows:

a) there are two basic concepts/meanings imbedded; namely:

   — identification as a process; and,

   — identification as a state;

b) identification involves the use of one or more attributes, i.e. data elements, the values of which (or combination of values) uniquely identify the occurrence or existence of a specified entity;

c) identification as the quality or condition of being the same is dependent on what is "under consideration", i.e. the context, purpose and or use of the identification in a business process. Identification is therefore related to the goal of the business transaction within which it is to be used;

d) where identification is a process undertaken by a Person (usually an organization or public administration), a key result is the assignment/issuance of an (unique) identifier by that Person to the particular instance or occurrence of an object or entity within the process used[42]; and

e) the same single world object or entity may well have more than one identifier assigned to it depending on the context(s) and identification process(es) of which it can be a part. See further 6.2.2 and E.4.1.

C.5.9 Finally, "identification" both as a process or a state is related to the agreed upon goal of the business in general and within such a context that of each business transaction in particular. As such, there are degrees or levels of detail and specificity to identification. For example, a business transaction in electronic commerce involving a value of $500 or less via debit/credit card, may well require a level of certainty of information for identification which is less than that for a similar business transaction but now one with a value of over $10 000. The same holds true for electronic administration where the value of the assets involved may be low or high even though these values are of a non-monetary nature.

C.5.10 Taking into account:

a) the ISO/IEC 2382 definition of "(entity) identification";

42) Organizations responsible for maintaining an identification process and associated code scheme for the issuance of identifiers and registering the same are commonly known as "Registration Authorities" (RAs). See further 6.2.3.

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b) the various ISO/IEC definitions pertaining to "identifier";

c) the various ISO/IEC definitions pertaining to authentication;

d) the Oxford and Webster dictionaries' definitions for "identification" and "identity"; and,

e) placing these in the context of (electronic) business transactions, the ISO/IEC 15944-1,

the definition for "identification" is given in 3.26.

NOTE This definition takes into account and supports two key possibilities or options with respect to identification; namely:

Option 1: that a specified entity (or object), i.e. its occurrence or instantiation, will have an identification which is unique and unchanging, i.e. a single permanent unique identifier for an instantiated real world object; and/or

Option 2: that each occurrence of a specified entity, (e.g. a real-world person) (See further 6.2.4), can have multiple identifications and resulting identifiers related/relevant to the (explicitly) stated context (or purpose), i.e. business goal.

Key examples of widely used Registration Schemas are provided in Annex D.

Rule C-3:

Any entity relevant to, or used to support, a business transaction shall be assigned a unique and unambiguous identifier based on an identification process.

C.5.11 In view of the fact that multiple different standard definitions exist for the term identifier, each with their own context and purpose, the term "**identifier (business transaction)**" and definition is needed and one which incorporates relevant aspects of these other standards, and places them in the context of a business transaction.

The term "identifier (business transaction)" is defined in 3.27.

3.5.12 With respect to the essential key properties of an identifier, it is noted that:

a) although an identifier is a single value, this single value may be composed of one or more atomic components, (e.g. as a "composite identifier")[43]. For example, the last number or terminal digit can be a "check" digit, or intelligence may be built into the identifier according to the business rules governing the identification process and the assignment of identifiers by the issuing Person;

b) an identifier as a single value can include a combination of the identifier of the issuing Person and the identification number assigned by that issuing Person, i.e. standards such as ISO/IEC 6523, ISO/IEC 7501, ISO/IEC 7812, etc., are based on this principle; and

c) whether an identifier used in a business transaction has built-in intelligence or not is determined by the agreed upon rule base of the issuing authority. Many existing international (and national) standards exist resulting in what are considered "intelligent identifiers". Identification versus designation (or "identifiers" versus "names")

Rule C-4:

Natural names or natural language identifiers shall not be used as identifiers in business transactions although they may be associated with them.

C.5.13 In global (electronic) business transactions, the same real object is recognized and known by multiple names depending on the language used at the human interface. Quoting the ISO/IEC JTC1 BT-EC Report:

43) See further the definition of the concept of "composite identifier" introduced in ISO/IEC 15944-2.

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"Human beings like to name "objects". But the approach of using "names" is not very IT friendly, cost-efficient or time efficient".[44] *Terms and names found in standards (as discussed in 7.1 and 7.2) are not linguistically neutral, nor are they IT-processable. In Electronic Commerce, there are specific local requirements which need to be identified.... There is a need to cast international standards in a manner which on the one hand supports unique, unambiguous and linguistically neutral identification and referencing of objects and on the other hand, supports the development of designation of such objects by terms and names in support of localization and multilingual requirements...."*[45]

The term "*name*"[46] is defined in 3.35.

C.5.14 Consequently, any object will have:

a) as many, i.e. multiple names, as there exist linguistic expressions used to designate[47] it;

b) in global electronic business transactions, many of the "names" used to designate the "object" being traded or a service being provided will be in the form of linguistic expressions which use non Latin-1 Characters, (e.g. Arabic, Chinese, Thai, Hebrew, Japanese, etc., all of which can now be supported via ISO/IEC 10646 a.k.a. Unicode); and

c) similarly, Persons (natural or legal) will have more than "one name" including that in their local language and Latin-1 equivalents of the same.

Consequently, names are not that useful for unambiguous identification nor can they serve as identifiers for elements in a business transaction. Name(s) should be considered linguistic expression(s) associated with an identifier.[48]

Unfortunately, in the world of information technology and within a particular application or information system, a name (or "name space") of entity, (e.g. Person[49], object, process, event, etc.), is often used as a synonym for identifier. This causes major problems in global interoperability from both a business operational view (BOV) and functional services view (FSV) perspective.

Rule C.5:

Open-edi scenarios, scenario attributes, roles, information bundles, semantic components and other elements pertaining to the same are to be identified through unique, unambiguous and linguistically neutral identifiers.

With such identifiers may be associated one or more names as needed for market, legal, localization and/or multilingual requirements.

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44) Quote taken from the JTC 1/BT-EC Report to JTC1: Work on Electronic Commerce Standardization to be initiated, 1998-05-04, p. 22 (registered as ISO/IEC JTC1 document number N5296).

45) Ibid, p.40, (in 7.4.5 Localization).

46) This is the definition for "name" found in ISO 1087. ISO 1087-1 has placed "name" in 3.4 "designations" as the depreciated term for "appellation". However, working through ISO 1087-1 and the fact that in electronic business transaction, one requires recorded information, i.e. not "verbal", for the purposes of this document a "name" is considered t o be a "verbal designation" which is recorded as a linguistic expression. Therefore, ISO/IEC 15944-1 will continue to use the concept/term/definition "name" as originally defined. Appellation is defined as a verbal **designation** of an individual concept

47) ISO 1087-1:2000, 3.4.1 defines *designation* as arepresentation of a **concept** by a sign which denotes it
NOTE In terminology work**,** three types of designations are distinguished: symbols, **appellations** in a specific **subject field**.

48) One could consider names to be "aliases" associated with an identifier. See further Annex E.3.

49) On “identifiers” versus “names” for Persons, see further 6.2.2 and Annex E.

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Annex D
(informative)

Existing standards for the unambiguous identification of Persons in business transactions (organizations and individuals) and some common policy and implementation considerations

D.1 Overview

D.1.1 General

a) This annex provides informative and explanatory text in support of: (1) the rules and guidelines; (2) the terms and definitions found in Clauses 1 through 5 of the normative part of this document; and, (3) the *Open-edi Reference Model*. (See D.1 "purpose"). The business rules and guidelines, as stated in bold, are the same as those stated in these Clauses even though they have been re-numbered in this annex. Those which are unique to this annex are indicated with an asterisk (*).

b) This annex is also meant to assist users of this document who are either not familiar with Open-edi standards in general, or whose main focus to date has been on the Functional Services View (FSV) only.

c) The focus of this annex is to support the Person component, i.e. the need for unambiguous identification of Persons making commitments in an electronic business transaction, in support of this document and Open-edi.

d) This annex provides additional required information with respect to existing standards which form part of the Open-edi standards Framework. They are to be used to support the Person component which is one of the three fundamental components of the Business Transaction Model.

e) The primary purpose of the Business Transaction Model is to serve as a common high level and non-technical view of business transactions. The basic assumption of this Business Transaction Model is that this common view is derived from (classical) commerce models with commonly understood (basic) processes as well as with common terms, definitions and perspectives shared by industry, government (especially policy makers), standardizers, consumers, IT specialists and other interested parties.

One key underlying assumption of the Business Transaction Model is that in business transactions, apart from the specific goods, services and/or rights being provided, there are three essential components in any business transaction; namely:

a) Persons[50] as subjects or parties able to make a commitment(s) arising from a business transaction (at least a buyer and a seller) (see 6.2 and Annex E);

b) business processes (see 6.3 and Annex F); and

c) the information or data exchanged (see 6.4 and Annex G).

These three fundamental components are presented graphically in Figure D.1 (as taken from Figure 7).

50) The use of "Person" with a capital P reflects its use as a defined term in this document (See 3.45) vis-à-vis its ordinary daily use, i.e. as in "person".

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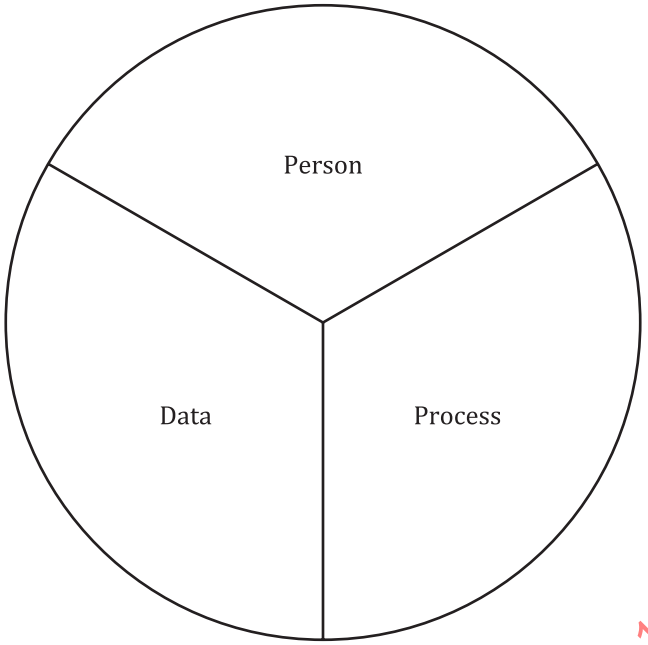


Figure D.1 — Business Transaction Model — Fundamental components (Graphic illustration)

D.1.2 Note on compliance with privacy/data protection, consumer protection, etc.

It is assumed in this document, and throughout this annex, that the collection, storage, use and interchange of recorded information based on these standards is done in compliance with applicable laws and pursuant regulations particularly those which pertain to privacy/data protection requirements[51)], consumer protection, other confidentiality and security services requirements, access and use policies, etc. This applies irrespective of whether a jurisdictional domain takes a regulatory or self-regulatory approach to compliance with such requirements.

D.2 Purpose

The first paragraph of ISO/IEC 14662:2010, Clause 1 *Open-edi Reference Model* states:

> *"This International Standard specifies the framework for co-ordinating the integration of existing standards and the development of future standards for the inter-working of Persons via Open-edi and provides a reference for such standards".*

The purpose of this annex is two-fold; namely:

a) to identify and summarize some key existing standards that support unambiguous identification of Persons in business transactions in particular areas relevant to Open-edi. It is the intention that these standards be used in the development of scenarios and scenario components requiring the unambiguous identification of Persons making business decisions and commitments; and,

b) to provide a summary of several recurring issues and policy considerations in the unambiguous identification of Persons especially as individuals in electronic business transactions arising from Open-edi related standards development work; namely:

   — anonymity;

   — privacy/data protection;

51) Note that ISO/IEC 15944-8 identifies and specifies added and more detailed concepts/defininitions/terms, rules, pertaining to privacy protection requirements. These become applicable where and when the Person in the role of a buyer in a business transaction is an individual.

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— what is an individual;

— role of a "natural" person in a business transaction;

— single global unique identifiers for individuals.

The purpose is to assist users of this document in dealing with these policy and legal considerations when building re-useable scenarios and scenario components.

D.3 Approach and overview

"Unambiguous identification" of Persons, i.e. as entities, able to make the commitments required for a business transaction, is one of the most important issues affecting Open-edi and the need for standards.

International standards which focus on specific aspects of naming, addressing and identification of persons (individual and organizations) exist.

The purpose of this annex is to provide information on several key international standards to serve as examples of existing standards which focus on unambiguous identification of Persons independent of "Open-edi" but already in use in commerce and administration world-wide. These standards should be considered "Open-edi related standards".

NOTE These examples are chosen apart from the very useful international standard ISO/IEC 9594/ X.500 Directory Services which focuses on binding between objects, i.e. not "Persons", and their locations defined as electronic "addresses" in this document. Further, the focus of this X.400/X.500 series of standards is on information exchange and not commitment exchange. See further Annex C.

Unless stated otherwise use of the term Person in this annex covers both organization and individuals. (See further 6.2.2).

D.4 Existing standards for the unambiguous identification of Persons

D.4.1 Purpose

International standards exist, and are in use worldwide, which ensure in the unambiguous identification of Persons. These are to be used as part of the Open-edi standards framework. Although developed for specific purposes and prior to the advent of the Internet, the global digital economy, e-commerce, e-business, etc., these standards contain specifications for the "WHATs" as well as approaches/solutions for some of the "HOWs" which can (and should) serve as key (generic) building blocks for the Open-edi standards framework.

In the clauses which follow are presented and discussed examples of International Standards which support the unambiguous identification of:

a) Persons (in general covering both individuals and organizations);

b) organizations (see 3.44); and

c) individuals (see 3.28).

D.4.2 Key existing standards

D.4.2.1 Specific standards already identified

Rule D-1:[52)]

Existing standards need to be used to the greatest degree possible in the building and use of scenarios, scenario attributes and scenario components.

52) This is a restatement of Rule 4, 6.1.4.

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Guideline D-1G1:

Multiple international standards exist, and are in use in business transactions worldwide, for the unambiguous identification of Persons. These need to be used as part of the Open-edi standards framework.

In the work undertaken in the area of unambiguous identification of Persons, the following International Standards have already been identified as being of particular relevance, i.e. those of the ISO/IEC. [These standards are presented here in numeric order]. There are likely to be more (e.g. those pertaining to Directory services, procedures for Registration Authorities, industry sector specific standards, etc.).

— ISO/IEC 6523-1:1998

— ISO/IEC 6523-2:1998

— ISO/IEC 7501-1:2008

— ISO/IEC 7501-2:1997

— ISO/IEC 7501-3:2005

— ISO/IEC 7812-1:2017

— ISO/IEC 7812-2:2017

— ISO 8583 (all parts)

— ISO/IEC 9594 (all parts)

— ISO/IEC 9798-1:2010

— ISO/IEC 10181-1:1996

— ISO/IEC 10181-2:1996

D.4.2.2 (Global) Unambiguous identification of "organizations" - ISO/IEC 6523

D.4.2.2.1 General

Rule D-2:

A widely used international standard exists for the (global) unambiguous identification of organizations (ISO/IEC 6523). This document should be used as part of the Open-edi standards framework.

This Clause focuses on summarizing the key aspects of one widely used international standard as a building block for resolving the issue of unambiguous identification of organizations[53)] in Open-edi. The formal title of the standard is:

ISO/IEC 6523-1:1998, *Information technology — Structure for the identification of organizations and organization parts — Part 1: Identification of organization identification schemes*

ISO/IEC 6523-2:1998, *Information technology — Structure for the identification of organizations and organization parts — Part 2: Registration of organization identification schemes*

Originally developed in 1984, this document stated that ISO/IEC 6523-1 "*specifies a structure for globally and unambiguously identifying organizations, and parts thereof, for the purpose of information interchange*".

53) See 6.2 "*Rules governing the Person component*" for definition of "organization" and “organization part”, how ISO/IEC 6523 is used in the standard in the context of information exchange and why the added definition of “organization Person” is needed to cover the commitment exchange aspects of a business transaction.

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ISO/IEC 6523-2 *"specifies the procedure for registration of organization identification schemes, and the requirements of International Code Designator Values, to designated identification schemes".*

The ISO/IEC 6523 series has proved very useful and was revised, updated and enhanced in 1997-98. The revised final version was successfully balloted and was published in 1998. It is a "stabilized" standard.

The Farance In. is the ISO/IEC Registration Authority for this document.

ISO/IEC 6523 supports a structured and data element-based approach and is based on the following assumptions/ rules:

a) there exists and will continue to exist (and co-exist), multiple schemas and associated systems for the unambiguous identification of organizations, i.e. organization identification schemata. Different schemata exist to support different goals;

b) each organization schema is managed by an Issuing Organization (IO). The ISO/IEC 6523 series requires the issuing organization to provide to the Registration Authority for ISO/IEC 6523, i.e. the British Standards Institute (BSI), precise criteria with respect to the rules governing the assignment of identifiers to each of the participants in a schema as well as criteria specifying who can or cannot be a member of that schema;

c) each particular organization identification schema of an Issuing Organization is assigned a unique identifier under ISO/IEC 6523 by the BSI. This schema identifier is known as an International Code Designator (ICD);

d) within each identification scheme, a unique identifier is assigned by the Issuing Organization to each (member) organization. This identifier is unique within that particular schema, and is known as an "organization identifier."

   — the combination of the ICD plus "organization identifier" supports the global and unambiguous identification of one organization among all other organizations;

   — the same real world organization can be part of one or more ISO 6523-based identification schemata (and most often are). Thus, the same real world organization will have one or more identifiers all of which are unique and unambiguous (globally).

e) within each organization there may be departments, a service, information systems, or other entities, which need to be identified for information interchange, i.e. as organization part(s);[54)]

f) each organization part within an organization may need to be assigned an identifier, i.e. organization part identifier (OPI); and,

at times it may be desired or required to specify the source used for the organization part identifier (OPIS). A primary reason for this is that organizations play different roles and thus are part of different "clubs", i.e. an Issuing Organization. Some of these roles require stringent qualifications to be met for membership, (e.g. not every organization can be a member of SWIFT, i.e. a role qualification), while for other "clubs", almost any organization can be a member. (See further Table D.2)

A graphic representation, i.e. Table D.1, of the four data elements comprising the base structure of ISO/IEC 6523-based identifiers is as follows:

Table D.1 — Base structure of component parts of an ISO/IEC 6523-based Identifier

1	2	3	4
ICD	Organization Identifier	Organization Part Identifier	OPI Source

The attributes of each data element and its use are specified in ISO/IEC 6523-1.

54) See further 6.2 "*Rules governing the process component*", (and in particular 6.2.7) for the definition of organization part and how it is used in this standard as well as Figure 17.

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The key is the ICD which is an integer value in the range of 1 to 9999. According to the rules of ISO/IEC 6523, each, ICD value allocated to an organization identification scheme need to be unique and once assigned need not to be re-allocated. ICD numbers are allocated sequentially. The highest current number is "0143+" (There are some gaps. For a complete and up-to-date list, contact the BSI).

ISO/IEC 6523-2 specifies the procedure and information, i.e. the process and data, required for the registration of organization schemes by issuing organizations (IOs), i.e. those responsible for the operation of an organization identification scheme associated with an ICD.

The registration authority for ISO/IEC 6523 is "Farance Inc. (see https://www.iso.org/maintenance_agencies.html)" which receives and processes applications for additions and amendments to the register of organization identification schemes, assign the ICD values, and maintain the register.

The widespread adoption and use, globally, of ISO/IEC 6523 is demonstrated in Table D.2 through examples of ICDs already allocated.

Table D.2 — Sample of ISO/IEC 6523 allocated ICDs with associated name of coding system and coverage information

ICD	NAME OF CODING SYSTEM	COVERAGE
0002	SIRENE - Système informatique pour le répertoire des entreprises et des établissements (Information System for the Register of Enterprises and Establishments)	Enterprises (individual enterprises or companies) in the field of agriculture, industry, trade services. Associations, authorities, regional authorities and public establishments active in France (over 3,300,000 registrations). The only "official" number used between authorities and organizations when dealing with data interchange on organizations.
0005	USA FED GOV OSI Network	Any organization that participates in GOSNET which encompasses governmental offices throughout the world. The ICD code forms the initial part of the OSI network addressing and naming tree.
0029	The All-Union Classifier of Enterprises and Organizations	All organizations in the USSR/Russia.
0030	AT&T/OSI Network	Any organization in an AT&T/OSI network environment. This program encompasses organizations throughout the world.
0034	Reuters Open Addressing Standard	Reuters and associated companies, their customers and suppliers
0037	LY-tunnus	All organizations in Finland including juridical persons and associations.
0038	Australian GOSIP Network	Australian government departments at federal, state, local levels, etc.
0041	Citicorp Global Information Network	Any company or organization that participates in a Citicorp Global Information Network environment (world-wide).
0049	Auckland Area Health	Health related organizations in New Zealand.
0052	Society of Motion Picture and Television Engineers (SMPTE)	Any organization which operates within or distributes to establishing SMPTE practices.
0060	Data Universal Numbering System (D-U-N-S)	Dun and Bradstreet. The DUNS numbers have world-wide recognition as a means of identifying businesses and institutions.
0064	UTC: Uniform Transport Code	The shipping and transport industry. The code identifies an individual transport or handling unity, (e.g. pallet, parcel), for reasons of tracking or tracing.
0069	SITA Object Identifier	Airlines, air manufacturers, etc., i.e. users of SITA Worldwide Telecommunications and Information Services.
0073	ICD Formatted ATM Address	Private ATM networks using Newbridge terminal switching equipment.
0078	Mitel terminal or switching equipment	Networks using Mitel terminal or switching equipment.

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Table D.2 *(continued)*

ICD	NAME OF CODING SYSTEM	COVERAGE
0080	UK National Health Service Scheme	Scope = "legal entities" of the UK Health care community, GPs, GDP, NHS Hospital Trusts, Health Authorities, Laboratories, Blood Transfusion, etc.
0085	Swiss Chambers of Commerce Schema	Organizations (legal persons, partnerships, sole proprietorships and their branch offices) registered in the business register or organizations (legal or natural) not registered in the business register.
0088	EAN Location Code	European Article Numbering system. Over 300,000 participants (mainly manufacturers) in over 66 countries.
0090	Internet IP Addressing ISO 6523 ICD Encoding	IANA - any organization in the Internet environment.
0093	Revenue Canada Business Number Registration	Unique identification of private and public sector entities, i.e. registrants, government programs and operating entity(ies). Used for GST. (See Treasury Board Information Standard (TBITS)-30 - Business Number. TBITS-30: Business Number – Implementation Criteria https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17285 (accessed 2011, and again 2021-03-22)
0111	Object Identifiers	IEEE including RAC (Registration authority committee and other sub-entities for SMPTE 298M Universal Labels for Unique Identification of Digital Data, an ISO/ITU-based identifier hierarchy registration system
0117	STENTOR - ICD Coding System	Coding system used within Stentor's ATM network to identify ICD NASP end points. ICD Code used to form Initial Domain part of the OSI Network Address as specified in Annex A of ISO/IEC 8348:2002
0126	GTE/OSI Network	Any organizations in a GTE/OSI network environment throughout the world.
0128	BNCR (Telekurs Banken Clearing Number)	Swiss banking institutions (sponsored through SWIFT - Society for Worldwide Interbank Financial Telecommunications).

The examples[55)] of ISO/IEC 6523 identification schemes, presented above, demonstrate that a standard exists which is already used extensively worldwide in commerce (and administration). **This document already supports many Open-edi applications**. The above examples represent:

a) country-based schemes of both a general and particular nature, (e.g. SIRENE schema of **France**, ICD = 0002; the LY-tunnus schemata of Finland, ICD= 0037; the **Canadian** Business Number (BN) Registration schema, ICD = 0093, etc.);

b) telecommunication sector uses both with respect to "switching" equipment and communication services;

c) the IP addresses used in the Internet, i.e. through IANA; (See under ICD = 0090)

d) a schema in support of government-based open system interconnect programs (GOSIP) in various countries as well as departments of Defence;

e) identification of articles, i.e. manufacturer ID + product number, being traded world-wide as well as their units of packaging, (e.g. pallets, parcels, containers), visually recognized through the ubiquitous use of bar codes, (e.g. ICD=0088, EAN Location Codes);

f) key industry sectors such as banking, security and related services, health, airlines, aeronautics, automobile, entertainment/motion pictures, etc.; and

55) The examples are taken from ISO/IEC 6523 *Information technology - Structure for the identification of organizations and organization parts. **List B:** The numerical list of all ICDs that have been issued.* (July 1999).

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g) major enterprises providing goods and services on a worldwide basis.

International standards, mechanisms and procedures thus already exist for the unambiguous identification of organizations not only worldwide but also in support of various roles that an organization can play. With respect to a particular role of an organization in a real-world transaction, it will use the applicable (registered) identification scheme and the associated unique identifier.

It is also useful to note that in 1995-1996, the European Commission and Industry Canada together took a lead role in resolving the issue of "unambiguous and unique identification of organizations world-wide" required for EDI. The approach taken was to resolve the issue through enhancing the procedures and criteria associated with the applicable international standard ISO/IEC 6532. This was accomplished as part of the EDIRA project (EDI Registration Authorities) as a component of the TRI-EDI initiative (Telecommunication Requirements for International EDI). The EDIRA project successfully addressed the need for harmonization and interoperability between: on the one hand ISO/IEC 6532-based identification of organizations including X.500, and on the other, different structures and approaches in use at that time in electronic data interchange (EDI) based on use of ANSI X12 standards and UN/EDIFACT. A common solution was found, i.e. through the determination of whether an ISO/IEC 6523 applicant is EDIRA compliant, and, if so, the RA noting this as part of the ICD registration. (As part of this project, Revenue Canada was successfully registered internationally as the Issuing Organization (IO) for the Business Number (BN) identification scheme, a.k.a. TBITS-30 Business Number)[56].

D.4.2.2.2 ISO/IEC 6523 and the identification of "roles" in scenarios and scenario components

Of particular interest in the context of construction and registration of re-useable scenarios and scenario components is the linkage between ICDs assigned under ISO/IEC 6523 and the unambiguous identification of "roles".

Many of the schemata for the identification of organizations contain rules which qualify whether or not an organization is qualified for a certain role. These ICDs are therefore useful in the development of scenario and scenario components both for those involving internal constraints only, as well as those involving external constraints (see further 6.1.6). Many of the ICDs as taken from Table D.2 are of this nature and include as examples:

a) ICD = 002, SIRENE. In France, the only "official" number for the identification of organizations which interchange data with authorities;

b) ICD = 0080, UK Health Service. "Legal entities" of the UK health care community;

c) ICD = 0088, EAN Location Code. Organizations which qualify for and participate in the European Articling Numbering System;

d) ICD = 0128, BCNR. Swiss banking institutions.

D.4.2.3 (Global) Unambiguous identification of "buyers and sellers" — ISO/IEC 7812[57]

NOTE

a) The contents of this subclause (D.4.2.3) have been amended to reflected changes to ISO/IEC 7812 which have been agreed to by ISO/IEC JTC1/SC17. These resulted in the publication of a new edition of ISO/IEC 7812 in 2017.

56) The results of TRI-EDI II projects are freely available, i.e. the results have been published on CD-ROM with copies deposited in key public libraries worldwide.

57) Technically, ISO/IEC 7812 pertains to identification cards. However, the major users of it are banks, financial institutions and other issuers of credit/debit cards (as well as major retailers). Persons use these credit/debit cards in the role of sellers and buyers for payments and fund transfers accompanying business transactions. This standard is also widely used for issuance of ISO/IEC 7812 based cards in various major industry sectors including airlines, travel industry and entertainment, merchandising, petroleum, telecommunications, etc., industries, national standards bodies and governments, etc.

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b) The key changes from the existing to new edition of ISO/IEC 7812 is the "re-assignment" of the nineteen (19) digits, i.e. numbers for any ISO/IEC 7812 –based card which is comprised of the following,

- the decomposition of the existing Issuer Identification Number between a) one (1) digit "Major Industry Identification Identifier (MII); and b) the five (5) digit " Issuer Identifier" into a single Issuer Identification Number and a the MII has been deleted and the use of this 1 digit MII has now been incorporated into a single new "Issuer Identifier Number (IIN);
- the transfer of two (2) digits from the existing "Individual Account Identification" number resulting into the new eight (8) digit "Issuer Identification Number (IIN)";
- the existing Individual Account Number being reduced from twelve (12) to ten (10) digits;
- the existing one (1) digit check number remaining the same; and
- the total maximum number of digits, in what is now called the "Primary Account Number" remaining the same at nineteen (19) digits.

Rule D-3:

An International Standard exists for the (global) unambiguous identification of Persons as buyers and sellers, i.e. ISO/IEC 7812. This document should be used as part of the Open-edi standards framework.

This Clause focuses on summarizing the key aspects of the international standard:

a) ISO/IEC 7812-1:2017

b) ISO/IEC 7812-2:2017

ISO/IEC 7812[58] is *"a series of International Standards specifying:*

- *a numbering system for the identification of card issuers operating within an interchange environment, the format of the issuer identification number and the primary account number.*
- *application and registration procedures for card issuers who operate a card program in an international interchange environment*

ISO/IEC 7812 specifies a unique pre-defined structure and the data elements for the identification of card issuers and individual account numbers for the purpose of identifying an account. The resulting identification number, i.e. the number that identifies the card issuer and card holder, is designed to be globally unique and unambiguous, i.e. within the ISO/IEC 7812 user domain.

Since: (1) credit/debit card issuers (as well as other identification card issuers) are the prime users of this document; and, (2) these cards are used to buy and sell goods and services, they serve as a primary building block for the unambiguous identification of buyers and sellers in (electronic) business transaction.

The ISO/IEC 7812 identification number is a composite identifier consisting of three distinct data elements whose interworkings are rule-based. The pre-defined structure and data elements of this composite identifier are the following:

a) the assignment of a unique eight-digit identifier to a card issuing institution, i.e. as the "Issuer Identification Number", that meets the registration requirements as specified in ISO/IEC 7812-1[59].

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58) ISO/IEC 7812 was developed ISO/IEC JTC1/SC17 *Cards and personal identification* and has been in use for thirty+ years, and is in its fifth edition, (issued 2017). The main challenge of ISO/IEC JTC1/SC17 is that of accommodating market-driven needs, increasingly diverse industry applications and a variety of information technologies. ISO/IEC JTC1/SC17/WG5 "*Identification cards — Identification of issuers*" manages ISO/IEC 7812 on behalf of JTC1/SC17. For more information on ISO/IEC JTC1/SC17, go to https://www.iso.org/committee/45144.html

59) IINs assigned prior to 2017 can be 6 digits in length until their Issuer migrates to an 8 digit format.

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b) the second data element is the identification of the "Individual Account Number, a variable length, maximum 10-digit number.[60] (See the multipart standard ISO/IEC 7811 Identification Cards – Recording technique)

c) the final data element is a single check digit calculated on all the preceding digits of the identification number computed according to the Luhn formula for modulos-10 check digit (explained in ISO/IEC 7812-1:2017, Annex B).

A graphical representation of the structure of the parts of the ISO/IEC 7812 "Primary Account Number" is presented in Figure D.2.

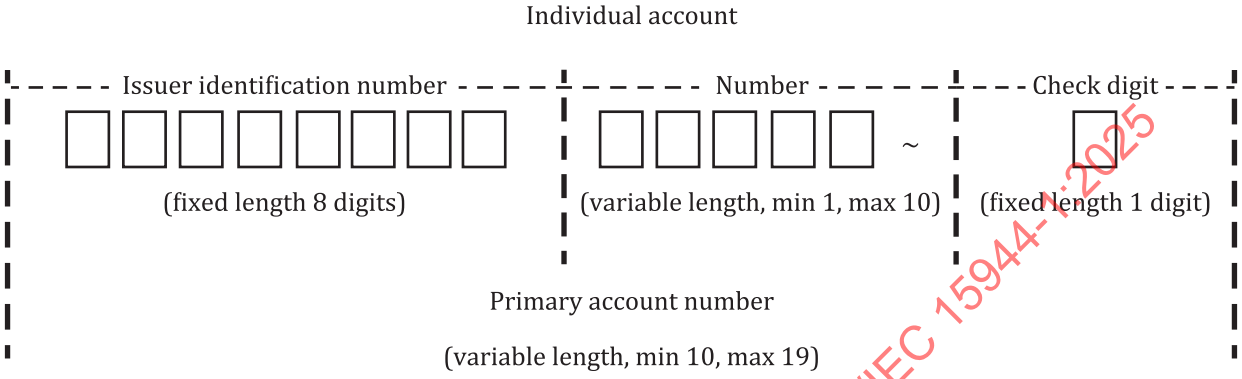


Figure D.2 — Structure of the parts comprising the ISO/IEC 7812 identifier

The Issuer Identifier Number (IIN) forms the first part of the identification number. It is assigned by the ISO/IEC 7812 registration authority.

Part 2 of this document specifies the application and registration procedures for IINs issued in accordance with ISO/IEC 7812-1. Registration Management Group (RMG) was established by ISO/IEC JTC 1/SC 17 to act on its behalf in managing the registration and assignment of IINs under the ISO/IEC 7812 series of standards.

Registration Authority (RA) is appointed by the ISO Council, responsible for assigning IINs and maintaining the ISO Register of Card Issuer Identification Numbers. Application forms are available on request, from the RA, the secretariat of the RMG and the secretariat of ISO/IEC JTC 1/SC 17. [61]

D.4.2.4 (Global) Unambiguous identification of individuals - ISO/IEC 7501

Rule D-4:

An international standard exists for the (global) unambiguous identification of holders of machine readable travel documents (MRTDs), i.e. ISO/IEC 7501. This document has components which should be part of the Open-edi standards framework.

Individuals have identification cards based on ISO/IEC 7501 for travel documents, ISO/IEC 7812 for identification cards (including credit/debit cards), as well as many other documents/cards identifying individuals. The common designation of an ISO/IEC 7501 identification "card" is a passport or visa.

The ISO/IEC 7501 series of standards has been revised to support "cultural adaptability" requirements as well as co-existence requirements of different technologies on a single card, (e.g. embossing, magnetic stripe, bar coding, integrated chip, optical storage, visual, etc.). One result is that on the printable, hard-copy, version of these travel documents, (e.g. a passport), provision has been made for the representation of the name of the individual in the language of the passport issuing authority, i.e. in addition to the current Latin-1 alphabet-based equivalent name which is also captured in machine-readable part. This will impact

60) Prior to 2017, 6 digit IINs existed and up to a 12 digit individual account number was allowed. In 2017, the INN migrated to an 8 digit IIN, resulting in the maximum length of the individual account number being reduced to 10.

61) The Registration Authority (RA) for ISO/IEC 7812 remains the American Bankers Association 1120 Connecticut Avenue N.W., Suite 600, Washington, DC 20036, USA, at www.aba.com.

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positively as many other international and national standards pertaining to the unambiguous identification of individuals.

Another major objective of ISO/IEC 7501 is "global interoperability", particularly with respect to the standardized specifications for placement of both eye-readable and machine-readable data in all MRTDs.

This standardization work is a co-operative effort of: (1) ISO/IEC JTC1 SC17 - *Identification Cards and Related Devices*; and, (2) the International Civil Aviation Organization (ICAO). ICAO is the UN organization through which member countries establish policies, rules and standards worldwide in the area of civil aviation. (It is headquartered in Montreal). Changes to existing editions or any new editions of ISO/IEC 7501 are prepared through those made to ICAO Document 9303, Parts 1, 2 and 3, which serves as the basis for the contents of the ISO/IEC 7501 multipart standard.

DOC 9303 uses terms such as "person", "holder", "name of holder", etc., but does not explicitly state that only a natural person as an "individual" can be a "holder" of a machine-readable travel document i.e. not a legal person. This was always assumed implicitly. From an Open-edi perspective, these criteria should be made explicit. (Person also is not defined in this document).

NOTE The same Person, as an individual, can have more than one global ISO/IEC 7501-based identifier, i.e. hold more than one passport, depending on the rules of the Issuing State(s).

D.4.3 Conclusions

The existing international standards identified above have common requirements for data, i.e. data elements pertaining to a Person. The data element values are structured and pre-defined. It is recognized that each of these standards has a specific focus and scope. All of them, however, are relevant to standardization requirements in support of (electronic) business transactions, a.k.a. e-commerce, e-business, e-government, etc.

Rather than creating new standards, it is strongly recommended that those using the Open-edi standardization framework and this ISO/IEC 15944 standard place a priority on using existing standards in an integrated manner to create generic base standards. Another term here would be a generic bridge standard, i.e. the need for a data element-based generic standard for unambiguous identification of Persons (individuals).

Rule D-5:

The number of data elements pertaining to Persons, generally, and individuals and organizations specifically comprising common/basic name and address information is finite. Many have already been defined in various international standards (as well as in government standards). They should be consolidated/integrated.

a) Identification of Persons

- ISO/IEC 6523 — *Structure for the Identification of organizations and organization parts*
- ISO/IEC 7501 — *Identification cards — Machine readable travel documents*
- ISO/IEC 7812 — *Identification cards — Identification of issuers*

b) Identification of Address (and Persons/personae)

- ISO/IEC 9594/X.500 Directory Services (focuses on bindings between objects and their locations).

Any project for the development of a standard(s) for naming, addressing and identification to support unambiguous identification of Persons in electronic business transactions, should be based on the following development principles:

a) support a structured and data element-based approach;

b) focus on the common, generic requirements but allow for "user extensions";

c) use and integrate relevant international standards (or parts thereof);

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d) be modular and have the ability to support various levels of details, i.e. granularity, thereby providing flexibility in its use in heterogeneous applications;

e) ensure the ability to support requirements of privacy legislation, public and private sector;

f) maximize facilitation of interoperability of data elements pertaining to name, addresses and identification data among players in electronic commerce, i.e. as required in business transactions (and in compliance with applicable legislation); and,

g) be IT-platform neutral and independent of specific applications.

D.5 Some common policy and implementation considerations for the unambiguous identification of Persons as individuals

D.5.1 Overview

D.5.1.1 In Open-edi and related standards development work, on the Business Operational View, the need to be able to address legal requirements in (electronic) business transactions is a recurring issue, especially those external constraints which are of a horizontal public policy nature.

It is not the purpose of this and other Open-edi related standards to attempt to resolve these issues. However, it is useful to help reduce misunderstanding about some common external constraints.

The text in D.5 has served as the basis for the development of normative text in ISO/IEC 15944-5, ISO/IEC 15944-8 and ISO/IEC 15944-12.

D.5.1.2 This is the purpose and context of D.4. One major area of public policy issue impacting electronic business transaction is that of the interactions of:

a) individual ↔ organization; and,

b) individual ↔ public administration.

(See further 6.1.3 and 6.2.7).

At the time that the *Open-edi Reference Model* was developed, individuals, on the whole, participated in EDI-based business transactions with each other only via organizations. The rapid world-wide development and use of the Internet in support of business transactions has led to: (1) individuals engaging in business transactions directly with organizations, i.e. without organizations acting as agents on their behalf; as well as, (2) individuals engaging in business transactions directly with each other, i.e. individual ↔ individual. At the same time, the Internet has made possible the conduct of business transactions not only among public administrations with other organizations but also of public administrations with individuals. (See further on the entity "Person(s)" and its Level 1 sub-components, in 6.2)

D.5.1.3 Five key policy issues associated with the unambiguous identification of Persons, especially as "individuals" in electronic business transactions include:

a) anonymity;

b) privacy/data protection[62)]

c) what is an "individual";

d) role of a "natural" person in a business transaction, i.e. as an "individual" or "organization Person";

e) single global unique "identifiers" for individuals.

62) With respect to consumer protection aspects, see 6.2.8.

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These five key policy issues and their resolution are interrelated. They are summarized in the Clauses which follow.

D.5.1.4 The approach to a standards-based resolution of these policy issues presented comprises the following assumptions:

a) Privacy/data protection is already a major concern of consumers with respect to electronic commerce as is the wider issue of building trust.

b) The need for unambiguous identification is relative to the context and purpose and associated requirements of the nature of the business transaction in which it is to be used.

   Consequently, in electronic business transactions, there may be levels of unambiguity, i.e. degrees of completeness or reduction of uncertainty in identification[63].

c) The higher the level of degree of certainty, i.e. unambiguity, of the identification of a Person, the less costly and more efficient the process for determining authenticity.

d) The need for unambiguous identification of individuals, their desire at times for anonymity, and a co-ordinated implementation of the Open-edi standards framework requires a clear response as to which of the two options presented in this Annex D should be the "base" option.

D.5.2 Anonymity

Rule D-6:

Identification of a Person as buyer in a business transaction is not always necessary in (electronic) business transaction including the seller knowing whether or not the buyer is an individual.

Various issues pertaining to anonymity of an individual in the context of privacy protection requirements are now addressed in ISO/IEC 15944-8. See further ISO/IEC 15944-8:2012, 9.5.

In day-to-day use in business transactions, as well as now electronic business transactions, one usually speaks of clients, consumers, customers, etc., not so much of individuals or organizations. However, it is the adoption of electronic commerce by individuals which has one of the highest profiles in the development of strategies for the widespread adoption and use of electronic commerce by the private and public sector alike.

From an electronic commerce (or e-business) perspective, one often does not need to distinguish whether the entity which is party to a business transaction is a "natural person" or "legal person", nor an individual or an organization, etc. Credit worthiness, ability to pay, secure payment, etc., of a Person are often more important criteria.

Currently, a buyer can remain anonymous vis-à-vis a seller by presenting a money value token[64] in which a seller has 100 % trust (e.g. cash). Similarly, in electronic commerce where the value token when presented by the buyer to the seller has 100 % trust of the seller, the buyer can also remain anonymous (provided the "E-cash" really has the nature of cash, and does not identify the bearer or holder of the token). Similarly, if a Person (undifferentiated as to organization or individual) with an e-mail address of jake4ever@gmail .com" presents an acceptable value token which does not link value token to buyer, the buyer can remain anonymous to the seller.

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63) For definitions of the terms "unambiguous" (3.66) and "identification" (3.26), see 6.1.4 *"Business Transaction: Unambiguous identification of entities".*

64) The term "value token" is a generic term used to cover values of a monetary nature such as cash, money orders, bearer bonds, pre-paid value tokens, etc.

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Thus, in electronic business transactions, unambiguous identification does not necessarily require one to distinguish the nature, i.e. sub-type, of a Person in a business transaction; for example, whether the Person is an individual or organization (or an organization Person).[65)]

The process component of the Business Transaction Model has five basic phases which should be noted, i.e. planning, identification, negotiation, actualization and post-actualization (see 6.1.5 and 6.3). In the planning phase, that is, the first phase in a business transaction, (prospective) buyers and sellers can and often do remain anonymous to each other. The fundamental characteristic of the identification phase is that of establishing one-to-one bindings among the parties (potentially) involved in a business transaction.

D.5.3 Privacy/data protection

Privacy/data protection[66)] pertains to sets of rights and obligations pertaining to the collection, use and disclosure of personal information. Personal information is defined as "meaningful information about an identifiable individual that is recorded in any form". Initially, privacy rights and obligations pertained primarily to personal information collected, used and controlled by the public sector, (e.g. by federal as well as state/provincial levels of government). In addition, specific sectors and activities have their own sets of privacy protection requirements, (e.g. banking records, medical records, student educational records, etc.).

However, while initially privacy/data protection requirements were focused on specific types of business transaction and/or business sectors, these requirements are rapidly becoming generalized for the whole of the public and private sectors in many countries, as well as all the countries that are members of the European Union.

Within the context of this Annex D, a common working definition for "privacy"[67)] is given in 3.68:

Similarly, a working definition of "personal information"[68)] is given in 3.69.

It is outside the scope of this Annex D to discuss this matter further. It suffices to note that one key objective of the development of the Business Transaction Model is the ability to support the privacy/data protection requirements for the implementation of Level 1 - External Constraints on Business. These challenges include defining “What is an individual?” and “What are the criteria for an "identifiable individual" from an IT-enablement perspective?”.

However, it should also be noted that the basis and point of departure of the classes of constraints in the Business Transaction Model is that of involving internal constraints only, i.e. no external constraints, and with Person undifferentiated, i.e. one need not distinguish whether the Person is an individual or organization.

One can thus develop generic and re-useable scenarios and scenario components involving internal constraints only for use in business transactions. Scenarios and scenario components built to support

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65) Privacy concerns of individuals who are worried about who knows what you see and spend online on the Internet with whom, for what etc., are giving rise to "anonymization services". Disabling "cookies" on one's browser's preferences increasingly prevents prospective buyers from exploring websites of sellers. Such services allow one (1) to browse the Web and go anywhere "cookie free"; (2) to send e-mail through a middle man "remailer"; (3) an anonymous website to allow anyone (individual or organization) to have a homepage without identifying themselves; and, (4) to support the use of synonyms, etc. (See further, Quittner, J. (Monday 8 February, 1999) Going private. Time, February 8, 1999, p. 62, or <<time.com/time/magazine/article/0.917/.990168.00.html>> (accessed 2009-12-16))

66) “Privacy protection” is an external constraint the primary source of which are jurisdictional domains. As such, this concept is defined in the context of external constraints in ISO/IEC 15944-5:2008, 6.3 “*Jurisdictional domains and public policy requirements*” and especially ISO/IEC 15944-5:2008, 6.3.3 “*Privacy protection*”. In addition, ISO/IEC 15994-8 focuses particularly on the more detailed privacy protection requirements.
In North America, i.e., Canada and the USA, "privacy" is the term used; in other countries, the term "data protection" is used, (e.g., those countries who are members of the European Union).

67) This working definition served as the basis for the formal definition of the concept of "privacy protection" in ISO/IEC 15944-5:2008, 3.109.

68) This working definition served as the basis for the formal definition of the concept of "personal information" in ISO/IEC 15944-5:2008, 3.103.

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requirements of external constraints such as those of a privacy/data protection nature would use, i.e. inherit, these existing scenarios and scenario components involving internal constraints only.[69)]

D.5.4 What is an "individual" and what are criteria for an “identifiable individual”?

One needs to have a definition for individual in the dematerialized world of business transactions, i.e. what are the unique attributes and behaviours of individual which allows one to distinguish individual as a unique entity/object from all the other objects one's information system is dealing with?

Various issues pertaining to “management of identitiy(ies) of an individual” in the context of (legal) privacy protection requirements are now being addressed in ISO/IEC 15944-8.

No standard definition, internationally or domestically, currently exists for individual.[70)] A review of terminology of international standards could not identify a standard which contained and defined the concept/term individual. Rather international standards tend to define particular roles of an individual in a business process along with associated data elements, (e.g. passport holder, cardholder, entity, etc.).

The concept/term individual needs to be defined in a consistent manner not only in the context of existing and future privacy/data protection requirements but also as a component of medium neutral legal/ regulatory frameworks. This has been done in this document.

Rule D-7:

Individual is the attribution of the property of indivisibility to a natural person, i.e. in making commitments, ability to have rights and obligations, being accountable/responsible for, etc.

Consequently, for the purposes of this document "individual" has been defined in 3.28. See further 6.2.” and specifically 6.2.7, as well as Annex E.

The use of the term Person in the definition of individual means that an individual inherits all the properties and behaviours of a Person. Secondly, the definition is neutral towards and independent of:

a) the manner in which various jurisdictional domains have differing rules as to what criteria are required to be met for an entity to be considered/qualify as a human being or natural person;

b) any qualification which a jurisdictional domain may place on human being/natural person with respect to ability to make commitments, be held responsible for, etc., (e.g. "minors", "being incapacitated", etc.).

Constraints of this nature exist in both the legal and commercial frameworks but are part of external constraints (see 6.1.6) of the *Open-edi Reference Model* impacting electronic business transactions.

This definition is harmonized with basic concepts underlying privacy. Personal information is "information about an identifiable individual". This includes information provided by an individual about him/herself to another Person in the context of an eventual delivery of a good, service and/or right provided by that other Person in the role of seller.

While this definition of individual serves as a common base, i.e. as part of a set of minimum external constraints, one needs to have specific criteria for what constitutes "identifiable" as in "identifiable individual". Currently, such criteria do not exist. Further, the interplay of the issue of "anonymity” and unambiguous identification needs to be addressed.

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69) Subsequent to the development of this document, ISO/IEC 15944-5 was developed. The focus ISO/IEC 15944-5 is that of external constrains of jurisdictional domains. One such set of external constraints are those of a “public policy” nature. See further 6.3 “*Jurisdictional domains and public policy requirements”.* Based on this earlier version of this document and additional work, Finally, it is noted that the focus of ISO/IEC 15944-8 is “*Identification of privacy protection requirements as external constraints on business transactions”.*

70) A review of international standards (using the online ISO Internet-based tools at hand) did not identify any standard which contained and defined the concept/term "individual". International standards that one might expect to contain a definition for "individual" tend to define particular roles of an individual in relation to a specific business process along with associated data elements, (e.g. passport holder, (credit) card holder, or more generically "token holder", etc.).

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D.5.5 Role of a natural person in a business transaction as "individual or organization" (or "organization Person")

With respect to business transaction and the application/implementation of the Level 1 privacy/data protection requirements, one will need to be able to determine in the identification phase of the process component (see 6.3 and Annex F), when one is marketing/selling goods and/or services, whether the Person one is dealing with is an identifiable individual or not, i.e. an individual or an organization [or organization Person (see 3.46)]. If the former, privacy/data protection requirements would apply, if the latter, these would not apply, (and to the information on a Person).

Consequently, from an electronic business transaction perspective, it is necessary to have a clearly understood definition of org anization, i.e. if one is dealing with an organization and not an individual, (e.g. for the associated information on an organization, privacy/data protection requirements would not apply). There is an international standard definition for organization which also is used in this document, i.e. ISO/IEC 6523. (See further Annex E)

As a result of standard development work on this issue, the following points were made:

a) individual is a natural person with a specific role(s) in a process;

b) a natural person in the role of a buyer also supplies information;

c) a natural person in the role of a buyer is the recipient of a good and/or service.

A key question is whether information provided by a natural person in the role of a buyer is deemed to be, i.e. to be treated as, that pertaining to an individual or an organization?

In many jurisdictional domains, and in the context of the Goods and Services Tax (GST) or value-added Tax (VAT), anyone who provides a good, service, and/or right is deemed to be an organization, irrespective of whether the good or service provided is zero rated, exempt, or the goods/services provider is exempt; or the Person providing the good or service is an incorporated person, (e.g. "legal" person) or not.

ISO/IEC 6523 takes a similar approach in its definition of organization (which is adopted as a normative reference in this document).

The NOTE and EXAMPE 2 of the ISO/IEC 6523 definition of organization states:

NOTE *The kinds of organizations covered by this International Standard include the following examples:*

EXAMPLE 2 *An unincorporated organization or activity providing goods and/or services.*[71)]

In summary ISO/IEC 6523 considers, any Person irrespective of their particular "legal" status (including unincorporated natural persons), who provides a good and/or service is deemed to be an organization. This Open-edi standard takes a similar approach, i.e. any Person in the role of a seller in a business transaction is deemed to be either a Person (internal constraints only perspective) or an organization (as may be required when minimum external constraints are included).

Similarly, a buyer is deemed to be simply a Person unless in the business transaction being modelled external constraints apply which require one to differentiate among the three sub-types of Person, i.e. individual, organization or public administration.

D.5.6 Unambiguous identification of individuals - two basic options

In the preceding subclauses, some key issues and requirements of both the commercial framework and legal frameworks were identified pertaining to the unambiguous identification of individuals. Before these issues can be resolved, it is necessary to have agreement among those modelling a business transaction in the form of scenarios, scenario attributes, and scenario components, i.e. roles and information bundles (and semantic

71) One example is that of a natural person being self-employed, being the owner of a store, etc. They are "unincorporated" but for the purposes of public administrations they are deemed to be organizations, (e.g., with respect to the application of goods and services tax (GST), value-added tax (VAT), etc.

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components) and registering the same for re-use, on the overall approach or context, within which these issues are to be resolved.

The results of the research and analysis undertaken in support of this document is that there are essentially two options for resolving the issue of unambiguous identification of Persons as individuals: namely, (1) what can be called "the Swedish option"; and, (2) what one can call the "Rest-of-the-World (ROW) option".

Option 1: SWEDISH SOLUTION[72)]

a) One single nation-wide schema and registration authority whereby each discrete and unique natural person has a single (official) persona and is assigned a unique identifier at birth to be used for life (and thereafter).

b) This single persona and the unique ID for each natural person is to be used for multiple different purposes and in various contexts, i.e. basically a one-to-many relation.

c) Data elements ensuring unambiguous name representation and identification of individuals are prescribed (including biometrics), their values are captured in database(s) and then used to produce a single unique "personal identifier" which in turn is used to produce a card/token, i.e. on a one-to-one basis. National standards are developed for an integrated "smart card" for this purpose.[73)]

Option 2: REST-OF-WORLD (ROW)

a) Multiple registration schemes and authorities and associated identification schemes and associated sets of data elements reflect needs of different purposes and use, i.e. contexts.

b) A Person has multiple personae and associated IDs, i.e. basically many-to-many. This is so for both "natural" persons and "legal" persons (or organizations).[74)]

From an Open-edi perspective, one has two basic options, the "Swedish option" or the "Rest-of-the-World option".

Both Options are possible. From a standardization perspective either option can be supported through development of standards.[75)] Cost-efficient and effective development of standards as well as their widespread adoption and use requires a decision to be taken.

With respect to the Swedish option, it is technically feasible to design and operate a registration schema for unique (single) unambiguous identifier for each discrete natural person, i.e. use of biometrics, (fingerprints, iris patterns), genetics, (e.g. DNA), etc. However, building such an infrastructure requires a massive upfront financial investment.

For such a mechanism to be effective requires universal participation either voluntary or through legislation. However, at present, neither of which these is likely to happen in the near future in many countries. The "Swedish Option" in any country requires applying enabling national legislation harmonized at both the federal and state/provincial levels locally and then internationally. Consequently, a single global schema for unambiguous identification resulting in a single universal identifier for each unique natural Person is not a viable scenario.

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72) It is noted that what is called here the "Swedish Solution" is not unique to Sweden. Other countries have (and may have) taken a similar approach. The USA and Canada among others have not. It is just that Sweden has the most transparent and clearly stated rules with respect to unambiguous identification of individuals, i.e., through single IDs. It also has very strong privacy legislation and is the country which pioneered the concept and implementation privacy/data protection.

73) The Swedish National Standards Body, i.e., Svensk Standards (or "SS") has developed several standards to this effect. See References [41], [42] and [43].

74) On "persona" and "identification", see further 6.2.2 and Annex E.

75) The legal framework of a jurisdictional domain plays primary role. For example, in the application of ISO/IEC 7501, a jurisdictions as a recognized and registered ISO/IEC 7501 passport issuer may have the rule of permitting an individual to hold and have only one valid passport while another jurisdictional domain, as a recognized and registered ISO/IEC 7501 passport issuer may allow an individual to hold more than one valid passport.

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In the present world, there is not a single universal schema for the provision and registration of a unique single unambiguous identifier for each single unique real world person (natural or legal). Current schemes which have such objectives are bounded by jurisdictional domains and in their operation. In addition, the use of the resulting identifiers is restricted by law or contractual agreement for a particular purpose. Changes in law and agreements among jurisdictional domains and levels of jurisdictional domains are required for any "universal" single schema, i.e. adoption of the Swedish Solution in all countries and worldwide. Also, the introduction of single universal identifier for a one-to-one linkage to a unique single real world Person could well lead to new types of security problems.

The most viable approach for Open-edi standards development is the "Rest-of-World" option. Even if any country should change its current policy in this area and use/mandate the Swedish option domestically for "natural persons", it would still have to be able to accommodate the "Rest-of-the-World" option for international business transactions.

The conclusion is that the approach for resolving issues pertaining to the unambiguous identification of individuals (in the Open-edi Standards Framework) should be based on the Rest-of-the-World option (with the Swedish option being considered a peculiar sub-set of the same).

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Annex E
(informative)

Business transaction model: Person component

E.1 Overview

Annex E provides necessary added informative and explanatory text for: (1) the rules and guidelines as found in normative text in thois document; and, (2) the terms and definitions as well as Figures 4 to 7 pertaining to the Clause 6 "Rules governing the Person as stated here in Annex E in bold are the same as those stated in these normative clauses as well as for the figures even though both have been re-numbered in this annex. The major basis for this annex is the result of work on requirements for standards in support of e-commerce involving the participation of:

a) various business sectors, (banking, retail, transport, telecommunications, IT, etc.);

b) public policy makers (various levels of government);

c) consumer associations;

d) experts in security services;

e) lawyers (private and public sector with expertise in common and civil law as well as international trade law); and,

f) ISO and ISO/IEC JTC1 standardizers.

This work identified gaps in an integrated approach incorporating requirements of commercial and legal frameworks and those of existing telecom/IT standards including security services.

The rules, guidelines and associated terms and definitions in Annex E incorporate those of relevant existing international standards, referenced in this document, and introduce other rules in order to bridge existing gaps. The intended result is an approach which links these different perspectives and integrates their requirements.

The primary reason for this Annex E is that there are no standards which focus on the making of business decisions and commitments, nor on the attributes and behaviours of entities and specifically Person[76)] as the unique type of entity able to make commitments.

Whether or not a Person decides to delegate its decision and commitment-making to be executed via a software program (e.g. use of an "expert system"), "artificial intelligence", "intelligent agents", etc., is immaterial to the fact that the Person who "delegates" authority through these or other IT means, i.e. as technical components, is still held to be responsible, accountable, liable, etc., for the decisions taken and commitments made in a (electronic) business transaction.

This annex is also meant to assist users of this document who are either not familiar with open-edi standards in general or whose main focus to date has been on functional services view (FSV) standards only.

This is one of three informative Annexes which provide additional required information on one of the three fundamental components of the Business Transaction Model; namely, Person, process, and data.

Rule E-1:

A business transaction requires Person, process and data

76) In Annex E, as well in ISO/IEC 15944 series of eBusiness standards, the use of "Person" with a capital "P" is used to indicate that it is used as a defined term (See 3.47), i.e., as differentiate from the day to day use of the word "person".

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These three fundamental components are presented graphically in Figure E.1 (as taken from Figure 7 in 6.1.5).

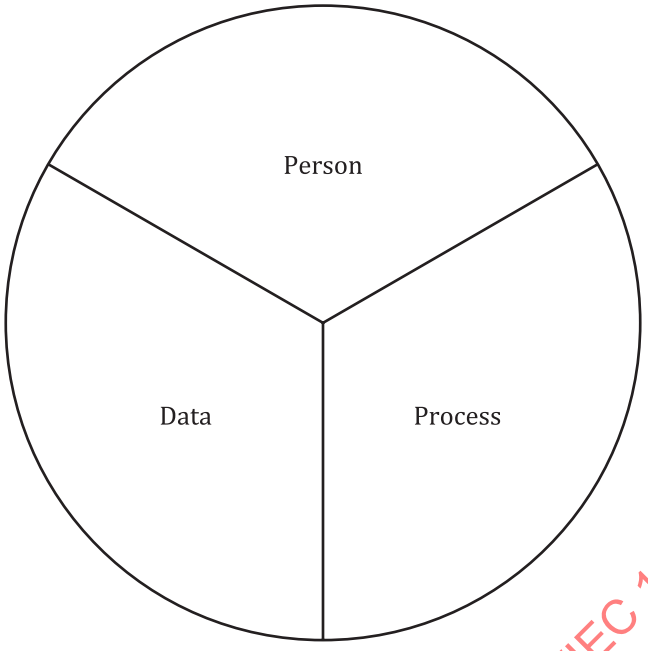


Figure E.1 — Business Transaction Model — Fundamental components (Graphic illustration)

A representation of Figure E.1 using the Formal Description Technique (FDT) Unified Modelling Language (UML) as the OeDT for this rule, yields Figure E.2:[77)]

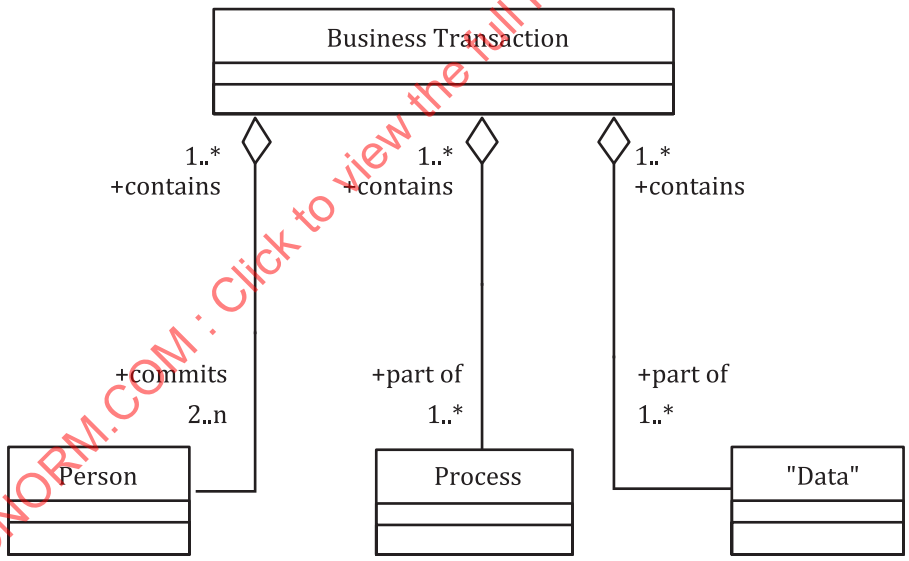


Figure E.2 — UML-based representation of Figure E.1 — Business Transaction Model — Fundamental components

E.2 Purpose

The purpose of this Annex E is five-fold; namely:

a) to incorporate and support a key aspect of the BOV, namely that of making business decisions and commitments;

77) In the UML Figure E.2 "contains" is used as a synonym for "association".

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b) to capture the business operational requirements from both commercial and legal perspectives;

c) to capture the unique attributes of Person as the entity in business transactions able to make commitments;

d) to ensure that this document can be used in support of both organizations and individuals engaging in business transactions via Open-edi; and,

e) to ensure that this document recognizes and can support the role of regulator in addition to the roles of buyer and seller in a business transaction.

The approach taken in this Annex E is to identify and define the distinguishing properties and behaviours of Person in the context of a business transaction (and associated categories of individual, organization and public administration) in the form of clear and precise rules as well as associated terms and definitions. These rules and associated guidelines summarize the results of the analyses, findings, discussions, and feedback for this standardization work which focus on an integrated approach to the various sources of business requirements.

These ISO/IEC 15944-1 terms and definitions serve as common bridges/links among policy makers, industry, consumers, IT specialists, etc. They are also to be used as common bridges among the legal and commercial frameworks with the information technology framework and standardizers.

Accompanying the "rules and guidelines" are brief explanatory notes. A key result or outcome of these rules are key fundamental common definitions and associated terms in support of widespread adoption and use of Open-edi (e.g. as in e-commerce, e-business, e-government, etc.).

E.3 “Person" in a business transaction

An electronic business transaction, like business transactions in general, requires Persons, i.e. as decision makers, as the key real-world entity and point of departure (instead of information technology applications, devices, tokens, information systems, etc.).

Rule E-2:

Business transactions require both information exchange and commitment exchange.[78)]

In Open-edi business transactions, information systems are deemed to serve as extensions of Persons who identify themselves in a business transaction in a dematerialized manner, i.e. through electronic digitized data elements, instead of through their physical presence or a physical surrogate, (e.g. paper documentation).

A key underlying need of the issue of unambiguous identification is the ability in a dematerialized world to be able to differentiate a Person from all the other entities that one is dealing with, among the participating information and communication technology systems, i.e. through the digitized data being interchanged.

The term "entity" is defined in 3.20.

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

Rule E-3:

Person is the only entity able to make commitments in a business transaction.

Guideline E-3G1:

In this document, the term "Person" is used to represent the generic use of the term "party" plus the ability of a party to be able to make commitments with respect to a business transaction.

Under commonly accepted international law, in any business transaction, whatever the nature and combination of information technologies involved, the participating parties are required to be Persons.

78) See further the normative 6.1.3.

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Persons are the only entities which are and can be held legally responsible and accountable for their actions, including authentication, authorization, commitment, etc.

A generic definition for Person is required, i.e. a Person as a unique type of entity in a dematerialized world differentiated from all other entities as those currently defined, and found in information technology standards such as objects, applications, devices, information systems, processes, sets of software code (or "applets" as "callable objects"), etc.

Various dictionary definitions for "person" exist. (See Oxford/Webster/Larousse). Compounding the issue is that under various laws within a jurisdictional domain, let alone among jurisdictional domains, multiple particular definitions of what is or what is not a Person exist. Research, analysis and discussions with JTC1/SC32/WG1 members and others, (e.g. lawyers), resulted in a number of findings. Summarizing and integrating these findings from the perspective and needs of the dematerialized world of electronic business transactions has as objective the ability to differentiate a Person from all other types of entities, i.e. as a unique entity type (or object). This resulted in a definition of "Person" and the identification of a set of properties of a "Person".

Rule E-4:

A "Person" is defined in 3.47.

This definition covers both the present material world and the emerging dematerialized world. It is independent of any particular information technology, i.e. is medium neutral. A Person, as an entity recognized by/in law, can be considered to be a "juridical Person" or in French "Personne juridique". A key property of a "stateless" human being is that he/she is not considered to be a Person "recognized by law". Another example in the area of reproductive technologies is that laws differ in various jurisdictional domains as to when a human being in formation becomes a "natural person" recognized in law.

The three unique properties of Person already identified include:

a) a human being (natural person) or body corporate (legal or artificial person) having rights and duties recognized by law;

b) the ability to act in some capacity, make commitments and fulfil resulting obligations; and

c) the ability to be able to be held accountable for actions, behaviours, decisions, etc.

It is important to note that from an (electronic) business transaction perspective, all three properties shall exist/be present for an entity to be identified and referenced as a Person.

A body of rules (including laws and regulations) exist which set external constraints on business transactions on the allowable behaviour of Persons and/or proscribe expected behaviours, i.e. in addition to internal constraints which the parties to a business transaction imposed upon themselves[79] These rule sets apply generally and/or locally as well as in relation to the provisioning a particular good, service and/or right. These rules as external constraints apply to Persons in the general sense. Many of these rule sets arising from the legal frameworks distinguish between Persons as: (1) natural persons as individuals; and, (2) natural persons or legal persons as organizations. Some apply to one sub-type of Person only[80].

Present day business transactions are in compliance with these external constraints rule sets domestically and internationally. It is assumed that in (electronic) business transaction, Persons will also comply with applicable external constraints, (e.g. laws and regulations updated and made medium neutral as required).

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79) On "internal constraints" versus "external constraints", see further 6.1.6.

80) See further E.7.

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E.4 Personae, identification and Person signature

E.4.1 Personae and identification

Unlike (material) objects, Persons represent and identify themselves (as well as other Persons) in a variety of ways, i.e. through different personae[81)] depending on the context of the business transaction.

The set of rules and guidelines which follow summarize the key aspects of personae.

Rule E-5:

A Person shall be identified or represented in a variety of ways, and shall be able to have one or more persona.

Persons (natural or legal) currently do, and will continue, to identify and represent themselves in a variety of ways, i.e. have at least one and usually multiple personae. These various personae and their associated identities represent the intersection of the activity or function the Person is engaged in and the role the Person plays in a business transaction.

In different business processes, the same Person may, and often does, represent him/her/itself through similar or different personae. In the physical world and the paper-based world such representations and associated identification are made unambiguous through the context, i.e. a Person (natural or legal) is physically present or the paper-based documentation provides sufficient contextual information to bind a Person to the persona used.

In the dematerialized world, one cannot readily ascertain whether the entity one is dealing with electronically is a representation of a real world Person or not, (e.g. "jknoppers@disney.com" or "jake4ever@disney.com" versus "mickeymouse@disney.com"). The examples provided all meet Internet IP requirements for routing and addressing, i.e. sent to or receive information from an addressable device. From an IT perspective these are only variations in values in a set of data element(s).

A real world Person (natural or legal) represents her/him/itself in one or more different ways, i.e. personae. An IT system does not "know" whether the values in such (a set of) data elements represent a real world Person or not. The identification and representation of a persona of a Person is done through one or more data elements. In short, the context or role of a Person in a business transaction has a major influence on the persona used by a Person.

Integrating the above results in the following definition, the definition of "persona" is given in 3.48.

In addition, to name(s) of a Person, the set of data elements comprising a persona can include information such as address, (physical or virtual), nicknames, trade names, pseudonyms, numbers, codes, date of birth, etc.

A common persona for all individuals, i.e. natural persons, is that of the name by which the individual after birth was registered, a civil act (or "baptised", "circumcised", or similar religious ceremony). However, individuals immigrate. A substantial number of citizens in various countries have/use "names", i.e. a persona, which are different from their original/first persona. Examples include use of transliterated Latin-1 characters, changes for cultural adaptability reasons such as the phonetic rendition of the original name/persona causing problems (apart from pronounce-ability), etc.

Figure E.5 (taken Figure 9, 6.2.2) provides a graphical representation of the links of a single same Person (natural or legal) → personae in different context roles.

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81) The Latin word for person is "persona" in the singular. In literature, "personae" are the characters (assumed by actors) in a play or novel. In Jungian psychology, a persona is the set of attributes adopted by an individual to fit himself for the social world which he sees as his or the personality an individual presents to the world. (Oxford/Webster)

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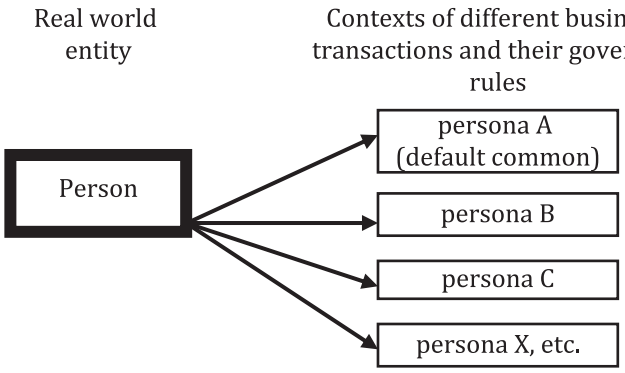


Figure E.3 — Links of a Person to its persona(e) in the context of different business transactions and their governing rules

A representation of Figure E.3, using the Formal Description Technique (FDT) Unified Modelling Language (UML) as the OeDT, yields the following:

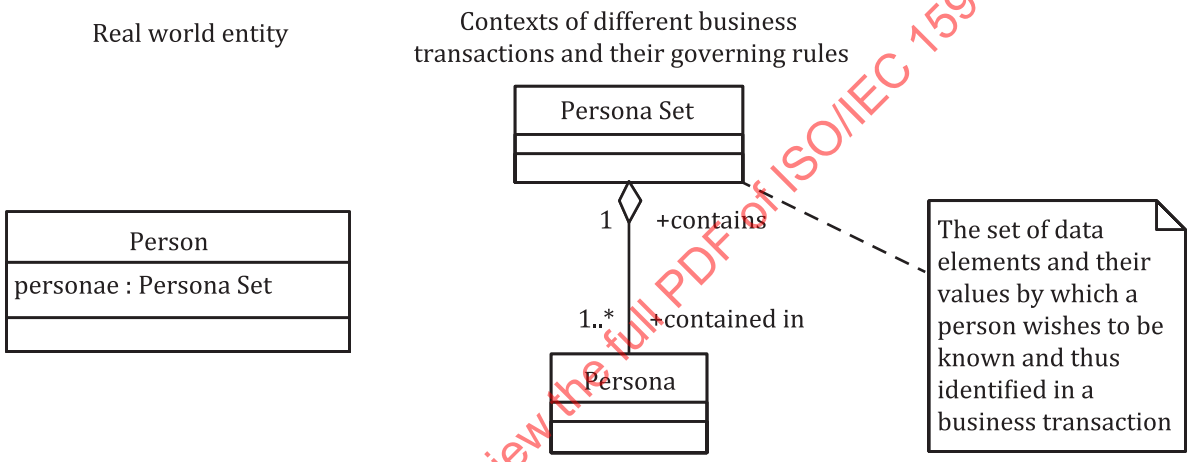


Figure E.4 — UML-based representation of "Figure E.3: Links of a Person to its persona(e) in the context of different business transactions and their governing rules"

Before continuing, it is useful to provide some examples of the same real world Person having multiple different personae and associated different identifiers in the context of various business transactions.

EXAMPLE 1 A bank as a "legal person"/"organization" with multiple personae and associated identifiers[82)]

a) A bank acting in the formal role of a bank as a regulated entity under Canadian, USA, Japan or U.K. banking legislation, and as part of a federation of banks world-wide identifies itself and interacts with other banks through a unique identity (number) issued by the Society for Worldwide Interbanking Financial Telecommunication (SWIFT) for interbank fund transfers.

b) The same bank acting in the role of employer as any other employer in a country unambiguously identifies itself to the taxation authorities via a unique number issued by such an authority.

c) The same bank acting in the role of a seller of goods and/or services collects applicable taxes on behalf of the government(s) in whose jurisdictional domain(s) the sale is deemed to have taken place, i.e. Goods and Services Tax (GST) or Value-Added-Tax (VAT). identifies itself through a unique identifier numbers issued by GST/VAT at the national/federal level as well as at the provincial/state/lander/canton level as required [as well as through equivalent unambiguous identification schemas and associated identifiers for the other jurisdictional domain(s)].

d) The same bank in the role of a buyer of goods, services and/or rights can unambiguously identify itself in a variety of ways. A common one being the Data Universal Numbering System (D-U-N-S).

82) See further Annex D. For example, organizations using the ISO/IEC 6523 standard will likely have several different identifiers depending on which of the organization schemas (ICDs) they are part of.

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e) The same bank in the role or member of a community with restricted membership and specialized functions, (e.g. Cirrus, EDC, Canadian Payments Association, etc.), unambiguously identifies itself through a unique identifier issued by/associated with each such member of this community.

f) The same bank in the role of an incorporated entity can unambiguously identify itself through its legal name or operating name. These names of an organization (either or both the legal or operating name) can be in more than one language, especially where the jurisdictional domain has more than one official language.

g) The same bank in the role of market differentiation or positioning can unambiguously identify itself in its present (or prospective) persona through a "trademark".

h) The same bank in the role of a Registration Authority in federation of debit/credit card issuer both identifies itself and Person (natural or legal) to which the card is issued. (See ISO/IEC 7812, as explained in Annex D).

i) The same bank in e-commerce can unambiguously identify itself through an Internet domain name or Uniform Resource Locator (URL). [Note: The Internet IP Addressing schema is registered through ISO/IEC 6523 by IANA and has the International Control Designator (ICD) =" 0090"]

EXAMPLE 2 A "natural person"/ "individual" with multiple personae and associated identifiers

a) A natural person/individual has perhaps the greatest variation in personae. First of all, there are variations in combinations of surnames, given names, initials, honorifics, titles, etc., which can form the personae by which individuals can and do represent and thus identify themselves in a wide variety of contexts. Any single and unique individual only has to look at all the variations in personae found in the different tokens, (e.g. credit cards, business card, driver's license, professional membership card, Medicare card, passport, public transport pass, etc.), each individual currently uses in daily business transactions.

b) The same individual in the role of a buyer can unambiguously identify him/herself as a persona through one or more data elements or sets of data elements which serve as "identifiers": (1) each of which is unique and unambiguous within the schema of the Registration Authority which issues them; (2) others which are not considered unique or unambiguous.

c) The same individual in the role of buyer is often presented options as to method of payment, i.e. variety of (sub)-processes. Some of these require unambiguous identification, others do not, (e.g. the equivalent of a cash-based payment).

d) Within a particular method of payment such as the use of a credit or debit card, the same individual as buyer can, in each instance of purchase, decide to use one of several unambiguous identities, i.e. specific combinations of personae and identifiers as found on one of several credit or debit cards accepted by the seller.

Rule E-6:

The level of unambiguity, i.e. certainty/reliability, of a persona and resulting identification as the Person Identity[83] used by a Person, shall be appropriate to the goal of the business transaction.

Most often this is a question of degree of granularity and level of specificity[84]

In different business transactions and associated processes, the same real world Person may represent itself through the same or through different persona. The persona itself can meet unambiguous identification requirements for a Person in a business transaction and/or other data elements may be required, i.e. an identifier. The same persona of a Person used in various business transactions may well have the same identifier or different identifiers.

Rule E-7:

The persona used shall be associated with a Person identity (Pi) that can be authenticated to the extent required for the business transaction.

Each business transaction will consider the persona used, on its own merits depending on the set of rules (internal constraints only and/or including external constraints as well) governing a business transaction. For example, a peculiar business transaction modelled through re-useable scenario attributes and scenario components may (1) require the use of a specific, i.e. predefined, persona, (e.g. a passport); while, (2) others

83) See 6.2.3 and E.4.

84) On "granularity", see further Annex G.

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may allow for several different existing persona (and associated identifiers) to be used as long as a set of other specified criteria are met, (e.g. anyone of the following X, Y or Z credit cards are acceptable irrespective of the persona used by the credit card holder).

Rule E-8:

Business transactions having different goals may allow a Person to use the same persona and its associated identification schema (including resulting identifiers), while others prohibit this.

Depending on the goals of the business transaction, a Person can, and often does, use the same persona in different roles and contexts. For example, the data elements comprising the name of a Person can be the same on several credit cards according to the wishes of the Person to whom the credit card (or similar token) pertains, or they can differ.

As a default, the internal constraints governing a business transaction will specify the acceptable personae for the Persons as parties to that business transaction. A common default is the acceptance of any persona as stated on the credit/debit card deemed to be acceptable as a method of payment in a business transaction. A common special case, as an example of an external constraint, is the requirement to produce the persona found in the passport of an individual when registering for lodging at a hotel. Equally important is the fact that at times sellers in a business transaction, i.e. those providing a good, service and/or right, prescribe the persona that a Person is required to use. Prescribe means that one has no choice in persona to be used and is required to follow clear and precise criteria for the representation of a specific persona in a particular category of business transactions. Examples include:

a) driver's license or health cards where an individual may required to use their "baptismal name" (or Latin-1 alphabet equivalent).

b) organizations having to use their complete formally incorporated name, (e.g. “Information Management Services Inc." instead of "INFOMAN®[85]" or "INFOMAN Inc." or “International Business Machines Inc.” instead of "IBM®").

Guideline E-8G1:

A party to a transaction has the option of prescribing the persona (and associated identifier) acceptable to it for the purpose of establishing commitment, (e.g. as the data elements comprising a persona and rules governing their values in a business transaction are prescribed by the party offering the good, service, and/or right). A systematic approach is known as a Registration Schema and the entity registering the persona known as a Registration Authority (RA).[86] Usually a Registration Authority assigns an identifier unique within that identification schema to each discrete Person/persona. A RA may use the ID of another Registration Schema if necessary.

The public sector in relation to the services provided often prescribes, through law or pursuant regulation(s), the data elements comprising a Person's persona and rules governing their values. For example, some government programs prescribe the use of a natural person's name as found on their birth certificate or the use of a legal person's name by which the entity was officially incorporated and registered.

Where a jurisdictional domain has more than one official language, it is likely that the name by which an organization was officially incorporated may have more than one linguistically different but equivalent "official names". This applies particularly, to public sector institutions in jurisdictional domains having more than one official language.

Guideline E-8G2:

A Person may have multiple “names” and a Person may change its name.

The name used by a Person forms a key part of the persona. Persons (natural or legal) can and do at times change their names. They can also use one persona in one business transaction and another persona in

85) This information is given for the convenience of the user and does not constitue an endorsement of ISO or IEC.

86) On "Registration Schema" and "Registration Authority", see the normative 6.2.3 *"Person - identity and authentication"* as well as E.4 *"Person - identity and authentication".*

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another business transaction. In addition, formal processes for change of name of a single, real world Person and registration of such changes exist in most jurisdictional domains.

With respect to natural persons, i.e. as individuals, a change in name can be considered being equal to a new persona (especially where such a name change is recognized/prescribed in the applicable jurisdictional domain). With respect to a name change of a legal person, this may be (1) for the same legal person; or, (2) for the same Person, as a "changed" or "different" legal, i.e. artificial person, (e.g. the incorporation number/ identifier can remain constant while the name of the incorporated entity may change)

Guideline E-8G3:

Names of natural persons are not unique. Many different discrete real world natural persons can and do share the same name (and even date of birth or mother's maiden name, etc.).

Some jurisdictional domains have pools of family names which are common to a significant number of individuals in that jurisdictional domain so that even adding the Christian name or "pre-name" to the family name does not result in an "unique and unambiguous" name for that individual in that jurisdictional domain. Other jurisdictional domains restrict the family names available or variations in family names, (e.g. China). This also results in numerous distinct and unique individuals having the same names.

Guideline E-8G4:

A natural person can and does identify him/herself in a business transaction through a variety of possible data elements comprising a name, (e.g. combination of given names, surname(s), nicknames, titles/qualifications, etc.).

Even if a natural person's name is unique, a natural person can identify him/herself through a variety of possible combinations of data elements comprising such a name, (e.g. combinations of one or more given names, surnames, applicable title(s)/qualification(s), nicknames, etc.), by which that person wishes to be known, i.e. identify him/herself. In addition, there are pseudonyms, noms de plume, etc., which persons may use to identify themselves. The latter are quite common in Internet name/addresses where they are commonly known as "nyms".

Further from a cultural adaptability perspective, a Person generally (or as individual, organization and/ or public administration) may use one persona for business transactions executed in the language of the jurisdictional domain of which they are part (e.g. an jurisdictional domain where the alphabet in use is of a non-Latin-1 nature such as Arabic, Chinese, Hebrew, Japanese, Korean, Thai, Russian, etc.), and another "equivalent" persona in (international) business transactions using an equivalent Latin-1 alphabet based representation.

A common example is the use of business cards which, on one side, have printed the persona in the language and character set of the "home" jurisdictional domain of the Person and, on the other, provide an equivalent persona based on the Latin-1 alphabet.

Guideline E-8G5:

A legal person can and does have multiple names, (e.g. legal, operating, marketing name, etc.), as well as various linguistic equivalents of the same.

Names of legal persons are not unique, i.e. possibly within a single jurisdictional domain but not from a global electronic business transaction perspective. A jurisdictional domain may have more than one official language. At times legal persons will have more than one “official” name (and quite often are required to have multiple equivalent official names in the various languages of a jurisdictional domain). This is especially true for "official" names for public sector organizations in jurisdictional domains having more than one official language. Therefore, the following guideline E-8G6 applies.

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Guideline E-8G6:

A name of a Person (natural or legal) does not necessarily provide for unambiguous identification.

That is:

a) Names of natural persons are not unique. Many different/discrete real world persons can and do share the same name (and even date of birth or mother's maiden name).

b) Names of legal persons are not unique. It is possible that, within a single jurisdictional domain, the name of a legal person as recognized and registered in that jurisdictional domain is unique but certainly not from a global electronic business transaction perspective which spans multiple jurisdictional domains.

Guideline E-8G7:

The number of types of common data elements pertaining to the name of a Person is finite. A set of standard data elements can/should serve as a template or catalogue for capturing and exchanging name information on Persons in electronic data interchange.[87)]

Unambiguous identification of a Person and the personae used by that Person pertaining to name and address information consists of various combinations of attributes, i.e. data elements, of that Person pertaining to name and address information. The number of data elements for naming Persons (natural or legal) is finite and the rules governing their inter-working are known (though often not explicitly stated as is required for electronic commerce). Once a particular combination of name/address data elements and their values associated with a persona are captured, those registering such data elements then assign an identifier which is both unambiguous and unique within that Registration Schema (or security domain).

It is assumed that different applications may well require various combinations of Person name data elements drawn from the same generic template or catalogue.

Guideline E-8G8:

Associated with each persona of the same Person can be a single identifier, or several personae can use the same identifier, and/or, two or more identifiers can be associated with a single persona, (e.g. use of exactly the same "name" on multiple credit cards with different identifiers).

An identifier is a unique value within an identification schema.[88)] In the day-to-day real world this is already happening. Figure E.5 (taken from Figure 10, 6.2.2) illustrates Person to persona(e) to identifier links.

NOTE Different fonts and representations are used for "identifier" to recognize the wide variety in forms and information technologies used to capture unique identifiers pertaining to a specific persona of a Person. The different "size" of the lines indicates that some combinations are used more frequently than others.

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87) The ISO/IEC 7501 and ISO/IEC 7812 standards provide the basis for such common data elements. (See further Annex D)

88) See further the standard definitions for “identification” and “identifier (business transaction)” in 3.26 and 3.27, respectively, as well as 6.1.4.

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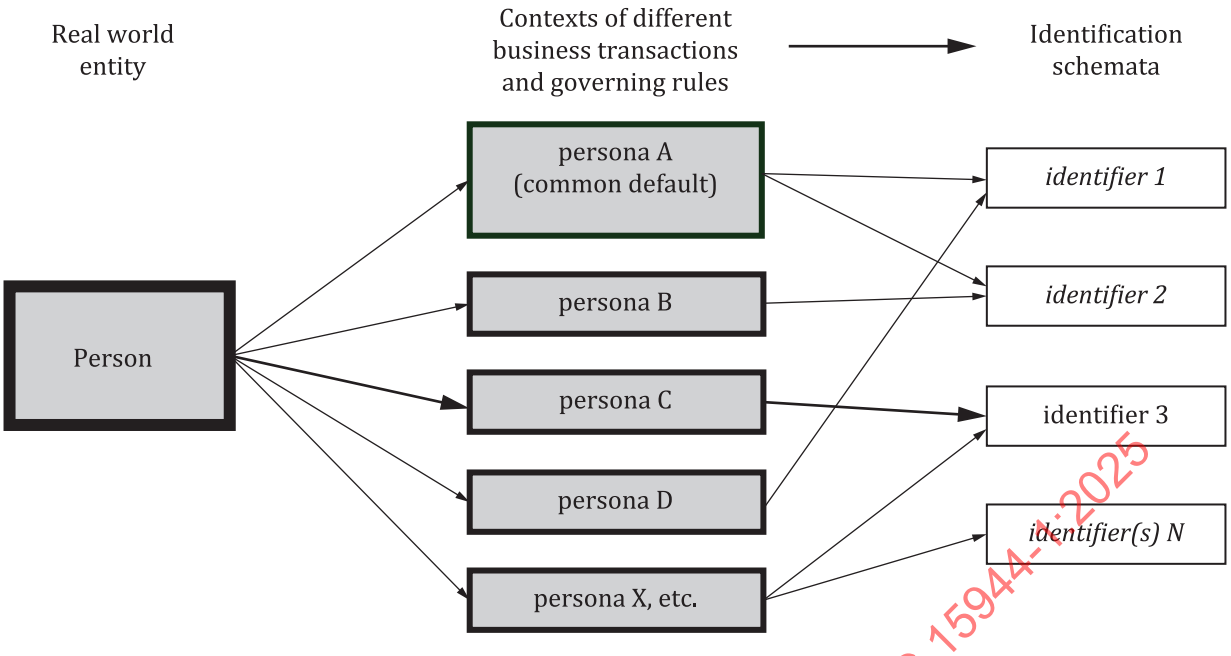


Figure E.5 — Illustration of Links of a Person to persona(e) to identifier(s) issued through identification schemata applicable to the contexts of different business transactions

A representation of Figure E.5 using the Formal Description Technique (FDT) Unified Modelling Language (UML) as the OeDT for this rule yields the following:

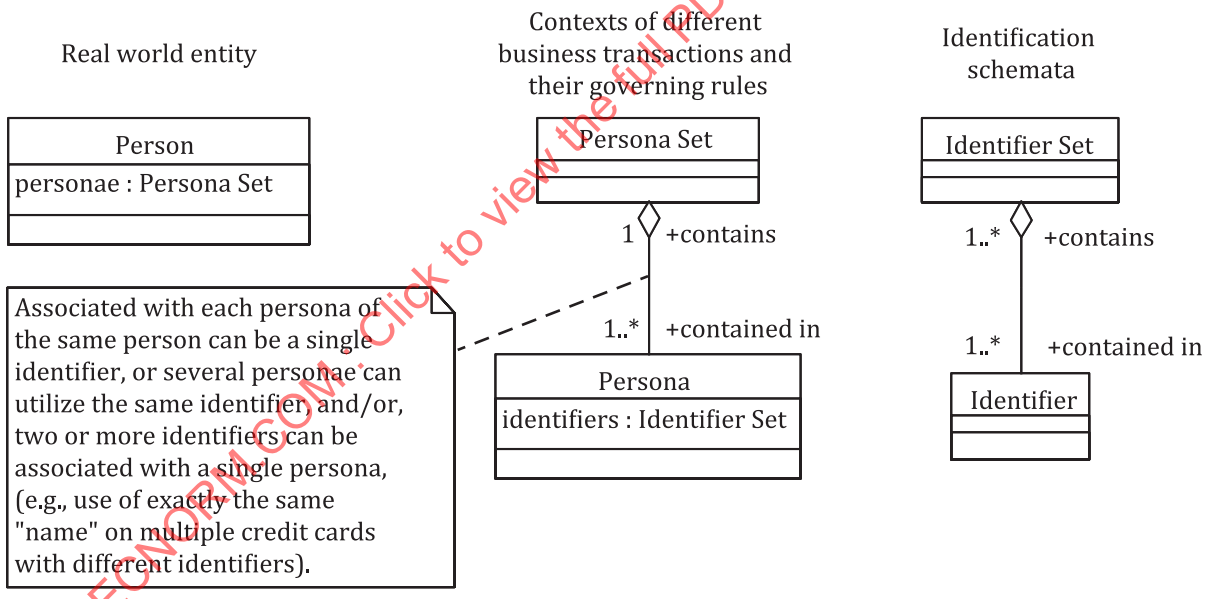


Figure E.6 — UML-based representation of "Figure E.5: Illustration of links of a Person to persona(e) to identifier(s) issued through identification schemata applicable to the contexts of different business transactions"

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E.4.2 Person signature

Rule E-9:

A Person can and does use different signatures and that shall be assumed to continue to be the case in present day business transactions.

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For example, a natural person, i.e. as an individual or an organization Person can use:

a) a signature comprised of all/full set of given names and surnames;

b) a signature consisting of a single given name and surname;

c) a signature consisting of one or more initials and a surname; and/or,

d) a signature of the nature of an "initial", i.e. to initialize.[89)]

Rule E-10:

An organization Person as an employee or officer acting on behalf an organization "signs", i.e. links itself, to a business transaction on behalf of that organization, in a variety of ways.

EXAMPLE An organization Person can and does use different signatures in different contexts and for different purposes depending on the roles and functions she/he is responsible for within the organization.

Rule E-11:

A Person controls the use of its signature.

It is assumed that a signature: (a) belongs to a Person, (and is not a "technical (FSV) component"); (b) is created/generated by a Person; and, (c) depending on the context of the business transaction is used by a Person either for the purposes of identification, authentication, authorization and/or witnessing.

Rule E-12:

In an (electronic) business transaction, the end entities are Persons irrespective of the nature and combinations of "technical components" of the functional (support) services of the information infrastructure involved.

Current definitions of digital signature or "electronic signature" in the context of security services focus on ensuring the integrity of a set of digital data. For example, an "electronic signature" is an asymmetric cryptographic algorithm which binds a set of digitized data, the purpose of which is basically two-fold; namely:

a) to ensure that no changes whatsoever occur in the contents of the set of recorded information exchanged between original sender and ultimate recipient, i.e. "data integrity"; and,

b) to ensure that such data is available to, i.e. can be read by, only the intended recipient(s), i.e. "confidentiality".

However, from an FSV perspective, the sender(s) and recipient(s) as "end users" are technical components, i.e. IT systems, DMASs, computers, applications, etc., and not Persons[90)]. The primary requirement for both the legal and commercial frameworks as well as that for building trust is to be able to bind a Person to a signature. Quite apart from any technical solution, (e.g. in the form of electronic, digitized and/or digital signatures), the first step is reaching agreement on a common (non-technical) concept/term and associated definition which binds a Person to a signature, i.e. "Person signature".

There are several advantages to the use of the concept/term "Person signature", including:

a) this is a clear and precise way of binding Person ↔ signature, i.e. as a special and particular type of signature, i.e. vis-à-vis the existing general/generic IT definition of an "electronic signature" as an "asymmetric encryption algorithm";

b) it is media neutral and transparent vis-à-vis both digital and the non-digital world;

c) it is independent of the manner, i.e. the HOW, in which a signature is recorded, (e.g. written, stamped, electronic, use of encryption, etc.); and,

89) This is quite common where a natural person as individual or organization person is requested to initialize each page in a contract or similar legal document.

90) See further 6.1.3 and especially Figure 4.

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d) it is a new term, i.e. coined, unambiguous and thus avoids the existing confusion in the area of signatures and (electronic) business transaction.

Rule E-13:

A signature which is created by and/or pertains to a Person is deemed to be a "Person signature" and is defined in 3.52.

Guidelines E-13G1:

A Person signature may be associated with any information or role in a business transaction.

It is important to note that:

a) the purpose of this definition is to focus on and address the "WHATs" of a signature of a Person, irrespective of the "HOWs", i.e. methods, means, information technology tools, etc. of doing so;

b) this definition assumes that a standard definition for signature exists as a "WHAT" and one which is media neutral and IT independent; and,

c) a Person signature can occur with respect to any set of activities or a Person signature can occur with respect to any phases or processes in a business transaction.

Also, Person signature can take different forms and be created by different processes, ranging from physical to advanced biometrics.

NOTE 1 Forms and processes by which Person signatures can be created and have legal status are not covered in this document.

It is assumed that the parties to a business transaction will, in addition to any internal constraints which apply, comply with any external constraints governing the use and formation of a Person signature.

Rule E-14:

Depending on the context of the business transaction, a Person signature is used for the purposes of identification, authentication, authorization, and/or witnessing.

It is important that in the modelling of a business transaction as a scenario, scenario attributes, and/or scenario components, to specify that when a Person signature is required of any party to a business transaction the purpose for which such a signature is used is deemed to be valid.

The above Rules and Guidelines, support the requirement of ensuring that the end entities in any business transaction including those which are electronic business transaction-based, are Persons, i.e. those entities which are able to make the required commitments, are held accountable/responsible for, etc. A variety of combinations of linkages currently exist among personae, identifications and signatures for the same unique real world Person. This is illustrated in Figure E.7 (as taken from Figure 11 in 6.2.2).

NOTE 2 Different fonts and representations are used for "identifier" to recognize the wide variety in forms and information technologies used to capture unique identifiers pertaining to a specific persona of a Person. The different "size" of the lines indicates that some combinations are used more frequently than others.

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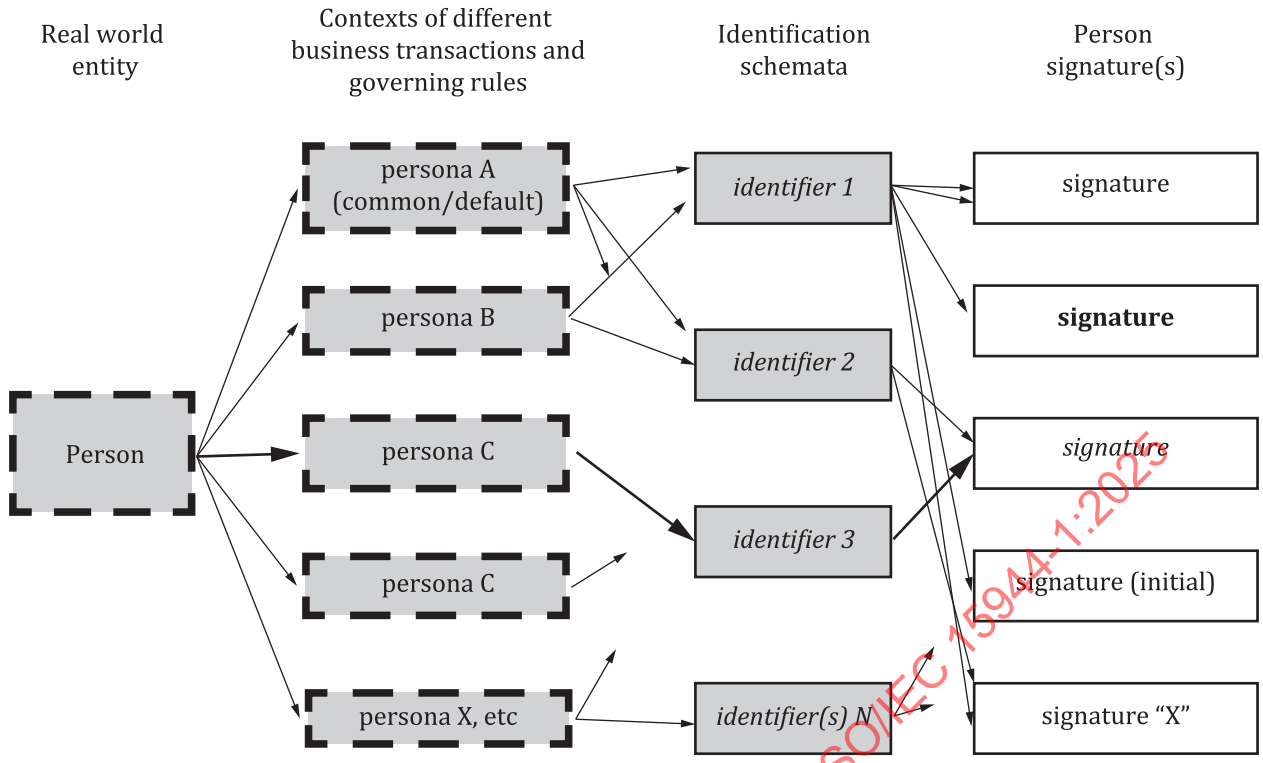


Figure E.7 — Illustration of relationships of links of a Person to (its) persona(e) to identification schemata and resulting identifiers to associated Person signatures — In the context of different business transactions and governing rules

A representation of Figure E.7 using the Formal Description Technique (FDT) Unified Modelling Language (UML) as the OeDT for this rule yields the following:

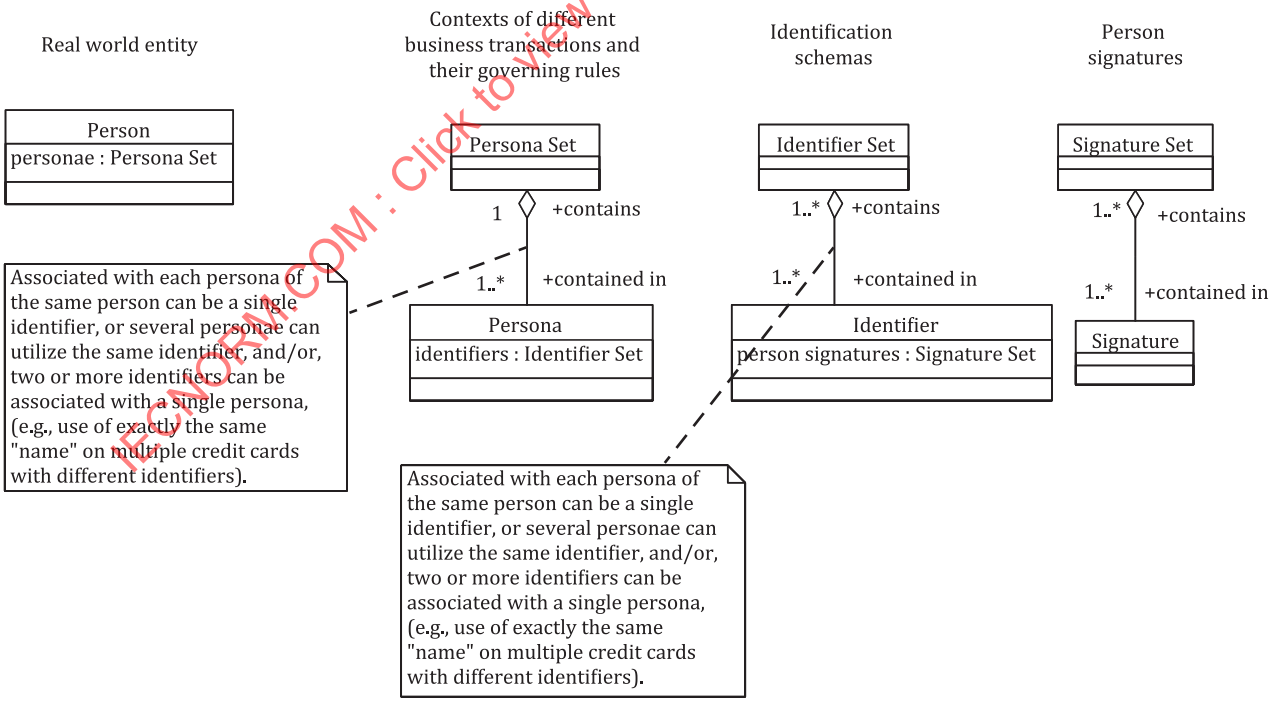


Figure E.8 — UML-based representation of Figure E.7

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E.5 Person — identification and authentication

As determined in E.3, a Person has one or more persona (and an associated identifier(s) with each). Which persona and associated identifier is to be used depends on the contexts of different business transactions and governing rules. However, with respect to the role of a Person in a specific instance of a particular business transaction, a Person will use a single and unique combination of its persona and the associated identifier, i.e. as its "Person identity" in an instantiated real world business transaction.

Person identity is defined as in 3.51.

Rule E-15:

The Person identity, i.e. the Person and the associated identifier, used by a Person in a business transaction, shall be capable of being prescribed depending on the context and goal of the business transaction.

It is assumed that for any business transaction modelled and specified using this ISO/IEC 15944-1 standard and for which the applicable re-useable scenario(s), scenario attributes, and/or scenario component(s) are registered using ISO/IEC 15944-2 will explicitly state the nature and contents of the Person Identity(ies) deemed to be acceptable in such business transactions.

It may well be that for a particular business transaction, such as the provision of a medical service, a particular and pre-specified and qualified Person identity is required to be used by the Person (as buyer) who is the recipient of such a medical service. And in another business transaction, one or more Person identities may be used, i.e. as long as they meet certain specified criteria, (e.g. any valid credit or debit card).

Figure E.9 (taken from Figure 12 in 6.2.3) illustrates the range of links between Person and Person identity.

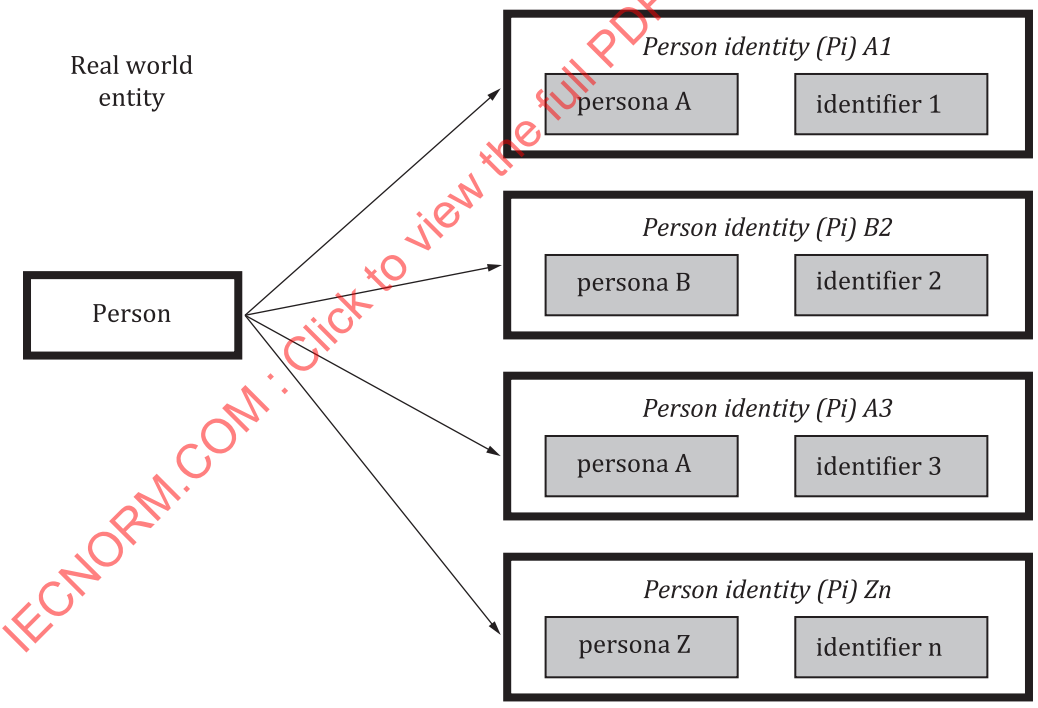


Figure E.9 — Illustration of range of links between Person and Person identity(ies)

A representation of Figure E.9 using the Formal Description Technique (FDT) Unified Modelling Language (UML) as the OeDT for this rule yields the following:

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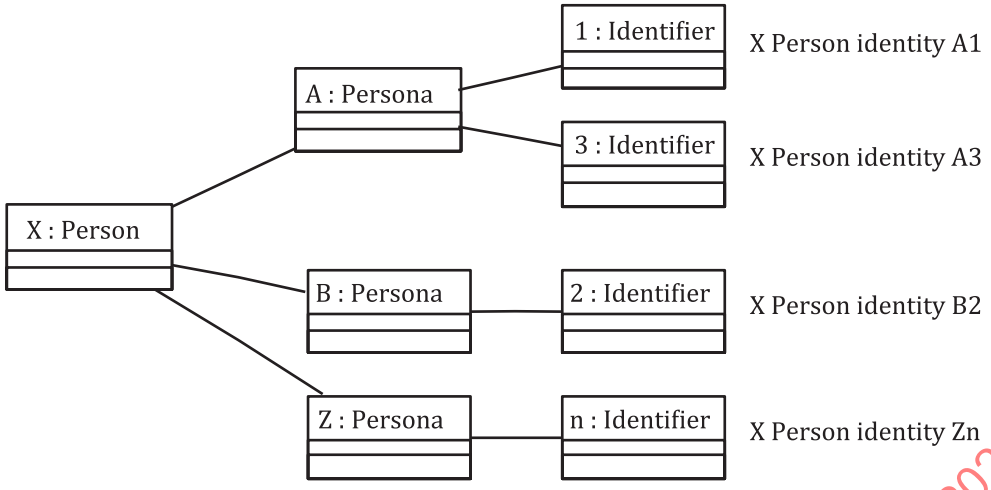


Figure E.10 — UML-based representation of Figure E.9

Business transactions differ in their nature and goals. The rules governing a business transaction: (a) may allow a Person to use one of several Person identities, (e.g. one of several different credit cards or debit cards); or, (b) require a Person to have/use a pre-specified Person identity, (e.g. a private health card, a national health insurance card, a passport, a drivers license, etc.).

When a Person identity is presented for use in a business transaction, it has to be "recognized" by the other parties to the business transaction. Each party to the transaction may have its own rules governing the requirements for establishing a "recognized Person identity."

Depending on the rules governing a business transaction, a Person identity for interchange purposes can be comprised of a small, finite set of data elements such as those required for identification systems for Persons based on international standards as found in ISO/IEC 6523, ISO/IEC 7501 or ISO/IEC 7812. (See further Annex D) The set of data elements required may be more extensive but shall still be finite and prescribed.

"Recognized Person Identity" is defined in 3.55.

Rule E-16:

In a business transaction, a recognized Person identity is established by either:

1) **mutual recognition and acceptance; or,**

2) **by referring to an identifier in a Registration Schema of a Registration Authority.**

This rule is illustrated in Figure E.11 (taken from Figure 13 in 6.2.3)

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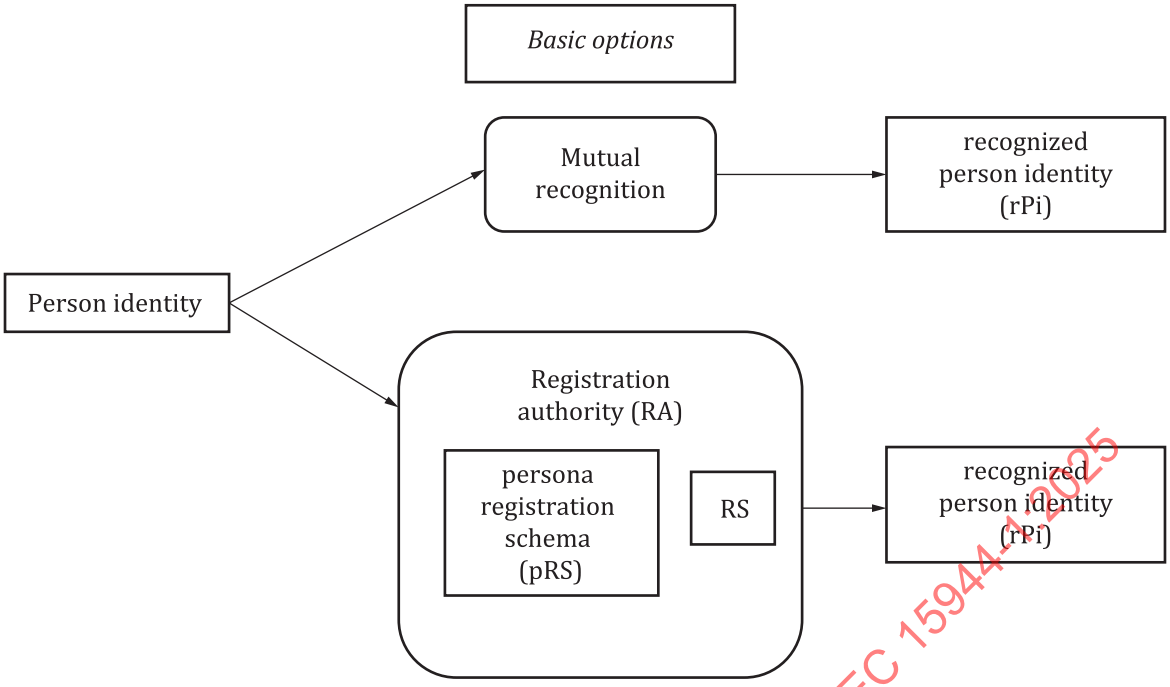


Figure E.11 — Illustration of two basic options for the establishment of a recognized identity based on a Person identity for use in a business transaction

A representation of Figure E.11 using the Formal Description Technique (FDT) Unified Modeling Language (UML) as the OeDT for this rule yields Figure 12.

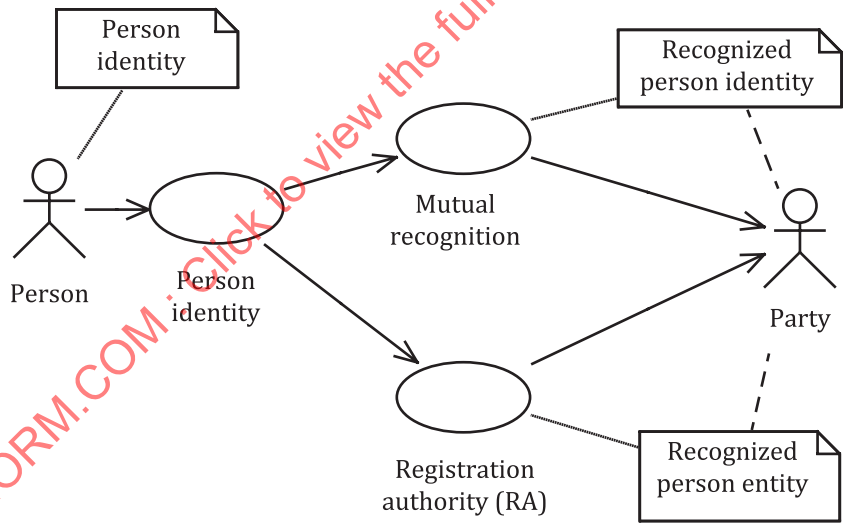


Figure E.12 — UML-based representation of Figure 11

When modelling a business transaction using this document, it is important to specify which of these two options apply.

Guideline E-16G1:

A recognized Person identity based on a Registration Schema of Registration Authority has the added attribute of being re-useable and thus is the preferred approach in support of Open-edi[91]***.***

91) In this context, it is useful to quote Rule 4 in 6.1.4. Annex D presents several widely used Registration Schemas with Registration Authorities based on international standards.

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Registration Schema is defined in 3.58.

In this document, Registration Authority is defined in 3.57.

Rule E-17:

A Registration Authority for Persons shall have explicitly stated rules for transforming a Person identity (Pi) into a recognized Person identity (rPi) to meet a stated business requirement.

When registering such business requirements as part of a business transaction modelled using this document, one should state which of these two options is being modelled (and registered). In addition, where it is possible that more than one Registration Authority's "Person identity" is acceptable, the list of acceptable Registration Authorities should be specified. Examples include: (a) a Person identity issued according in compliance with ISO/IEC 7812[92)] (or a subset of the same such as a "MasterCard", a "VISA card", an "American Express Card", a "Eurocard", a "Diners Club card", etc.); and, (b) a Person Identity issued in accordance with other ISO/IEC standards such as ISO/IEC 6523 and ISO/IEC 7501[93] and ISO/IEC 7812 where the Person is an individual; and/or any other international standard proving a similar business operational requirement. The Guideline which follows captures these requirements.

Guideline E-17G1

The rules governing a business transaction may either require the use of a specified recognized Person identity (rPi) or allow for several of a similar nature. (For example, credit card payment may be acceptable from several different credit card issuers).

The establishment or verification of a recognized Person identity will require the capability for authentication, i.e. Person authentication, especially in electronic business transactions.

Person authentication is defined in 3.50.

For Person authentication to be successful, the following actions are required to have already taken place:

— a Person identity (Pi) is required to have been established; and,

— the Person identity (Pi) is required to be recognized, i.e. be a recognized Person identity (rPi) is required to exist.

Rule E-18:

In a business transaction, Person authentication is established by either: (i) mutual recognition and acceptance; or, (ii) by referring to predefined Registration Schema and process, i.e. the rules governing the process for qualifying its members.

In modelling a business transaction using this document, it is necessary to state explicitly which of these two basic options is used and/or acceptable when registering a scenario, scenario attribute, and/or scenario component. If Option "ii)" is used the registration schema (and process) deemed acceptable needs to be specified.

E.6 Person and roles: buyer and seller

Rule E-19:

The two basic roles of Persons involved in any business transaction are those of buyer and seller

They are defined in 3.8 and 3.62.

Rule E-20:

Unless bound by external constraints, buyers and sellers as Persons are free to undertake any business transaction involving any good, service, and/or right they mutually agree to.

92) See further Annex D, especially D.5.

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The following are explanatory notes to Rules E-19 and E-20:

NOTE 1 The use of the term Person in these definitions means that seller and buyer inherit all the properties of a Person.

NOTE 2 Synonyms for buyer include "client", "purchaser", "shopper" (and "emptor" as in "caveat emptor" = buyer beware).

NOTE 3 Synonyms for seller include "dealer", "merchant", "(service) provider".

NOTE 4 Use of terms such as consumer and vendor is reserved as defined terms to be used in connection with consumer protection requirements, as set of common horizontal external constraints. (See further E.9)

NOTE 5 The phrase "providing an equivalent value, usually money" covers the following situations.

NOTE 6 It is up to the buyer and seller to decide and mutually agree upon "an acceptable equivalent value".

EXAMPLE The seller can set the monetary value at $0.00 for the good or service provided. The seller can provide this good, service, and/or right for free in terms of monetary value but the seller can still retain other rights with respect to the good, service, and/or right which the buyer upon receipt of the good, service, and/or right is obliged to honour. The common example is the seller retaining copyright or other intellectual property rights. The medical, education and social services sector represent areas where the contents of a business transaction do have value, need to be protected, etc., but such values are of a non-monetary nature.

NOTE 7 The buyer and seller to decide and mutually agree upon "an acceptable equivalent value".

NOTE 8 In the public sector, many goods, services, and/or rights are provided for "free" to buyers, increasingly known as "clients".

A primary reason the monetary value for delivery of such goods or services to Persons generally, or individuals specifically, is that the seller as a public administration has already been "pre-paid" with respect to an "acceptable equivalent value" through the collection and receipt of the same in the form of taxes.

NOTE 9 The buyer and seller can barter, i.e. not all business transactions need to involve money.

NOTE 10 With respect to the seller, the phrase "to get possession of" and "to hand over" could or could not involve full transfer of ownership rights. For example, the buyer, can purchase only: (a) a "right to re-sell", i.e. the seller retains the intellectual property rights on the good, service and/or right bought by the buyer; or, (b) the business transaction can be a "sale" of a licence to use with the seller retaining the intellectual property rights, (e.g. patents, copyrights, trademarks, or industrial designs).

NOTE 11 For Open-edi based implementations where the exchanges of equivalent values are primarily of a non-monetary nature, (e.g. as in (electronic) administration, health, education, social services, etc.), synonyms for seller and buyer are often "provider" and "recipient" or "client".

NOTE 12 It is assumed that: (1) either the buyer or the seller can use an agent; (2) that both can agree on involving a third party; and/or, (3) external constraints can require the involvement of a third party in a pre-specified role.

Rule E-21:

Rules and practices of buyers and sellers governing business transactions, including those via Open-edi apply, either to Persons generally or distinguish between individuals, organizations and/or public administrations.

It is important to ascertain in a business transaction whether the rules and practices of buyers and sellers which govern a business transaction: (1) apply to Persons generally, i.e. as internal constraints with no external constraints applicable; or, (2) distinguish (or need to distinguish) between individuals and organizations, (and/or public administration) as a results of the application of minimum, common external constraints. (See further E.8)

Where one needs to distinguish in a business transaction whether one (or more) of the parties, i.e. Persons, to the business transaction is an individual or an organization, it is likely that privacy/data protection rules need to be applied to "information pertaining to an identifiable individual" associated with a business transaction. (See further ISO/IEC 15944-8)

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Rule E-22:

It is assumed that, unless bound by external constraints buyers and sellers as Persons are free to undertake any business transaction involving any good or service they mutually agree to.

The basis of the Business Transaction Model (BTM) is that it has been derived to provide a simple view of commerce for which there are no constraints on the actions of buyers and sellers, i.e. the only constraints are internal constraints which are those which the parties to the transaction impose on themselves. The BTM recognizes that there often are external constraints on buyers and sellers imposed by regulators and implemented through public administrations. (See further E.8.)

The Business Transaction Model is based on the following assumptions:

a) A natural person in the role of a buyer is deemed to be an individual.

b) A natural person in the role of a seller is deemed to be an organization.

NOTE 1 This is consistent with the international standard definition of organization. (ISO/IEC 6523)

NOTE 2 This is consistent with a self-employed and/or unincorporated natural person offering for sale a good, service and/or right (and already being considered to be an organization for sales tax/value-added tax purposes).

E.7 Person and delegation of commitment to agent and/or third parties

E.7.1 General

In many business transactions, several other parties are involved other than those in the roles of buyer and seller. Two categories of parties most commonly involved are those known as agents and those known as third parties. They are separate and represent different roles. In addition, this issue is complicated by the use of various terms/words being used as synonyms, (e.g. intermediary, service provider, service bureau, etc.).

It may well be that in one business transaction, a service provider acts as an agent and in another acts as a third party. (And in other business transactions, a service provider could play the role of seller or of buyer.) From both a commercial and legal perspective, there is a need to differentiate between (1) "acting on behalf of another Person" and "being responsible and accountable for associated commitments," versus (2) simply providing a "common service".

E.7.2 Agents

Rule E-23:

Rights or obligations arising from commitments in a business transaction shall be fulfilled either directly by the Person who is an end entity or through an agent acting on its behalf.

In most business transactions, the Persons in the role of buyer or seller as end entities, i.e. primary parties (or as "recipient" and "providers" in public administration can each either undertake all the activities and associated data interchanges directly or delegate a part of these to another Person.

A Person who acts for another Person in any capacity is defined as an agent, (e.g. as a deputy, substitute, representative, factor, emissary, etc.) (See further Oxford/Webster dictionaries). In commerce, politics, law, etc., there are numerous specific applications and uses of agents flowing directly from this general meaning. In the context of this document, agent is defined in 3.1.

With respect to us e of the term agent, it is understood that:

a) an agent is a Person and thus inherits, is required to have, all the properties of a Person; and,

b) often "intermediary" is used as a synonym for agent, but could also be a third party. Consequently, the term "intermediary" should not be used.

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In a business transaction, agents are those Persons who undertake a specific business process or function on behalf of a buyer or seller. This basic relationship of agent to a buyer or a seller is illustrated in Figure E.7 (as taken from Figure 14 in 6.2.5).

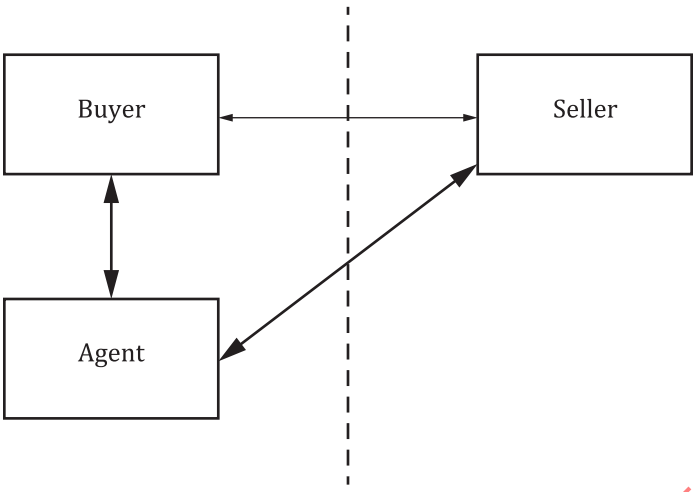


Figure E.13 — Illustration of buyer-seller interaction with buyer using an agent

A representation of Figure E.13 using the Formal Description Technique (FDT) "Unified Modelling Language" (UML) as the OeDT for the above rule yields Figure E.14.

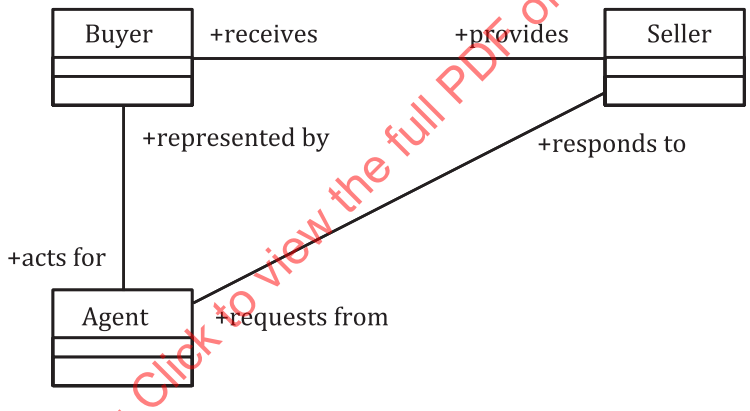


Figure E.14 — UML-based representation of Figure 13

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Rule E-24:

The ability to delegate a role to an agent shall be explicitly stated, and if constraints shall be satisfied before such delegation can take place, they shall be explicitly stated.

It is recognized that certain roles and responsibilities of a Person in a business transaction cannot be delegated to agents. Where this is so, such constraints are required to be explicitly stated.

Rule E-25:

Where delegation of a role cannot take place, this shall be explicitly stated.

This rule captures the present day requirement that certain roles, functions and associated rights and responsibilities are qualified. A Person (natural or legal) may have to meet specified criteria and/or be certified to be able to act as agent with respect to a specific activity or function in a business transaction. For example, not any Person can be a doctor, a bank, an engineer, airline company, etc.

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A basic buyer/seller agreement and associated business transaction(s) often involves the use of "agents", (e.g. banks, carriers, logistic chain facilitators, etc.). Interactions between the agents, in turn can take the form of "subsidiary buyer/seller" agreements.

In day-to-day business transactions, it is often implicitly understood who is responsible for what and when, i.e. where in a process, including the role of agents.[93] Experience, custom and precedence have established these and the "Evidence Acts" recognize this in the phrase "in the usual and ordinary course of business".

However, for business transactions via Open-edi, such commonly understood delegations to agents are required to be explicitly stated at a level of preciseness and unambiguity which:

a) facilitates maximum use of information technology among autonomous Persons and their agents;

b) builds trust and confidence for the digital economy; and,

c) ensures re-usability of scenarios and scenario components.

E.7.3 Third parties

Rule E-26:

A business transaction takes place between two Persons, and other Persons, i.e. third parties, may fulfil specified role(s) or function(s) on mutual agreement or as a result of external constraints.

Any business transaction, including commercial agreements and contracts, always involves the two Persons primarily concerned, i.e. in our case a Person in the role of buyer and another Person in the role of seller. Quite often whether or not either Person uses an agent(s), there still may be other Persons involved, i.e. a third party. Third parties fulfil a role or function mutually agreed upon by the two primary parties most often in a position of neutrality and of trust.

An early example is that of the notary, "a person publicly authorized to draw up or attest contracts or similar documents, to protest bills of exchange, etc., and discharge other duties of a formal character". (Oxford English Dictionary, 2) As a neutral observer and note taker, a notary has the trust of all Persons primarily concerned, i.e. is a trusted third party (TTP) to all the primary Persons.[94]

A generic definition for third party in 3.65.

In addition to notarial-type functions, clearinghouses and exchanges are prime examples of third parties. The nature of the linkages between buyer and seller and a common third party is illustrated in Figure E.8 (as taken from Figure 15 in 6.2.5).

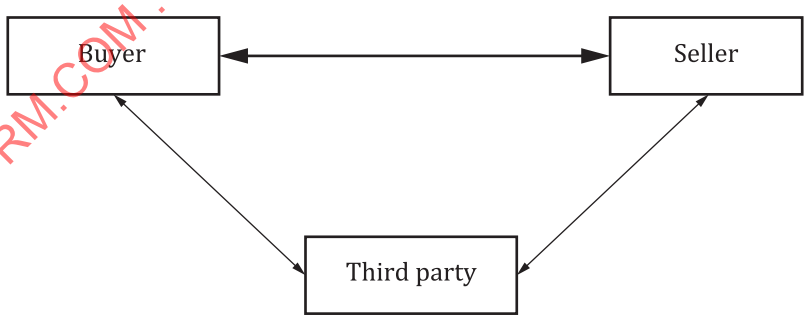


Figure E.15 — Illustration of a buyer and seller with a third party

93) Within the world of information technology, one also speaks of agents, (e.g., robots, spiders, crawlers, bobots, etc.). It is recommend that such mechanisms, software programs, applications, etc., and other technical components be referred to as "IT agents". This reduces some of the present confusion.

94) The introduction of paper documents as business and financial instruments (16th century) in support of commerce as a substitute for actual persons being present also required the building of trust and confidence in them at that time of new information technology. This was achieved through the use of trusted third parties (TTPs), i.e. notaries. As trust and confidence in the use of paper documents increased the need for TTP services diminished.

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A representation of Figure E.15 using the Formal Description Technique (FDT) "Unified Modelling Language (UML) as the OeDT for the above rule, yields Figure E.16.

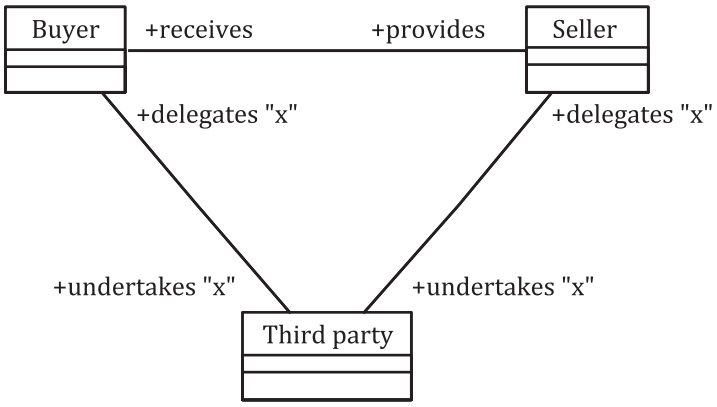


Figure E.16 — UML-based representation of Figure 15

E.8 Person and external constraints: regulator

It is understood with respect to present day business transactions, as well as with respect to those enacted in the future based on Open-edi standards, that there are external constraints on both (1) permitted behaviour of buyers and sellers; and, (2) the nature of the goods, services and/or rights being provided.

Rule E-27:

External constraints exist on the provisioning of goods, services and/or rights and the behaviour of persons as players in business transactions including those provided via electronic commerce.

The introduction of external constraints on the behaviour of Persons as players and their roles as buyers or sellers in a business transaction introduces an additional third role, namely, that of a regulator. Entities which impose external constraints on market behaviour and associated business transactions of buyers and sellers are deemed to be regulators. Regulator is defined in 3.59.

Key properties of an entity known as a regulator are that:

a) it is required to be a Person;

   Increasingly this is a "legal person", i.e. organization, instead of an individual[95]. A regulator represents an authority who prescribes principles, policies or rules which govern or control (a) behaviours of Persons such a limiting the set of rights and obligations they can commit to in a business transaction, (b) the manufacture/provisioning of goods and/or services and, (c) interchanges of the same among Persons. For example, the sale of certain kinds of goods may be prohibited by a regulator, or if allowed only under specific rules and conditions, (e.g. pharmaceuticals products sold as "drugs"), sales of alcohol prohibited to minors, etc.

b) the domain or applicability of the role of a regulator is usually linked to that of a jurisdictional domain. Jurisdictional domains of various categories and at various levels exist. The issue of identification, mapping and categorization of jurisdictional domains is addressed in ISO/IEC 15944-5.

It is assumed that prescription(s), (e.g. laws, regulations, policies, directives, etc.), issued by Persons in their role of regulators will be:

a) harmonized and consistent among and between all levels of government (domestically and internationally);

95) In many jurisdictional domains such as "constitutional monarchies", the regulator is, in law, a natural person, i.e., a King or Queen, in whose name laws and regulations are issued (or via an "agent of the Crown" such as a "minister of the Crown".

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b) be clear, predictable and precise providing equal treatment for digital and non-digital transactions;

c) promote and support the use of open standards and interoperability including these rules sets, (e.g. laws, regulations, policies, etc.); and

d) that external constraints prescribed by regulators on business transactions (should) have the attributes of consistency, predictability, clarity, flexibility, etc.[96)]

E.9 Person and external constraints: individual, organization, and public administration

E.9.1 Purpose

It is understood with respect to present day business transactions, as well as with respect to those enacted in the future based on Open-edi standards, that there are external constraints on both (1) permitted behaviour of buyers and sellers; and, (2) the nature of the goods, services and/or rights being provided. External constraints exist on the provisioning of goods and services and the behaviour of Persons as players in business transactions including those provided via electronic commerce.

A very common, almost generic requirement of external constraints are those which pertain to a Person where one is often required to distinguish whether the Persons participating in business transactions are deemed to be individuals or organizations.

From a legal perspective, generally applicable worldwide, there are basically two types of Persons, namely, "natural persons", and "legal persons" (a.k.a. "artificial persons").[97)]

Initially, "human being" and "person" were synonymous both in usage and in law. The introduction in law of the now internationally legally recognized concept of the entity of "legal person", (a.k.a., "artificial person"[98)]), means that “person” and "human being" are no longer synonyms and the latter has become known as "natural persons". This is true for most of the legal systems currently in use world-wide, (e.g. common law, civil law, "Russian" law, "Chinese" law, etc.). Figure E.17 illustrates this common legal perspective.

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96) These and others are all objectives resulting from the OECD Ministerial Conference on Electronic Commerce (7-9 October 1998). (See further the URL <<http://www.oecd.org/subject/e_commerce/>> and A Global Action Plan for Electronic Commerce prepared by Business with Recommendations for Governments.
(See further the URL http:www.oecd.org/dataoecd/12/22/2091896.pdf (accessed 2009-12-20))

97) Historically, male human beings have always been recognized as having legal rights and duties, able to make commitments, etc., i.e., as Persons. For female human beings, this was an "on" and "off" situation well into the 20th century. For example, in Canada, it was not until 1921 that women were recognized as persons with a right to vote, etc., i.e., female human beings equally recognized as natural persons with the same rights and obligations as male human beings.

98) The need for raising capital, (e.g. building and outfitting of a ship for trade to the East Indies) (other than by a King or Prince, i.e., private sector instead of public sector financing), to support the expanding global world economy in the 17th century outstripped the financial capacity of partnerships and similar structures by which natural persons formed companies, i.e., initially an agreement among two or more natural persons as "companions". Thus, laws were passed in different jurisdictional domains creating a "legal" or "artificial" person, i.e., as limited liability joint stock companies, in order to be able to raise the substantial capital for what were the mega projects of those earlier times. See further the seminal work by W.R. Scott in Reference [35].

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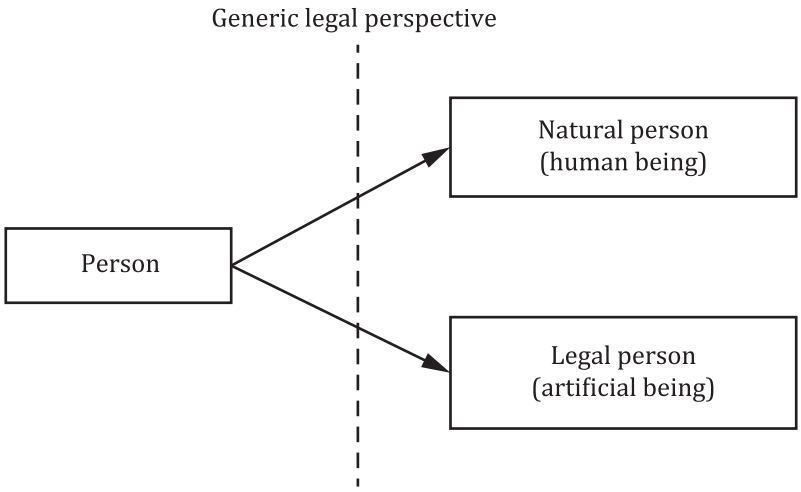


Figure E.17 — Generic legal perspective of "Person" (Graphic illustration)

A representation of Figure E.17 using the Formal Description Technique (FDT) "Unified Modelling Language (UML) as the OeDT, yields Figure E.18.

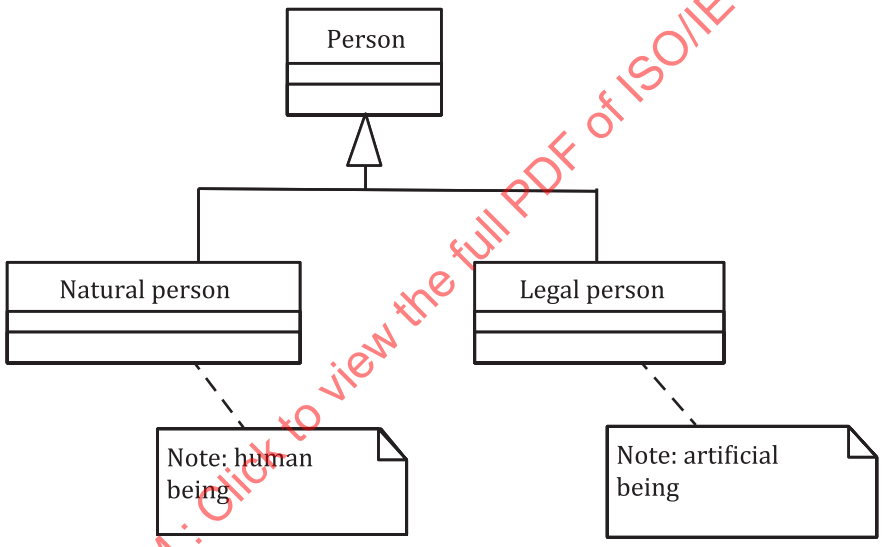


Figure E.18 — UML-based representation of "Figure E.17: Generic legal perspective of "Person""

Laws, statutes, regulations, policies, etc., (whatever the jurisdictional domain) either:

a) apply to Person in general, i.e. to both natural and legal persons and do not differentiate between the two[99)]

b) apply only to "natural persons" or "legal persons", but not both; or,[100)]

c) differentiate between "natural person" and "legal person" but apply to both[101)]

In developing the Open-edi scenarios and scenario components involving minimal external constraints, it is important to ascertain where and when which of the three noted options apply.

99) Primary examples are national goods and services taxes or local sales taxes. These apply to any Person selling a good or service irrespective of whether they are a "natural person" or a "legal person".

100) A key example is "human rights" which apply only to natural persons in their role as individuals.

101) An example is the registration of automobiles in that both natural persons and legal persons can register and own an automobile. Another example is of laws pertaining to privacy/data protection requirements which differentiate between Persons as individuals and organizations in rights and obligations.

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Rule E-28:

From a minimal external constraints perspective, the three basic sub-types of Persons as role players in any business scenario are: (a) individual, (b) organization; and, (c) public administration.

While "natural person" may be a more correct term for some technical legal reasons, the term individual is commonly used, i.e. in the context of rights and obligations, (e.g. Charter Rights, entitlements, privacy, etc.).

Similarly, organization is the concept/term commonly used in information technology in areas such as global unambiguous identification of organization for electronic addressing, (e.g. X.500 standards), security services, (e.g. X.509 standard on which PKI (Public Key Infrastructure) is based, etc.).

It is understood that:

a) a "natural person" can participate in a business transaction as either an individual or an organization Person; and,

b) a "legal person" participates in business transactions only as an organization.

Consequently, this document uses the terms individual, organization, and public administration as the three basic sub-types of Persons as players in any business transaction involving minimum external constraints. Figure E.19 (as taken from Figure 16 in 6.2.7) illustrates this.

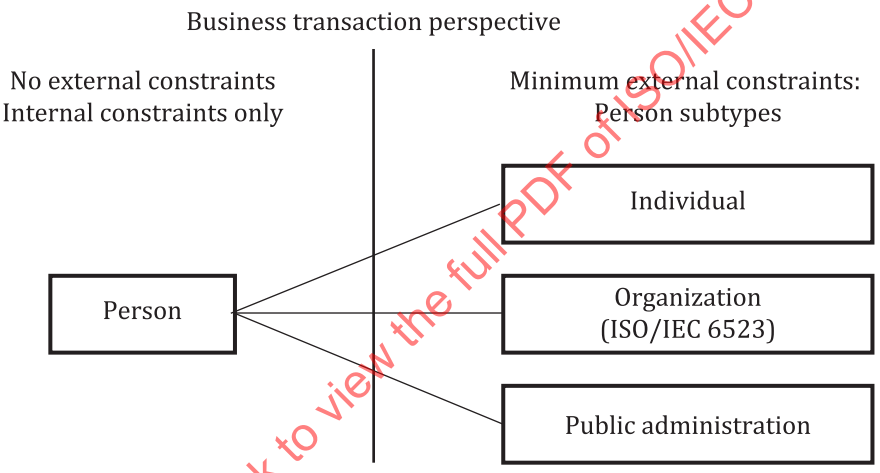


Figure E.19 — Integrated business transaction perspective of Person: Minimum external constraints

A representation of Figure E.19 using the Formal Description Technique (FDT) Unified Modelling Language (UML) as the OeDT, yields Figure E.20.

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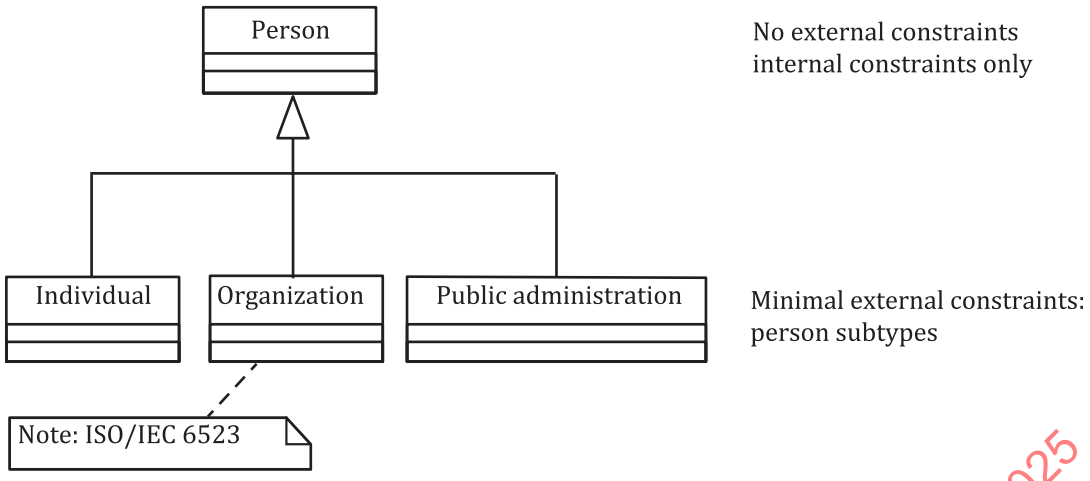


Figure E.20 — UML-based representation of Figure E.19

E.9.2 Individual

Individual is the attribution of the property of indivisibility to a natural person, i.e. in making commitments, having rights/obligations, being accountable and/or responsible for, etc.

Individual[102)] is defined in 3.28.

It is important to bring to the fore and state the following key aspects (or properties) of an individual; namely:

a) the use of the term Person in the definition of individual means that an individual inherits all the properties and behaviours of Person.

b) the definition of individual is neutral towards and independent of:

   — the manner in which various jurisdictional domains have differing rules as to what criteria are required to be met for an entity to be considered/qualify as a "natural person";

   — any qualifications, which a jurisdictional domain may place on a natural person as an individual with respect to their ability to make commitments, be held responsible for, etc., (e.g. "minors", "being incapacitated", etc.).,

c) this definition of individual is harmonized with basic concepts and requirements underlying privacy/data protection, i.e. "personal information", which is defined as "information about an identifiable individual". This includes information provided by an individual about her/himself to another Person in the context of an eventual delivery of a good, service, and/or right provided by that Person in the role of seller. It is possible that consumer protection requirements also apply to a Person who is a buyer as in individual. (See 6.2.8 and 0 on consumer and vendor)

E.9.3 Organization, organization part and organization Person

Rule E- 29:

A legal (or artificial) Person consists of one or more natural persons and/or one or more other legal Persons.

102) When the 1st edition of ISO/IEC 15944-1 was first developed in 2000 >2002, no standard definition existed internationally for individual. The review of international standards at that time did not identify any standard which contained and defined the concept/term individual. Rather, international standards tend to define particular roles of an individual in relation to a specific business process along with associated data elements, [e.g. as a "holder of a token" issued by an organization as in passport holder (ISO/IEC 7501), (credit) card holder (ISO/IEC 7812), etc.].

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A unifying term and common concept used internationally is the standard term organization as the collective common term for all the different ways legal (or artificial) persons can be composed and be recognized in various jurisdictional domains.

An international standard definition for organization exists and is widely used especially in the areas of information technology/communications infrastructure, (e.g. OSI, X.500, Internet addressing, etc.), security services, etc. It is provided in ISO/IEC 6523-1 and ISO/IEC 6523-2. This document meets the requirements arising from increasingly widespread use of information technology.

The ISO/IEC 15944-1 adapted ISO/IEC 6523 standard and defines "organization" in 3.44.

This term and definition of organization is independent of whether the Person is a "natural" or "legal" person. Any combination can form a "framework of authority", which incorporates decisional/commitment capability, responsibility, traceability, accountability, etc., attributes.

It is important to highlight and bring to the fore some key aspects of this international standard definition from the perspective of a business transaction.

First, the phrase *"act, or are designated to act, towards some purpose"* links into the Process component of the Business Transaction Model (BTM), i.e. one does not start a process without some purpose in mind especially in a business transaction.

Secondly, EXAMPE 1 "an organization incorporated under law" recognizes that each jurisdictional domain (at whatever level) can have its own rules for "incorporation", i.e. qualifying and registering a legal or artificial person.

Thirdly, EXAMPLE 2 "an unincorporated organization or activity providing goods, services, and/or rights including" recognizes that from a business transaction perspective, three key elements should be noted; namely:

a) if a Person provides a good, service and/or right, irrespective of the Person being a "natural person" or a "legal person", the Person is deemed to be an organization;

b) this definition applies irrespective of whether the Person is providing the goods, services and/or rights on a commercial basis, i.e. for-profit, or on some other basis, (e.g. public sector administrative, services to the public, with or without (some cost-recovery) fees, exchanges of information among public administrations, etc.); and,

c) this definition applies, whether or not in a particular jurisdictional domain the examples of entities given in "Example 2 are, or need to be, "incorporated".

Fourthly, the definition recognizes and takes into account that organizations in turn can re-group themselves in relation to the outside world and thus represent themselves as another different single organization for purposes of information interchange and act as a "framework of authority".

E.9.4 Organization part

A key property of an organization is that, unlike an individual, it is deemed to be divisible, i.e. can have one or more distinct parts identified for information interchange.

Rule E-30:

An organization, unlike an individual, can have more than one organization part identified for information exchange pertaining to a business transaction among autonomous parties.

The ISO/IEC 6523-1:2023, 3.2 definition for "organization part" is adapted in 3.45[103)].

103) The concept/term and associated definition for "organization part" was added to ISO/IEC 6523-1 when it was revised in 1998. The primary purpose was to reflect and incorporate the real world fact/requirement that an organization has sub-components which undertake specific roles or functions within that organization, i.e. "organization parts". Consequently, each organization part possibly need to be identified as an "unique address" (or addressable location) within an organization to which information is to be sent to or received from, i.e., for "information interchange". (The X.500 Directory Services standard is based on and supports this concept). This requirement exists irrespective of whether physical or virtual objects are to be interchanged. See further in Annex D, D.4.2.2.2.

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It is up to each organization to decide what organization parts it wishes to have. Large organizations may have hundreds of organizational parts. Small and medium sized organizations may have just a few.[104)]

Of importance from a business transaction perspective is that organization parts need to be taken into account when modelling business transactions as scenario(s), scenario attributes and scenario components. This is especially so where organization parts form a distinct part of the external behaviour of an organization.

E.9.5 Organization Person

From a business transaction perspective, one needs to be able to qualify and identify which sub-type of organization part can commit to, and be held responsible/accountable, with respect to a business transaction, i.e. on behalf of the organization.

Open-edi is more than just information exchange electronically. The context of business transaction adds key additional properties and behaviours. One of these is the need to be able to unambiguously identify and ascertain whether or not an organization part has the attributes required for it to be able to act on behalf of an organization as a Person in a business transaction. A solution to this issue is the introduction of the concept/term "organization Person" to reflect the added requirement of an organization part of being able to support commitment exchange aspects in a business transaction.

Rule E-31:

In a business transaction, an organization Person may make commitments for an organization or organization part, i.e. as authorized to do so on behalf of the organization.

Within the context of (a) the definition of Person; (b) the international standard definitions for organization and organization part; and, (c) the added requirements of commitments in a business transaction, it is necessary to introduce the concept/term and associated definition of organization Person is given in 3.46.

Figure E.21 (as taken from Figure 17, 6.2.7) illustrates the linkages among organization, organization part, and organization Person and does so in the context of commitment exchange versus information exchange.

Figure E.21 differentiates between: (a) using solid lines, the added legal and commercial perspectives of organization → organization part → organization Person relation of commitment exchange plus information exchange; and, (b) using dotted lines, the existing information exchange perspective of ISO/IEC 6523 of organization → organization part (and to various examples of organization parts) for the purpose of information exchange only.

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104) Given the wide variety in structures of organization, scope (from local to multinational), size (from a 2-3 employee SME to a Fortune 500 company), it suffices to note that there exists a multitude of organization parts such as types of organizational units, functions, positions/titles, etc. Similarly for information exchange purposes, many organizations have one or more locations specified as physical or electronic addresses to which information can be sent to or received from. Existing standards are deemed to cover information exchange with respect to organization and organization parts.

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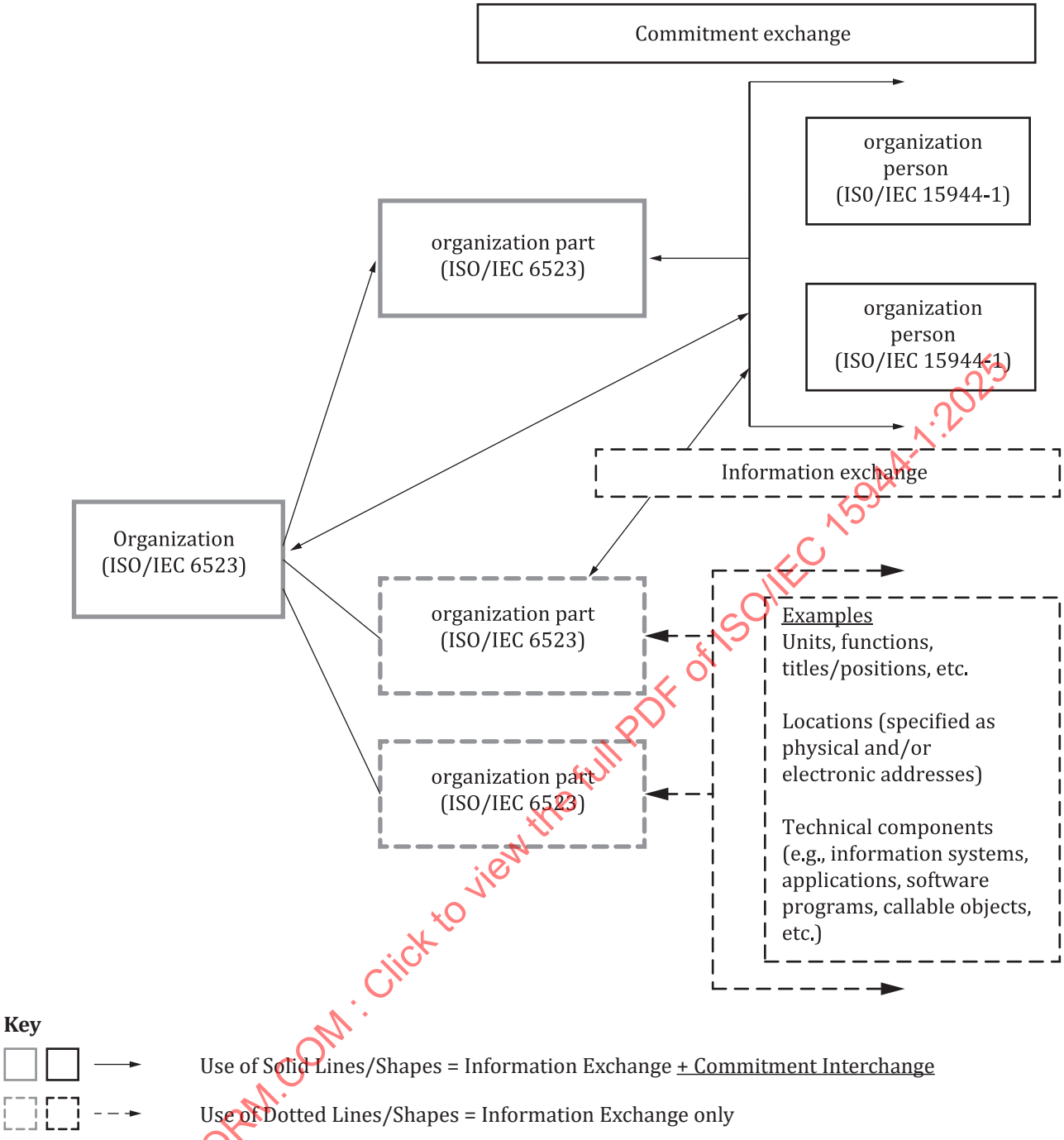


Figure E.21 — Illustration of commitment exchange versus information exchange for organization, organization part(s) and organization Person(s)

A representation of Figure E.21 using the Formal Description Technique (FDT) "Unified Modelling Language (UML) as the OeDT, yields Figure E.22.

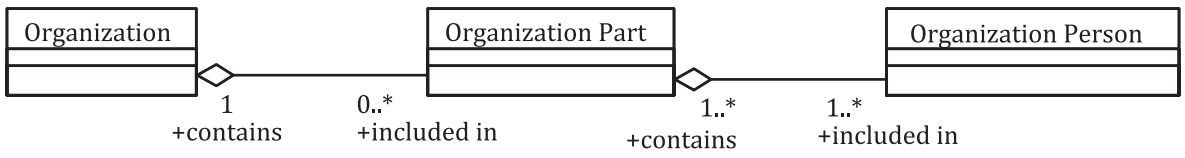


Figure E.22 — UML-based representation of part of Figure E.21

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E.9.6 Public administration

The third sub-type of a Person as a party to a business transaction is that of public administration. A public administration is a Person who is deemed to have all the attributes of an organization plus at least one unique additional attribute, from the perspective of a business transaction. A public administrator has the attribute that in addition to being able to play the roles of an organization, i.e. buyer and seller, it can also act on behalf of a regulator.

NOTE This role of acting on behalf of a regulator is unique to public administration and is independent of whether a public administration decides to administer the regulatory functions, (e.g. government services) itself or delegate (e.g. outsource) such a function, i.e. to an agent acting on its behalf.

The definition of "public administration" is given in 3.54.

E.9.7 Summary overview of the three sub-types of Persons and the three primary "primitive" roles of a Person in a business transaction

This sublause summarizes the rules and guidelines found in:

a) E.2 on Person;

b) E.5 on buyer and seller;

c) E.6 on external constraints and regulator; and,

d) E.8 on external constraints and individual, organization, and public administration.

Not all Persons as parties to a business transaction can perform all three roles especially the role of regulator. For the Business Transaction Model with respect to the above noted minimum external constraints, the permitted intersects of the Persons as players and of the three key roles is illustrated in Figure E.23 (taken from Figure 18 in 6.2.7), in which dark box represents "Yes", i.e. applies, while empty box represents "No", i.e. does not apply. The "grey" box represents those where the default is "no" but where under specified external constraint conditions, it could be a "Yes". For example, under some conditions, an individual could act as a seller. However, from an external constraints perspective an individual in the role of seller is viewed as an organization[105]. In addition, under some conditions, a public administration may delegate a regulatory role to an organization (which is not a public administration[106]).

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105) From an IT standards perspective, (e.g. ISO/IEC 6523), an unincorporated activity providing a good, service, and/or right is deemed to be an organization. However, there could be legal requirements in a jurisdictional domain, where a "natural person" in the role of a seller is deemed to be an individual and not an organization. It is up to such jurisdictional domains to resolve how such an approach is harmonized with privacy/data protection requirements.

106) Increasingly products and services provided by public administrations on behalf of a regulator are being "outsourced" to organizations, (e.g. private sector for-profit or not-for-profit organizations) which perform the role of public administration).

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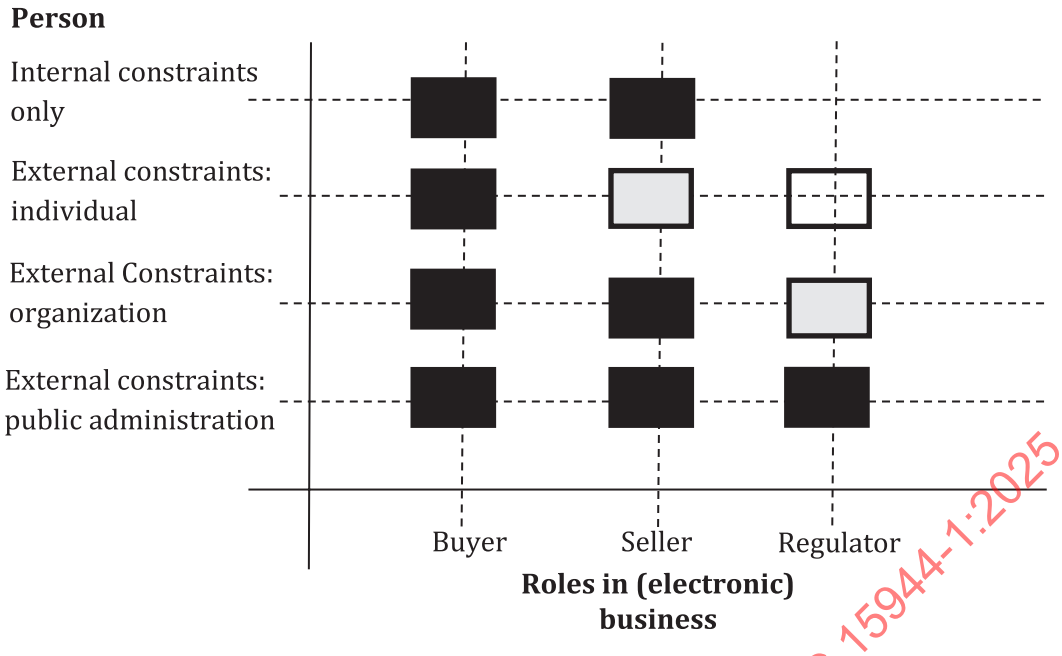


Figure E.23 — Business Transaction Model — Basic players and roles public administration constraints

E.10 Person and external constraints: consumer and vendor

Another minimum external constraint that needs to be taken into account in business transactions is that commonly known as "consumer protection". This Clause focuses on minimal external constraints of this nature but does so in a very limited manner. Its purpose is to assist those using this document to build scenarios, scenario attributes and scenario components as register-able and re-useable objects.

It is outside the purpose of this standard to address external constraints on a business transaction of the nature of "consumer protection". The sole purpose of this Clause is to ensure that when one uses this standard to model business transactions or parts of business transactions as scenarios and scenario components, one does note under "external constraints" whether of not the scenario and/or the scenario component supports external constraints of a consumer protection nature.

There is an ISO Consumer Policy Committee (COPOLCO) which is addressing the standardization of consumer protection requirements. It is anticipated that when such are developed and agreed to that these will: (1) use this document as a Normative Reference; and (2) that in turn, those using this document will be able to reference and use such international consumer protection standards to specify external constraints included in a re-useable scenario and/or scenario component.

Rule E-32:

From a minimal external constraints perspective, a common set of constraints on a business transaction where the buyer is an individual is that of a consumer protection nature.

A "consumer" is defined in 3.12.

Further, a "vendor" is defined in 3.67.

In conclusion, it should be stated that many of the external constraints of a consumer protection nature may well already be included as part of the modelling of simple business transactions. Examples include warranties, ability of the seller to inform the buyer of defects, etc. Annex F contains many such examples. With respect to consumer protection itself, this area is developed further in ISO/IEC 15944-5 as part of public policy requirements in its 6.3.2.

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Annex F
(informative)

Business transaction model — Process component

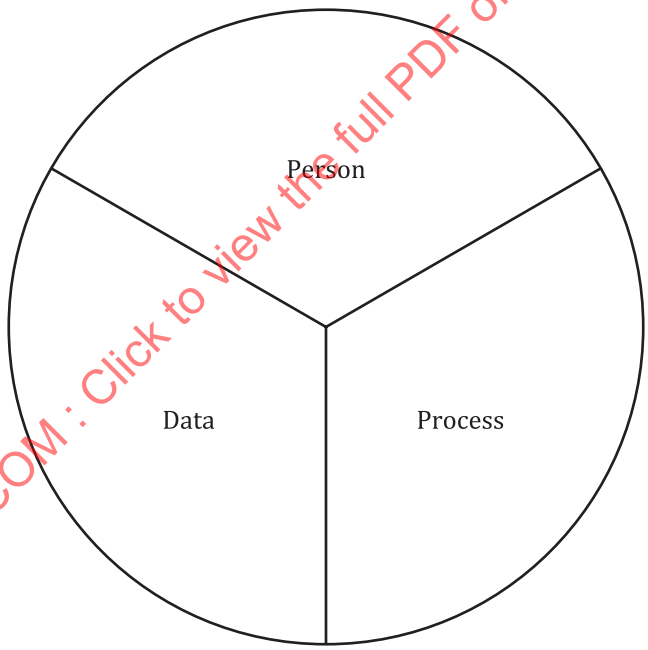
F.1 Overview

F.1.1 Purpose

The purpose of this annex is to provide informative and explanatory text for the rules and terms and definitions found in 6.1.5 and 6.3 of the normative part of this document. The rules as found here in this annex in bold are the same as those stated in these two Clauses even though both have been re-numbered in this annex.

This annex is also meant to assist users of this document who are either not familiar with standards in general or whose main focus to date has been on Functional Services Views (FSV) standards only.

This is one of three Annexes which provide additional information on one of the three fundamental components of a Business Transaction Model (BTM), namely, Person, process, and data. These three fundamental components are presented graphically in Figure F.1 (as taken from Figure 7 in 6.1.5).



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Figure F.1 — Business Transaction Model — Fundamental components (Graphic Illustration)

A representation of Figure F.1 using the Formal Description Technique (FDT) Unified Modelling Language (UML) as the OeDT yields the following Figure F.2.

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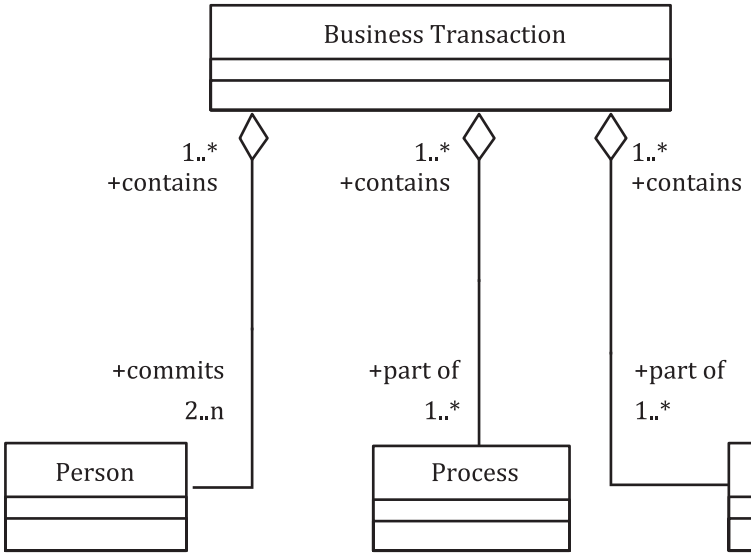


Figure F.2 — UML-based representation of "Figure F.1 — Business Transaction Model — Fundamental components"

The Business Transaction Model has been developed to serve as a common high level and non-technical view of a business transaction. The basic assumption of this Business Transaction Model is that this view is derived from both (classical) commerce models and IT models. For example, some IT models contain "system" instead of "Person". These have been integrated into commonly understood (basic) processes which can be shared, from the various perspectives of the Business Operational View, i.e. commercial, legal, public policy, standardizers, IT specialist and other interested parties. (See further Figure 3)

F.1 through F.3 serve as the explanatory text to 6.1.5, 6.3 and 7 of the normative part of this document. F.4 and F.5 serve to provide summary information on the background studies which resulted in the five phases of the process component. **A key purpose is to provide a link between the (classic) economic models of the real business world and the Business Transaction Model for Open-edi.**

F.1.2 Sources of contents

Three terms and definitions in ISO/IEC 14662 serve as the basis and point of departure for our understanding of the process component in the Business Transaction Model; namely:

a) business (defined in 3.5);

b) business transaction (defined in 3.7); and,

c) Business Operational View (BOV) (defined in 3.6).

In the context of these Open-edi definitions and for this document, a "process" is defined in 3.53.

Many models exist and are in use for analysing and describing the processes and steps in a business transaction. This annex includes a survey of "buying and selling" six models (including that developed by G. Zaltman (and T. Bonoma) (1978) whose works were the basis of earlier significant contributions to standards development work resulting in the Open-edi Reference Model).

The process component of the Business Transaction Model incorporates common elements of these models, takes into account commercial, legal and IT perspectives, and integrates them into the context of this document development work on the Business Operational View.

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F.2 Process component

F.2.1 General rules

Integrating these classic and current models, i.e. as found in F.4, in the context of the BOV results in five basic sets of activities or "phases" in a business transaction; namely:

a) planning;

b) identification;

c) negotiation;

d) actualization; and,

e) post-actualization.

The terms for the five phases, i.e. planning, identification, negotiation, actualization and post-actualization were derived so as to provide terms which are neutral towards existing economic models, as well as existing IT models. They were also derived to map to existing commercial and legal frameworks as well as public policy requirements.

Business transactions, and in particular those which are Open-edi based can be viewed from a process perspective as five distinct activities. This perspective on the process component is linked to the making of business decisions and commitments in a business transaction. By providing this common view to business +transactions, one provides a single frame of reference for discussion of many of the diverse issues as well as putting these issues in a context. For example, in "identification", this may be the point to introduce the need for authentication whereas the area of "negotiation" or "actualization" may be the point to pursue the issue of digital signatures.

Rule F-1:

Conceptually, a business transaction can be considered to be constructed from a set of five fundamental phases which are planning, identification, negotiation, actualization and post-actualization.

These five basic sets of activities or phases integrate business models taking the perspective of the seller, the perspective of buyer and that of a combined buyer-seller view as well as that of contract formation. Also incorporated is the approach of "early loose couplings" and "late bindings". Factored into this division of five phases are common external constraints of the nature of privacy/data protection, consumer protection and similar legal/regulatory requirements as external constraints on business transactions, i.e. those in addition to internal constraints. (See further 6.1.6).

This division into five phases facilitates the identification of, and mapping to, existing standards which can be used in support of Open-edi based implementations. It also facilitates specification and re-use of scenarios and scenario components and also reduces their cost of construction by maximizing (re-) use of existing standards and related tools. (See further F.3)

Rule F-2:

These five fundamental phases may take place in any order.

It is understood that these five basic phases need not occur in a sequential manner. For example, data pertaining to post-actualization aspects, (e.g. warranties, consumer protection requirements), may well be made available as part of the planning phase. For example, data pertaining to post-actualization aspects, (e.g. warranties, consumer protection requirements, etc), may well be made available as part of the planning phase. Or information on the choices in methods and terms of payment often forms part of the planning phase.

Rule F-3:

A Person may terminate a business transaction by any agreed upon method of conclusion.

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In any business transaction any party to the transaction can terminate the business transaction upon one of the agreed conclusions by all those involved although some of the recognition may be implicit. A common example is that of one of the parties decides not to respond anytime during the process, (e.g. a time out).

Rule F-4:

The five fundamental phases may be completed in a single continuous interactive dialogue or through multiple sets of interactions among buyers and sellers and possibly involve agents and third parties as well.

For example, the Immediate Settlement Model is a trade model where the entire business transaction process, such as planning, identification, negotiation, actualization, (e.g. delivery of merchandise and payment), is completed in real time under the Open-edi environment.

A typical case would be downloading a software product or music from the seller with the buyer paying with e-money or a debit account. Note that in this example while the planning and identification phases can pertain to the identification (and authentication) of the buyer, it this case it is not required (see further D.4.2) as the good, service and/or right is simply delivered to the electronic address provided. This type of electronic business transaction is equivalent to a buyer walking into a store and paying with cash. Because the seller has 100 % confidence in the value token being provided in exchange for the good, service and/or right provided, there is no need to identify the buyer. If at times a warranty is provided, it is up to the buyer to decide whether or not to exercise the warranty. Doing so requires the buyer to identify itself to the seller but this is at the buyer's discretion, (e.g. would be an optional Information Bundle(s) in the scenario for this business transaction). This would be a scenario involving internal constraints only.

F.2.2 Planning phase

In the planning phase, both the buyer and seller are engaged in a process to decide what action to take for acquiring or selling a good, service and/or right. From a seller's perspective, the planning phase relates to all those actions or events whereby data pertaining to the availability of a good, service, and/or right is made available. It is up to the seller to decide how much data to make available and at what level of granularity without having any information on a specific buyer.

For example, the seller may decide to limit the level of detail of information, or not to provide particular information about a good, service, and/or right without the prospective buyer: (1) identifying itself; and, (2) agreeing to maintain the confidentiality of the information provided by the buyer. All information made available on the Internet by sellers of goods, services and/or rights which can be accessed free of charge and without identification, (e.g. no cookies), is a good example of the planning phase.

From a seller's perspective, common examples include advertising, market research, promotions, provision of catalogues, direct marketing, product branding and positioning of a good or service, auctions, etc.

Many public and private sector organizations, as well as individuals provide information products for free, (e.g. reports, "advice" documents, software, music, etc.). Often the information pertaining to the negotiation, actualization and post-actualization phases of the business transaction is included. Often too this is in the form of an intellectual property protection condition, (e.g. the product or service is available for free but for personal use only, is not to be resold, use of product needs to identify and acknowledge the source, etc.).

The buyer by downloading the "for free" product service, i.e. actualization phase, is deemed to agree to abide by the associated terms and conditions, i.e. the contract formation, and abide by them in the use of the product, i.e. post-actualization phase.

A common example of terms and conditions attached to for free products or services are those pertaining to intellectual property rights, i.e. the product or service can be downloaded for free but the seller retains the intellectual property rights, (e.g. copyright). Common terms and conditions here include "For personal use only and not to be sold (or parts offered for sale)", "users of this product need to identify and acknowledge the source where this product forms part of their work", etc. It is common practice for the seller to require a buyer to explicitly acknowledge having read, understood and agreed to abide by such terms and conditions before a download occurs.

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From a buyer's perspective, the planning phase pertains to all those actions or events whereby:

a) the potential buyer searches among potential suppliers of a good, service and/or right based on information made available by these suppliers of goods, services and/or rights, i.e. from a buyer's perspective potential sellers;

b) the potential buyer requests information, product/service literature, etc., from potential sellers; and/or,

c) the potential buyer makes a more explicit statement of needs in the form of a request for proposal (RFP)/ request for bid (RFB) for quotation (RFQ), price quotes, etc. It is becoming increasingly common and often required for public sector organizations, (e.g. as regulators), to publicly post (detailed) specifications for the purchase of a good, service, and/or right.

   For example, where a Request for Proposal (RFP) or request for bid (RFB) contains confidentiality or intellectual property provisions, persons participating in such a RFP or RFB would be expected to ensure that conditions of this nature are adhered to in the exchange of information bundles.

F.2.3 Identification phase

The identification phase pertains to all those actions or events whereby data is interchanged among potential buyers and sellers in order to establish a one-to-one linkage. These one-to-one linkages pertain to particular goods, services and/or rights, availability of the same, the identification of the buyer and seller to each other on a one-to-one basis, etc.

The Identification Phase also pertains to exchanges of Information Bundles required to progress from the planning phase to the negotiation phase as is mutually acceptable. A key result of the identification phase is the transformation from a loose coupling among potential buyers and sellers to an early one-to-one binding required, and mutually agreed to, for the negotiation phase to begin.

From a seller's perspective, there may well be limits on the nature and level of detail of data a seller is willing to provide on a particular good, service and/or right, i.e. in the planning phase, without identification of the potential buyer.

From a buyer's perspective, there may well be requirements for more detailed data on the prospective seller, especially where the seller is represented to the buyer in electronic form.

A key aspect of the identification phase is to ensure that “minimum external constraints: public administration” of the nature of privacy/data protection, consumer protection, etc., can be complied with if required. This is independent of whether these external constraints are of a regulatory or self-regulatory nature. This also requires the seller to determine whether the Person as potential buyer is an individual or an organization (a common minimum external constraint) or can simply be considered a Person (a no external constraints perspective, i.e. internal constraints only).

NOTE For the purposes of this document, and in conformance with ISO/IEC 6523-1, unincorporated persons who provide a good, service and/or right, i.e. natural persons, who as role players are sellers in a business transaction, are deemed to be an organization.

It is up to each seller to decide how much data and at what level of detail about a good or service offering to make available without knowing the identity of a particular prospective buyer.

From an electronic business transaction perspective, the planning phase of the process component would include product or service information made available via the Internet WWW which a prospective buyer could view or download without "cookies".

It is also important to note that the planning phase covers all activities of Persons, including individuals as well as organizations (private or public sector), making freely available information about themselves or produced by the same, i.e. that information they decide to make publicly available. This includes many types and categories of public sector products documents which are available for free but where a buyer in downloading them in effect incorporates the negotiated element in a contract formation the primary element of which is the seller maintaining intellectual property rights.

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The boundary between the planning phase and the identification phase is marked by characteristics such as:

a) the seller requires to know the identity of the prospective buyer;

b) the seller requires the prospective buyer to agree to a confidentiality arrangement before furnishing more detail, or what is considered proprietary data, on the good, service and/or right to be provided; and/or

c) the seller requires and the prospective buyer agree to "return" (or destroy) all confidential/proprietary recorded information should the business transaction not be "actualized".

In summary, from a seller's perspective the boundary between the planning phase and identification is when the seller desires to identify on a one-to-one basis the identity of the prospective seller before providing any additional data.

Similarly, the boundary between the identification phase and the negotiation phase is marked by characteristics such as:

a) the seller requiring no commitments from the buyer apart from the latter agreeing to keep particular detailed information confidential and/or agree to return or destroy the same should the negotiation phase fail to result in an agreement; and/or

b) any information provided on terms and condition, possible options, etc., before "formal" negotiations are entered into.

F.2.4 Negotiation phase

The negotiation phase pertains to all those actions and events involving the exchange of Information Bundles following the identification phase, i.e. a potential buyer and seller having (1) identified the nature of good(s), service(s), and/or right(s) to be provided; and, (2) identified each other at a level of certainty, i.e. unambiguity, to their mutual agreement. The process of negotiation is directed at achieving an explicit, mutually understood, and agreed upon goal of a business transaction. This may include such things as the detailed specification of the good, services and/or right, quantity, pricing, after sales servicing, delivery requirements, financing, use of agents and/or third parties, etc. This is the key to the entire process because it is during the negotiation phase that the direction of the remaining activities in a business transaction will be established.

The end of the negotiation phase is marked by the following conditions being present.

a) The particular good, service and/or right to be provided by the seller to the buyer have been specified at a level of detail, i.e. granularity, mutually agreed to by both buyer and seller.

b) The buyer and seller have unambiguously identified each other to their mutual satisfaction. and where necessary required authentication requirements and need for type/level of security services have been mutually agreed to.

c) The buyer and seller have agreed to whether or not agents or third parties are to be involved in the business transaction and, if so, have explicitly stated the specified roles or function these Persons are to fulfil.

d) The buyer and seller have agreed to terms and conditions pertaining to:

   — the acceptable equivalent value which the buyer is to provide to the seller in exchange for the latter providing the good, service and/or right.

   — If an "acceptable equivalent value" is of a monetary nature, this involves agreement on terms of payment, method of payment, financing, etc.

   — transfer of property rights, (e.g. from full and complete ownership to a (permanent or short-term) licence to use, (e.g. as in relation to intellectual property rights).

   — post-actualization requirements, if any have been identified and agreed to (see F.2.6)

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e) Contract formation is deemed to have been concluded. Formation of contract can range from:

— the seller providing an explicit summary of all the pertinent information exchanged as information bundles exchanged during the planning, identification and negotiation phases for sign-off by the buyer; to

— the totality of the exchanges of Information Bundles among seller and buyer ((and/or participating agents and/or third parties) during the planning, identification and negotiation phases resulting in the formation of an implicit contract. Many electronic business transactions will be of this nature.

Finally, it should be noted that the results of the negotiation phase may well be agreement to conduct electronic business transactions under specified terms and conditions, pre-identified options and variables, (e.g. added discount on price, if volume reaches certain threshold levels, etc.). The actualization phase would in effect consist of multiple instantiations of a pre-agreed upon model of a business transaction.

F.2.5 Actualization phase

The actualization phase pertains to all activities or events necessary for the execution of the results of the negotiation. Normally the seller produces or assembles the goods, starts providing the services or rights, prepares and completes the delivery of good, service and/or right, etc., to the buyer as agreed to according to the terms and conditions agreed upon at the termination of the negotiation phase.

Normally, the buyer begins the transfer of acceptable equivalent value, usually in money, to the seller providing the good, service and/or right. Where transfers of value of a monetary nature are involved, these can range from pre-paid (P.P.D) to cash-on-delivery (C.O.D), i.e. as found in common international commercial terms (a.k.a. Incoterms[107]), or for pre-paid deposit or no deposit, to staggered payments, financing, to payment at a mutually agreed to date after delivery of acceptance by the buyer of the product/service, (e.g. "no payment/no interest for 90 days").

In addition, it is understood that in transport of a good or a service from a seller to a buyer and the transfer of equivalent acceptable value from buyer to seller, there are associated transfers of property rights. It is assumed that unless special conditions apply, where and how such transfer of property rights are to be transferred is governed by international accepted commercial terms, i.e. Incoterms, (e.g. "F.A.S." or Free-Along Side, or "F.O.B." Free-On-Board, etc.).

F.2.6 Post-actualization phase

The post-actualization phase includes all of the activities or events and associated exchanges of Information Bundles that occur between the buyer and the seller after the agreed upon good, service and/or right is deemed to have been delivered.

These can be activities pertaining to warranty coverage, service after sales, post-sales financing such as monthly payments or other financial arrangements, consumer complaint handling and redress, or some general post-actualization relationships between buyer and seller. In addition, this could include ongoing communications pertaining to product recall or fixes of defects, availability of product replacements, (e.g. new models), or associated product availability, available changes in the services provided (or add-ons), available changes in the terms and conditions pertaining to the good, service and/or right provided, (e.g. prices/rates, packaging or bundling of services, extensions of warranties, or time period covered, etc.).

F.3 Process component and construction of scenarios and scenario components

F.2 contains several examples of business transactions or parts thereof which can be modelled into re-useable scenario and scenario components. This Clause provides some further information from the perspective of construction of scenarios and scenario components.

First of all, only two roles of Person are presented, i.e., buyer and seller, and these involve internal constraints only, i.e. no external constraints. Further, agents and third parties are also entities which can form part of re-useable scenarios involving internal constraints only. Categories of Persons are not differentiated, i.e.

107) International Commercial Terms. See further http://www.iccwho.org/incoterms

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individual, organization, public administration, which pertain to (are the result of) external constraints. This allows one to build generic scenarios without having to include privacy/data protection requirements.

Similarly, the roles of vendor and consumer are not included since these involve adding properties and behaviours to seller and buyer pertaining to requirements arising from external constraints in the form of consumer protection.

Secondly, one can develop generic base scenarios covering common aspects of the planning and identification phase. For example, accompanying the sending of a catalogue is an initial identification by the seller of prospective buyers and the assignment by the seller of an (initial) customer ID, (e.g. a catalogue subscription provided for free).

Thirdly, one can combine the requirements of the planning, identification and negotiation phases into a scenario and associated scenario components to support a Mediated Trade Model and associated Basic Mediated Trade Scenario[108]. A third party is involved and performs common business activities on behalf of both buyer and seller.

Fourthly, various common business processes forming part of the actualization phase of a business transaction can also be modelled as re-useable scenarios and scenario components. Examples include a "Delivery Scenario," a "Payment Scenario", an "Authentication Scenario", etc.[109]

F.4 Summary of background study supporting the five phases of the process component

F.4.1 General

This subclause provides summary information on the background study which resulted in the five phases of the process component of the Business Transaction Model. In F.4.2 the Initial view is presented and in F.4.3 the combined results of the analysis of the various buying and selling models. In F.4.4 is found a selective bibliography while in F.5 the key characteristics are noted of the six buying and selling models forming part of the background study.[110]

F.4.2 Initial view of process component

In any business transaction there appear to be at least five phases to a process. Each phase provides a distinct set of activities or sub-parts for the completion of the business transaction. However, these actions do not necessarily occur sequentially. They are:

a) **Identification** - the act of positively identifying buyer and seller, plus other objects to be used in the process.

   In this part of the process, both buyer and seller need to positively identify themselves. If we take the situation where a buyer enters a store, say, to buy clothing, his or her presence is indication to the seller of intent. However, in a distance-selling situation, both the buyer and the seller need positive identification of the other. Identification can include, for example, product validation or service validation -- I represent a particular clothing line or I am the value-added reseller of Microsoft products. The seller may use this type of identification in the selection of the seller of choice.

   Likewise, the seller needs some assurance of the identity of the buyer. As the process continues to the next steps, it will become increasingly more important to assure the correct identity of the buyer.

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108) See further ISO/IEC TR 15944-6:2015, 7.3.4 "*Trade models by participation type*" ” which are part of 6.6 *Classification and Identification of Open-edi Scenarios.*

109) See further ISO/IEC TR 15944-6:2015, 7.4.2 "*Scenario types*".

110) The development of the five phases of the processs component was a result of the separate study of well known buying and selling models led by David Clemis. The result of this study formed the basis of 6.3.

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b) **Negotiation** - the process of settling on price, quantity and other elements of the good, service and/or right.

The most important part of the process is that of negotiation. The buyer and the seller determine the good, service and/or right needed by the buyer, the quantity and the price. Other factors such as payment schedules, financing and delivery schedules are also determined. At the conclusion of this stage, both buyer and seller will have completed a contract for the good, service and/or right and established the mechanism for payment and delivery.

c) **Transaction** - the process of exchanging monetary instruments for the good, service and/or right

Following the negotiation for the service, the next step is the actual production of the good, service and/or right and the exchange of payment. In this stage, the good, service and/or right is prepared for exchange and payment is made or arranged. The process of this phase has been simplified if the negotiation has been completed and comprehensive.

d) **Delivery** - the act of placing the good, service and/or right into the hands of the buyer.

Once the transaction has been completed, the good, service and/or right is delivered to the buyer by the seller. It is not until or the buyer receives the good, service and/or right, that a basic commerce activity can be considered complete.

e) **Client Service** - the actions after the delivery has been completed; post-delivery activities, replacement and exchange policies, redress of consumer grievance, to name a few.

There may be an obligation of the seller to provide service after the completion of the transaction and delivery. Normally, this is called client service or post-delivery service. In the negotiation stage, the buyer and the seller may agree to conditions of the quality and workmanship, which are warranted by the seller. The seller may also provide post-delivery maintenance of the good, service and/or right. There may be other follow-up agreements, which may have been negotiated between buyer and seller.

F.4.3 Results of analysis of buying and selling models

F.4.3.1 Overview

A study of several commerce models has identified several models that are quite similar to the initial model proposed above. The models fell into three categories; (1) that of the organization or seller, (2) the buyer; and, (3) a combined buyer-seller view (as represented by the BTM). A review of these models can be found in F.5.2. This review identified key attributes that constitute the flow of commerce. A summary of the findings organized in tabular form is presented in Table F.1.

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Table F.1 — Summary table of buying and selling models

Attribute	Original Perspective (F.4.2)	Seller Perspective			Buyer Perspective			Combined Perspective
		Depth Selling (F.5.1)	Stages in Making a Sale (F.5.2)	Dyadic Sales Process F.5.4)	I-B Behaviour (F.5.5)	Corporate I-B Process (F.5.6)	Cycle of I-B Process (F.5.3)	Business Transaction Model BTM
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Planning	O+[a]	X	X			X[b]	X[c]	X
— establish need					X	X		
— search					X	X	X[d]	
— contact		X	X			X		
— source legitimization				X				
Identification	X			X[e]				X
— discussion		X	X					
Negotiation	X	X[f]	X		X	X		X
— terms				X[g]				
— values				X				
— doubts		X						
Actualization	O+							X
— transaction	X				X	X		
— delivery						X		
Post-Actualization	O+ [h]	X[i]						X
— evaluation			X[j]		X	X[k]		
— relationship maintenance				X				

[a] O+ = Extension of original

[b] Note that there are ten stages for this model. (1) initiation, (2) precipitation; (3) identification of terms and requirements; (4) contact; (5) negotiation; (6) delivery; (7) acceptance (acceptance, payment and completion); (8) payment; (9) completion; (10) performance feedback.

[c] i.e. “precipitating decisions”

[d] i.e. “precipitation decisions”

[e] i.e. “Information exchange”

[f] i.e. including “completion of negotiations”

[g] i.e. “attribute delineation”

[h] i.e. “client services”

[i] i.e. “follow-up”

[j] i.e. Post Sale Analysis

[k] i.e. “performance feedback”

The original model can now be extended to include three new elements; namely:

a) planning;

b) actualization; and,

c) post-actualization.

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Each of these three are explained below.

a) Planning

In this phase, both the buyer and the seller are engaged in a process to decide what actions to take for acquiring or selling a good, service and/or right. This is where the buyer may be engaged in determining budgets, gathering information on products and their suppliers, comparing potential suppliers, and brand discrimination, to name a few.

On the other hand, the seller is gathering intelligence about potential customers, market analysis, product acceptance, branding, etc. She or he may also be building potential client lists and establishing pricing discrimination based on client hierarchies (good risk, frequent buyer, financially sound, etc.).

b) Actualization

Actualization is the combination of what was originally thought to be two separate activities -- transaction and delivery. The boundary between these two appears to be somewhat blurred and not meaningful. Actualization is essentially the execution of the negotiated work both in terms of exchanging products for payment and the delivery of the products to the buyer.

c) Post-Delivery (or Post-Actualization)

This is similar in nature to the originally proposed client service phase. The extension includes actions such as post-sales review, product warranties, payment plans, return policies, or other consumer-related post purchasing actions.

NOTE Post-actualization was the eventual term chosen since "delivery", like payments, could take in several stages after a business transaction was instantiated.

ADDITIONAL SUB-ACTIVITIES

In deriving the common model, we identified several key sub-activities. However, this is not an exhaustive list and it is recognized that there are others that need to be identified. For example, in looking at the area of planning, several of the models referred to such activities as establishing need, searching for information, developing contact lists, and the identification of product or service sources. A partial list of the sub-activities follows:

a) **Planning:** Establish Need. Initiation: The organization first markets its products to potential sellers; Precipitation: The buyer determines there is a need to purchase.

Buyer: Search among and identify potential suppliers; Evaluate the marketing mix of potential suppliers.

Contact: No "ploys" are used to contact potential buyers.

Identify Needs (For the buyer): Strategy formulation; Project planning; Make-buy analysis; Requirements determination; Specification development.

Arrange to Provide (For the seller): Strategy formulation; Market forecasting; Research and development; Service process design; Information acquisition.

Information Exchange: Market queries; Requests for information; Product/service literature; Requests for quotation; Price quotes.

Precipitating Decisions: Marketing activities; Need for purchase; Timing and financial constraints, i.e. economic situation and market information.

b) **Identification:**

Buyer: Determine the requirements for the product or service; Estimate the budget and obtain approval; Determine who the potential sellers are.

Seller: Estimate costs; Determine method of acquiring the product.

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Source Legitimization: Different tasks involved if buyer is repurchasing from supplier, or if it is a new relationship; Information from the seller needs to be transmitted to the buyer to establish itself (a) as an expert, (b) as being similar to the buyer.

Information Exchange: The buyer transmits information as to the product needed, and which attributes are important; This information varies with the relationship between the buyer and seller; The seller attempts to differentiate its product from the competition, and to have an advantage when negotiating.

Product Decisions: Determine similarities between product needed and products available; Quality and expected life constraints on the product;

Supplier Decisions: Two possible outcomes: (a) Product is differentiated, therefore selection of supplier occurs when product is selected, (b) Products are similar, therefore supplier characteristics need to be selected; Purchasing policy constraints.

c) **Negotiation:**

Buyer: Preliminary discussion with sellers; Technical negotiations;

Modification: Commercial negotiations; Select seller.

Seller: Contact manufacturer, or select possible agents; Select agent; Place order with manufacturer or agent.

Discussion: Discussion of tangible and intangible products; Both the buyer and the seller participate.

Doubts: The buyer expresses "doubts, beliefs, statements, ideas, and concepts" about the product.

Attribute Delineation: Explicitly: product features, credit terms, (a) Product quality, (b) Delivery; Implicitly: attribute determination and evaluation.

Attribute Value Negotiation: Determine "limits" (a) Important for the seller: price, delivery dates, product features, (b) For the buyer: price, style, product features.

d) **Actualization:**

Payment: Methods, terms

Delivery: Post-delivery inspection; Acceptance; Post-Delivery; Performance Feedback; Relationship Maintenance.

New attributes: Implicit bargaining over attributes; Commitment Decisions; Changes in price, quality, and service constraints from the supplier.

F.4.3.2 Conclusions

It appears that a business transaction, and in particular an electronic business transaction, can be viewed from a process perspective as five distinct phases. By viewing the process through these phases, we can derive the components of each phase and begin to map these needs into this document. By providing this common view of business transactions, we can provide a single frame of reference for discussing many of the diverse issues and putting those issues into a context. F or example, in identification, this may be the point to introduce the need for authentication whereas the area of either negotiation (or transaction) may be the point to pursue the issue of digital signatures.

F.4.4 Key sources used for development of Annex F

NOTE The references cited here and elsewhere in Annex F apply only to Annex F itself and not to this document as a whole.[111)]

111) The development of the five phases of the process component of the business transaction model was a result of a separate project activity in the development of the first edition of ISO/IEC 15944-1 led by David Clemis. This Annex F represents the results of this vital development activity. The results formed the basis for 6.3 titled *Rules governing the process component.*

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Key sources which were used for the background study are given as References [44] to [57].

F.5 Survey of buying and selling models forming part of background study

F.5.1 General

The purpose of F.5 is to provide an analysis of a survey of each of six well-known buying and selling models which formed the background to this study. The six models are as follows:

a) "Depth selling model" (Thompson (1973) focuses on the organization (seller) perspective and has six (6) stages;

b) "Stages in making a sale" (Thompson & Evans, 1969), which focuses on the buyer/seller combined perspective and has five (5) stages;

c) "The cycle of industrial-buying process" (Hill & Hillier, 1977), which focuses on the buyer perspective and has five (5) stages;

d) "The dyadic sales process" (Wilson, 1978), which is a buyer behaviour model and consists also of five (5) stages;

e) "Industrial buyer behaviour" (Johnson, cited in Bonoma & Zaltman,1978), focuses on the buyer perspective, and consists of six (6) stages;

f) "The stages of the corporate industrial-buying process for selected items of capital equipment" (Hill & Hillier, 1977), and focuses on the organizational perspective, and has nine (9) stages.

Several economic process models are widely known and are currently in use. They serve as a basis for the process component. The models are grouped into three perspectives: that of the organization or seller, the buyer and a combined view of both buyer and seller (as represented by the BTM).

F.5.2 "Depth selling model"

This model as found in Thompson (1973) Selling: A managerial and behavioral science analysis represents the seller perspective, and has six stages which are:.

a) planning;

b) contact;

c) discussion;

d) doubts;

e) completion of negotiations; and,

f) follow-up.

This is a model from the seller's perspective, since the stages concern the selling of goods or services. These stages are explained below.

a) Planning

This stage involves all activities performed by the salesperson prior to contacting the potential buyer. This could include the preparation of arguments to encourage the buyer to purchase the product, anticipation of the buyer's doubts about buying, and the formation of counter-arguments to these doubts. The seller is required to determine what needs the buyer has that can be satisfied with a purchase.

b) Contact

This stage is the responsibility of the organization. It is the moment of initial contact between the buyer and the seller (the individual and the organization via the salesman). Although the organization initiates

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the contact, the individual needs to decide to become a partner for the exchange to take place. For the purpose of this paper, the contact stage could be referred to as a closing sub-stage of the planning activity.

c) Discussion

During the discussion stage, the organization needs to raise the benefits of the product or service to the individual. At this step, the organization presents the arguments determined during the planning stage. The individual participates with questions about the purchase. This stage includes two-way communication between the individual and the organization, which implies that this stage is a part of the negotiation process.

d) Doubts

At this point, the individual raises doubts about making a purchase and the organization, in turn, must ease these doubts. This is the stage when the organization convinces the individual to purchase. It can be implied that this is a later sub-process of negotiation.

e) Completion of Negotiation Stage

This is when the organization and the individual determine the terms of the transaction. These could include terms of payment, delivery, and contractual obligations for each party. This model does not include the actual transaction or delivery of the product. The reasoning may be that this is a model for the salesman, and once the purchase is established, the role of the salesman is complete.

f) Follow-up

The follow-up stage is when the organization needs to determine the effectiveness of the sales process. This may include whether the organization correctly estimated the individual's need to be satisfied through product purchase, if any of the stages need to be modified for other potential buyers.

F.5.3 "Stages in making a sale"

This model is from the article "Behavioral approach to industrial selling" by Thompson and Evans (1969:137-151). It is accredited to either a salesman or the sales manual for Carborundum Company. This model represents the seller perspective and has five stages which are:

a) planning;

b) contact;

c) discussion;

d) negotiation; and,

e) post sale analysis.

This model is similar to the Depth Selling Model, except that person-to-person interaction, readiness, empathy, and source credibility are applied to this model. The stages of planning, contact, and discussion are identical to the depth selling approach, while the negotiation stage is a combination of the doubts and completion of negotiations, while the post sale analysis is the same as the follow-up stage from the Depth Selling Model. For this paper, it is assumed that the stages in this model are attributed to the individual and the seller according to the equivalent stages in the Depth Selling Model.

The concepts that need to be analysed according to the roles of the seller and the buyer are person-to-person interaction, readiness, empathy, and source credibility.

a) Person-to-Person interaction

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For the model, interaction occurs from the beginning of the contact stage to the end of the negotiation stage. This implies that both the buyer and the seller are active members of the process from the point of contact through to the end of negotiation.

b) Readiness

This concept occurs from the planning stage to the end of the contact stage. Readiness refers to the buyer's interest in participating in the exchange, but it is one of the seller's roles. The seller needs to plan for attracting the interest of the potential buyer. During the contact stage, the seller should then modify the plan according to feedback provided by the buyer in order to maintain this interest.

c) Empathy

Empathy is the responsibility of the seller (the organization). This occurs from the contact stage to the end of the negotiation stage. The seller should anticipate the buyer's needs, with respect to how they can be satisfied by purchase, and interpret any feedback about the sales process.

d) Source Credibility

The notion of source credibility occurs from the start of the contact stage up to the end of the post sale analysis, i.e. the end of the exchange process). Source credibility refers to the seller's credibility as a selling partner from the perspective of the buyer. It is the responsibility of the seller to ensure that it is viewed as a competent, reliable, and trustworthy trading partner.

F.5.4 "The cycle of industrial-buying process"

This model taken from the Hill and Hillier (1977), Organizational buying behaviour: The key to more effective selling to industrial markets is a buyer-behaviour model, interpreting the decision-making stages involved in buying a product. This model has the four following stages:

a) Precipitating decisions

According to Hill and Hillier, the first stage in the process it when the organization first markets its products to the supplier (i.e. the initiation stage). However, the first stage in the buying process is actually the precipitation stage. This is when the organizational buyer determines that there is a need to purchase. For the purposes of this paper, an organization whose role is that of the buyer can be referred to as an individual.

b) Product decisions

The product-specification stage is when the individual compares product needs with the products available from selling organizations. The buyer is responsible for finding the various products available on the market, and determining which needs can be met by each selling organization.

c) Supplier decisions

The supplier-specification stage is when the buyer chooses the best supplier.

d) Commitment decisions

This stage occurs at the end of the exchange process. The individual must decide whether or not to continue the relationship with the organization. This decision is made by analysing whether all of the purchase requirements and expectations have been met by the exchange with this supplier.

F.5.5 "The dyadic sales process"

This model is from Organizational buying behaviour (Bonoma and Zaltman, 1978) in the chapter "Dyadic interaction: Some conceptualizations" by David T. Wilson and represents the seller perspective. The five stages of the model are:

a) Source legitimization

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For this model, source legitimization refers to the point when the seller is accepted as a "legitimate and credible partner." (Wilson, 1978:43) Both the buyer and the seller are required to participate in this stage, however it is the responsibility of the seller to ensure that it is viewed as a trusted party.

b) Information exchange

At this stage, the buyer is responsible for conveying to the seller what its requirements for the product are, i.e. what "problem" can be solved with a purchase. This may be interpreted as a part of the identification process.

c) Attribute delineation

At this point, both the buyer and the seller participate, and determine the terms of the exchange. Some terms discussed may be features of the product, terms of credit and payment, delivery, etc. This may be a sub-process in negotiation.

d) Attribute value negotiation

Both the buyer and the seller are responsible for attribute value negotiation. They are required to determine the numerical value of the terms of the exchange, and which of the traits are the most important. The end of this stage signifies the completion of the negotiation process.

e) Relationship maintenance

During the relationship maintenance stage, the buyer and the seller are required to decide whether or not to continue their relationship. If both parties decide to continue their exchange relationship, “implicit bargaining over exchange values may take place, particularly if problems with performance attributes arise.” (Wilson, 1978:45)[52]

F.5.6 "Industrial buyer behaviour"

This model as found in Patterns industrial buying behaviour by Johnston (1981), accredited to Bonoma, Zaltman, and Johnston, and represents the buyer perspective, and has the following six stages/activities:

a) establish the need for products or services;

b) search among and identify potential suppliers;

c) evaluate the marketing mix (product, price, promotion, distribution) of potential suppliers;

d) negotiate for and enter agreement about purchase terms;

e) complete a purchase; and,

f) evaluate the purchase’s utility in facilitating organizational goals.

Summary conclusions about these stages of the model are presented below. As Johnson (1981) did not provide further explanation, and the accredited volume was unobtainable, we make the following assumptions about these stages.

Establish the Need for Products or Services: This stage is the sole responsibility of the organization as buyer.

Search Among and Identify Potential Suppliers: Although it is only the individual who must actively participate in this stage, the organization is responsible for ensuring that the buyer will be capable of finding information about the seller’s products. This stage may be implied to be the beginning of the search phase.

Evaluate the Marketing Mix of Potential Suppliers: This step, performed by the individual, can be implied to be the end of the search phase. It is the last step prior to contact of the selling organization.

Negotiate for and Enter Agreement About the Purchase Terms: This is the first stage with both the individual and the organization are actively participating and communicating with each other. For this paper, this is simply the negotiation process.

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Complete a Purchase: This stage can also be referred to as the transaction. Both the buyer and the seller need to fulfil the agreement they negotiated in the previous step. Although both parties are participating in this stage of the model, there may not be any two-way communication, depending upon the terms of the agreement.

Evaluate the Purchase's Utility in Facilitating Organizational Goals: Because the majority of the model involves only the buyer, it may be assumed that this step is meant to be an evaluation from the individual's perspective of the effectiveness of the exchange process.

F.5.7 "The stages of the corporate industrial-buying process for selected items of capital equipment"

This model was originally developed to demonstrate the results of a study, and as found in Organizational buying behaviour: The key to more effective selling to industrial markets (Hill & Hillier, 32-33) represents the buyer perspective. For the purposes of this paper, we have simplified the model, with the following ten stages/activities:

a) initiation;

b) precipitation;

c) identification of terms and requirements;

d) contact;

e) negotiation;

f) delivery;

g) acceptance;

h) payment;

i) completion; and,

j) performance feedback.

Each of these are explained below.

a) & b) Initiation and Precipitation: These two stages are similar and may be combined to form one step, i.e. establish need. This modified stage can be considered to be one step with two parts; the buyer perspective and the seller perspective.

c) Identification of Terms and Requirements: This is when the organization as buyer determines the desired features of the good. This may be implied to be a search function.

d) Contact: This is the first point where the buyer and seller communicate.

e) Negotiation: At this stage, the buyer and seller undergo a series of steps to determine acceptable terms of the product, delivery, and especially payment.

f) Delivery: This is the only model with mention of the delivery stage. It can be assumed that the party that is responsible for the delivery of the product or service was a term negotiated in the previous stage.

g) Acceptance, Payment and Completion: These three stages, which are the responsibility of the organization as buyer, can be combined in order to form the transaction stage. These first two components may be sub-processes in the stage, whereas completion may be assumed to be the completion of the transaction.

h) Performance Feedback: This final stage is when the buyer and seller are required to evaluate whether their expectations for the exchange.

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Annex G
(informative)

Business transaction model: data component

G.1 Overview

This annex provides explanatory text for (1) the rules and guidelines; and, (2) the terms and definitions, as well as the figures, found in 6.4 pertaining to the Data Component of the Business Transaction Model as found in the Normative Part of this document. The rules and guidelines as stated here in Annex G in bold are the same as those stated in 6.4 as well as for the figures even though both have been re-numbered in this annex, i.e. Rules and Guidelines 43 through 48 in 6.4, here are Rules G-1 through G-11.

A major basis for this annex is the result of work on requirements for standards in support of e-commerce involving participation of various business sectors (e.g. banking, retail, transport, telecommunications, IT, etc.), public policy makers at various levels of government, consumers associations, lawyers (private and public sector with expertise in common and civil law as well as international trade law), ISO and ISO/IEC JTC1 standardizers, etc. This work identified gaps between existing international standards and the need for an integrated approach incorporating requirements of commercial and legal frameworks into electronic business transactions.

This is one of three Annexes which provide additional required information on one of the three fundamental components of business transactions, namely; Person, process, and data. These three fundamental components are presented graphically in Figure G.1 (as taken from Figure 7 in 6.1.5)

This Annex is also meant to assist users of this document who are either not familiar with standards in general or whose main focus to date has been on Functional Services View (FSV) standards only.

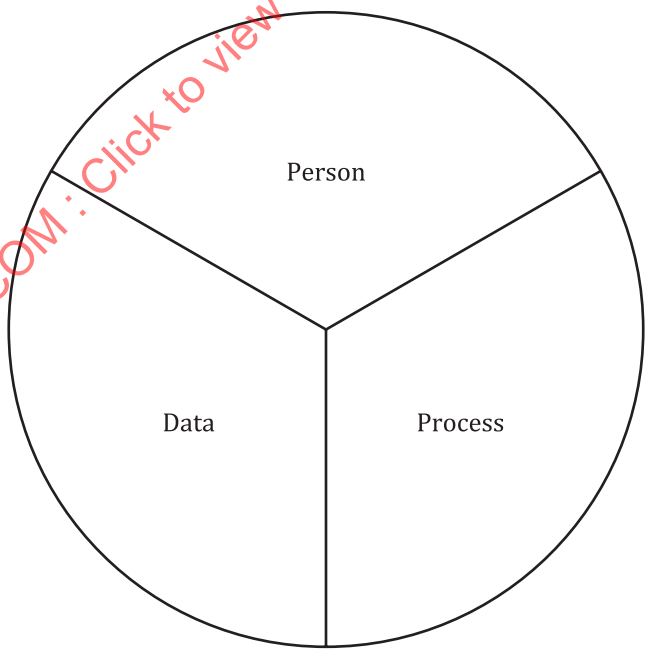


Figure G.1 — Business Transaction Model — Fundamental components (Graphic Illustration)

Rule G-1:

A business transaction requires Person, process, and data.

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A representation of Figure G.1 using the Formal Description Technique (FDT) Unified Modelling Language (UML) as the OeDT for this rule yields the following Figure G.2.

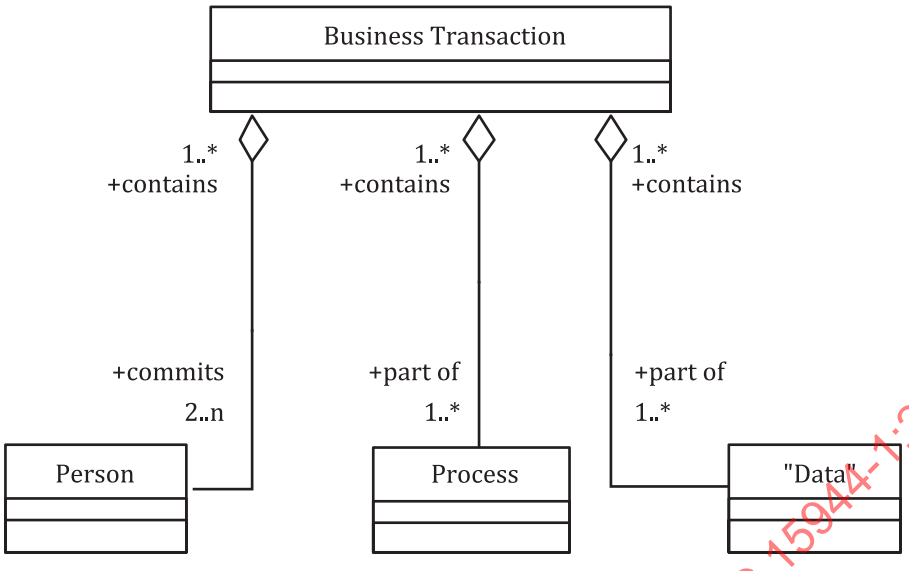


Figure G.2 — UML-based representation of Figure G.1

G.2 Context: Business transaction

G.2.1 The context of the data component is that of data in an (electronic) business transaction (as needed to facilitate widespread adoption and use of Open-edi in support of application areas such as electronic commerce, electronic administration, electronic business, etc.). Two key attributes are that: (1) it is business transaction-based; and, (2) takes place through electronic data interchange (see 3.19). The definitions for these terms are found in ISO/IEC 14662.

G.2.2 This definition of business transaction (see 3.7) is:

a) generic, i.e. independent of whether it is executed through electronic or non-electronic means;

b) sector independent, i.e. it applies within and among sectors, (e.g. public/private, industrial, geographic, etc.); and,

c) independent of whether the business transaction pertains to "for profit" or "not-for-profit" based exchanges of values.

This definition of EDI (see 3.19) is independent of the multiple data types which may be interchanged such as numbers, characters, images, sound, etc.

G.2.3 In the context of the previous business transaction, the data component of the Business Transaction Model integrates the following factors:

a) Existing commercial and legal frameworks for business transactions allow for and use both information which is recorded and that which is not, i.e. that known to and used by natural persons in making commitments, but not (yet) recorded.

b) Data is a category of recorded information which has specific qualities and particular attributes.

c) Within data as a category of recorded information, there is a particular sub-category known as "data element" also with its specific qualities and particular attributes.

d) There is a category of data element which is structured and for which the permitted values, i.e. contents, are predefined.

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e) Existing business-to-business applications consist of rule-based business transactions which make extensive and widespread use of code sets, often through tables. These code sets represent common business practices and serves as building blocks of business transactions.

f) A key thrust of this document is to build confidence and trust, and clarify rules (marketplace, legal, etc.). A major success factor is the degree to which existing ambiguities in business transactions can be removed through development of (re-useable) Open-edi scenarios and their components. A major characteristic of cost-effective and efficient business operations, customer service, etc., is "paying attention to details". From a data perspective, this need for preciseness in data elements is known as "granularity". The higher the degree of granularity, the greater the precision. Precision is necessary to avoid ambiguity.

G.3 Business information to recorded information

A standard definition for "information" exists independent of whether the information is recorded or not. It is also medium neutral and serves as the basis, i.e. point of departure for this document. 3.29 adapts the definition of "information" from ISO/IEC 2382:2015, 2121271 "

Rule G-2:

In a business transaction, information is either recorded or it is not.

Basically, information exists in two states:

a) that which is "known" to a natural person, but is not yet recorded in any form; or,

b) that which is recorded on some medium.

Both states are acceptable in the present legal and commercial frameworks and business practices. In essence, a "contract" is a "meeting of the minds" of the natural persons involved. Orally exchanged information resulting from face-to-face meetings and use of the telephone play, etc., and will continue to play, an important role in the planning, negotiating and actualization of business transactions. Judicial proceedings rely heavily on oral presentation and (cross) examination of natural persons, i.e. as "witnesses" having knowledge of facts, events, things, processes or ideas, including concepts, that within a certain context has a particular meaning. (The admission of written/paper documents containing recorded information as evidence in judicial procedures is an exception to the "Hearsay Rule").

One should note that, business transactions may or may not include recorded information.

In everyday commerce, a contractual agreement, (e.g. the result of the negotiation phase process[112)] in a business transaction), need not involve any recorded information, i.e. can be a verbal contract, (e.g. based on a handshake). Similarly, in court or similar proceedings, evidence is presented orally by natural persons and hearsay is not admissible. One exception to the Hearsay Rule is that written records or documents, i.e. recorded information, may be admitted.

Finally, many present day business transactions especially those involving individual consumers and cash-based involve little or no recorded information interchange between buyer or seller, it is assumed that "e-cash" has the same attributes/properties and behaviours as "cash", and the buyer can remain anonymous[113)]. This is not to say that recorded information is not produced to record a completed business transaction. But this is primarily, one of the seller recording the sale of a good, service, and/or right, (e.g. to comply with external constraints of a regulator such as sales tax).

Rule G-3:

Electronic business transactions require "recorded information".

Within the existing legal frameworks (international, national, and local laws and regulations), multiple different definitions exist for "record", "document", "recording", etc. The concept/term "recorded

112) On the five process phases in a business transaction, see further 6.3.

113) On the issue of anonymity, see further Annex D.4.2.

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information", can serve as a common bridge term among existing differences in definitions in the legislative framework as well as those of information technology standards.

Unlike business transactions in general, electronic business transactions are based on and require "recorded information" which is defined in 3.56.

Current laws and regulations governing government and business operations are mostly "paper-based" and presume the presence of paper records. "Medium neutrality" encapsulates two key attributes: (1) neutrality towards, i.e. independent of, the means, method or technology used to record information; and, (2) neutrality, independent of the type of "medium" on which the information is recorded.

The meaning and use of the term "medium" often gets confused with form, format, type of representation and use, etc. It is therefore necessary to have a common understanding of the concept/term "medium", i.e. from legal, commercial, information technology, standardization, etc., perspectives.

The concept/term "medium" is defined in 3.34.

This is a "media neutral" definition. The inclusion of "non-volatile in nature" criteria is to cover latency and records retention requirements. The primary reason for the numerous notes is to capture as completely as possible, as attributes, the properties and behaviours of “medium”.

The relation of “information” to “recorded information” and medium to existing legal and commercial frameworks for business transactions is illustrated in Figure G.3 (as taken from Figure 18 in 6.4.1).

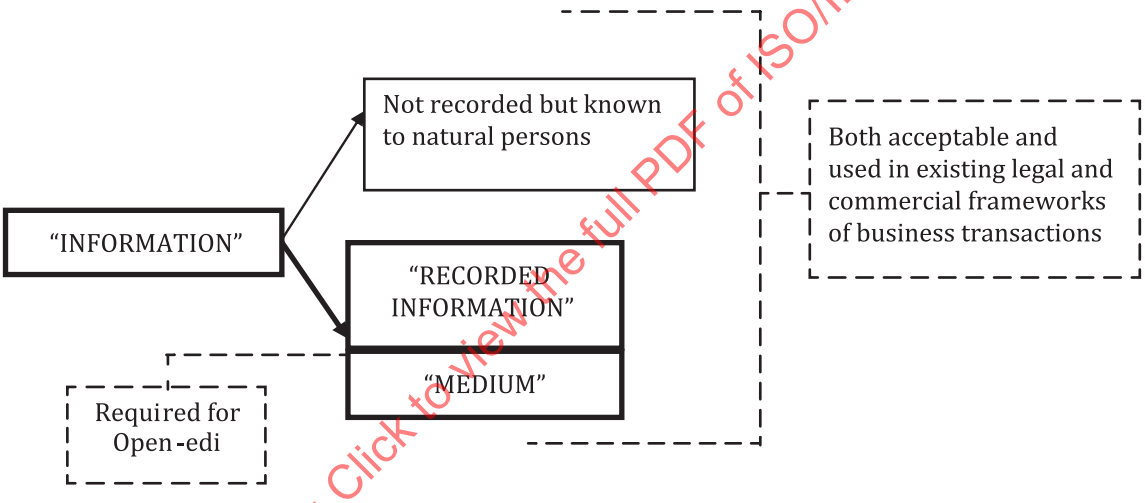


Figure G.3 — Relation of “information, “recorded information” & “medium” in business transactions — Legal, commercial and Open-edi requirements

A representation of Figure G.3 using the Formal Description Technique (FDT) Unified Modelling Language (UML) as the OeDT for Rules G-2 and G-3 yields the following Figure G.4.

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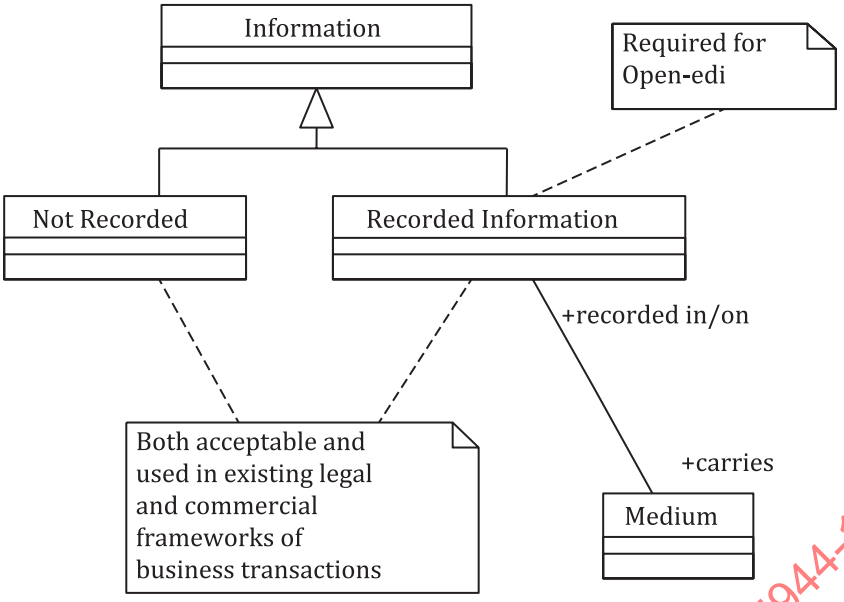


Figure G.4 — UML-based representation of Figure G.3

G.4 Recorded information to electronic data

Rule G-4:

Not all recorded information is data, but all data is recorded information.

Not all recorded information is data but all data is a category of recorded information. Data is a particular category of recorded information which has certain properties.

The definition of data in the context of an electronic business transaction is given in 3.14.[114)]

Here it is noted that:

a) Under this definition of "data", software is a subset or category of data.

b) This definition of "data" is presented from the perspectives of both the legal framework and standardization framework and is of a generic nature. It is applicable to all categories of information exchanges involving computer systems and telecommunication networks.

c) Use of the term "recorded information" in this definition means that all attributes of this term are inherited.

Rule G-5:

Electronic business transactions require (1) data; and, (2) data that is recorded or stored on any medium in or by a computer system.

An electronic business transaction by definition requires the use of information technology and particularly that of a computer system. Any recorded information which does not have the properties of data and cannot

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114) This definition integrates definitions of "data" from IT, commercial and a legal perspectives. The use of the term "computer systems" links to the Open-edi Reference Model definitions " 3.8 "*Electronic Data Interchange (EDI)"* and " 3.12 "*Information Technology System (IT system)".*
This definition is compatible with that found in ISO/IEC 2382. This definition includes representation of recorded information "suitable for communication, interpretation, or processing by human means. Open-edi pertains to automated exchanges, i.e., IT-interface perspective and considers "human means" the linguistic equivalent value from a human interface perspective.

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be used in a computer system[115)] does not form part of an Open-edi business transaction. This is illustrated in Figure G.5 (as taken from Figure 20 in 6.4.2).

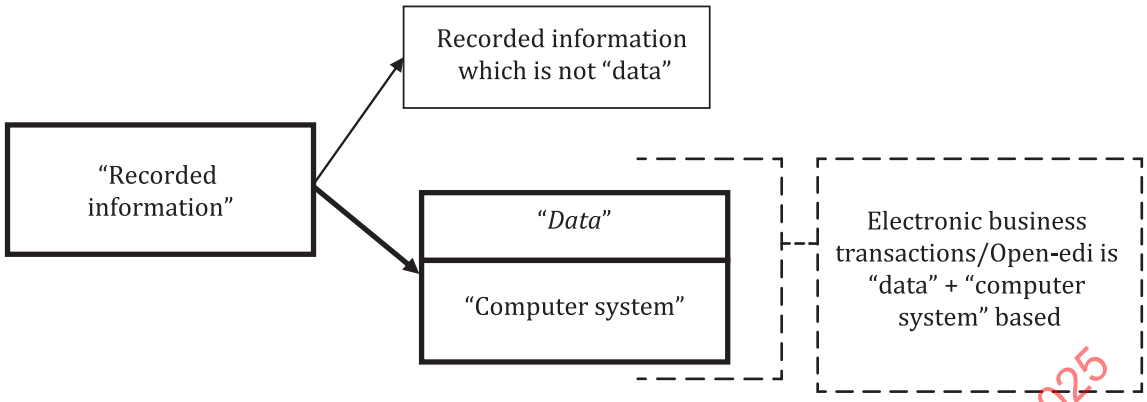


Figure G.5 — Relations of "recorded information", "data" and "computer system" in electronic business transactions/ Open-edi

A representation of Figure G.5 using the Formal Description Technique (FDT) Unified Modelling Language (UML) as the OeDT for this rule yields the following:

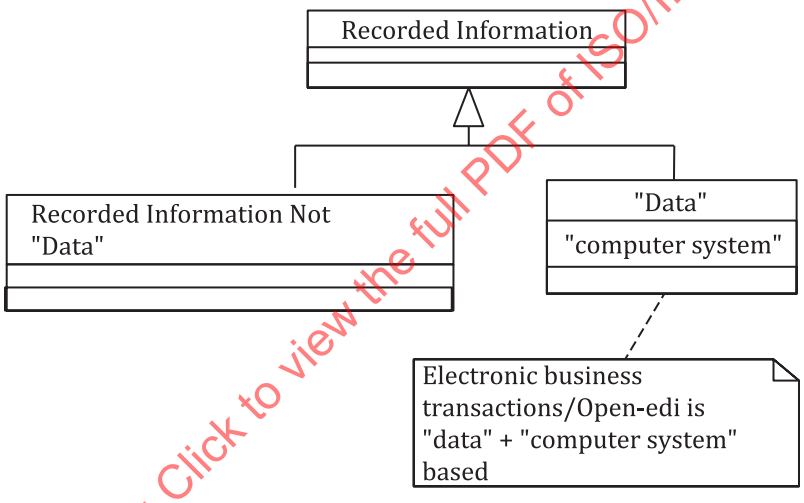


Figure G.6 — UML-based representation of Figure G.5 "Relations of "recorded information", "data" and "computer system" in electronic business transactions/ Open-edi"

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Rule G-6:

The definition of "data", and related information technology terms and definitions found in this document shall be mappable into legal frameworks.

Information technology standards also define "data". 3.13 adapts the defintion of "data from ISO/IEC 2382:2015, 2121272.

115) The definition of "data (in a business transaction)" combined with that of "computer system" is not specific to any particular information technology. As information technology advances, the scope of recorded information *"prepared in a form suitable for use in a computer system*" will also advance and expand accordingly.

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