BRITISH STANDARD

BS ISO/IEC 15944-1:2002

Information technology — Business agreement semantic descriptive techniques —

Part 1: Operational aspects of Open-edi for implementation

ICS 35.240.60

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INTERNATIONAL STANDARD

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2002-08-15

Information technology — Business agreement semantic descriptive techniques —

Part 1: Operational aspects of Open-edi for implementation

Technologies de l'information — Techniques descriptives sémantiques des accords 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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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

Attention is drawn to the possibility that some of the elements of this part of ISO/IEC 15944 may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

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

ISO/IEC 15944 consists of the following parts, under the general title *Information technology — Business agreement semantic descriptive techniques*:

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

— *Part 2: Registration of scenarios and their components*

— *Part 3: Open-edi description techniques*

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

Annexes A and B form a normative part of this part of ISO/IEC 15944. Annexes C to J are for information only.

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0 Introduction

0.1 Purpose and overview

ISO/IEC 14462 Open-edi Reference Model[1)] described the conceptual architecture necessary for carrying out Open-edi. That architecture described the need to have two separate and related views of the business activities. The first is the Business Operational View (BOV). The second is the Functional Service View (FSV). Figure 1 from ISO/IEC 14662 illustrates the Open-edi environment (for definitions of the terms in Figure 1 use 3.1).

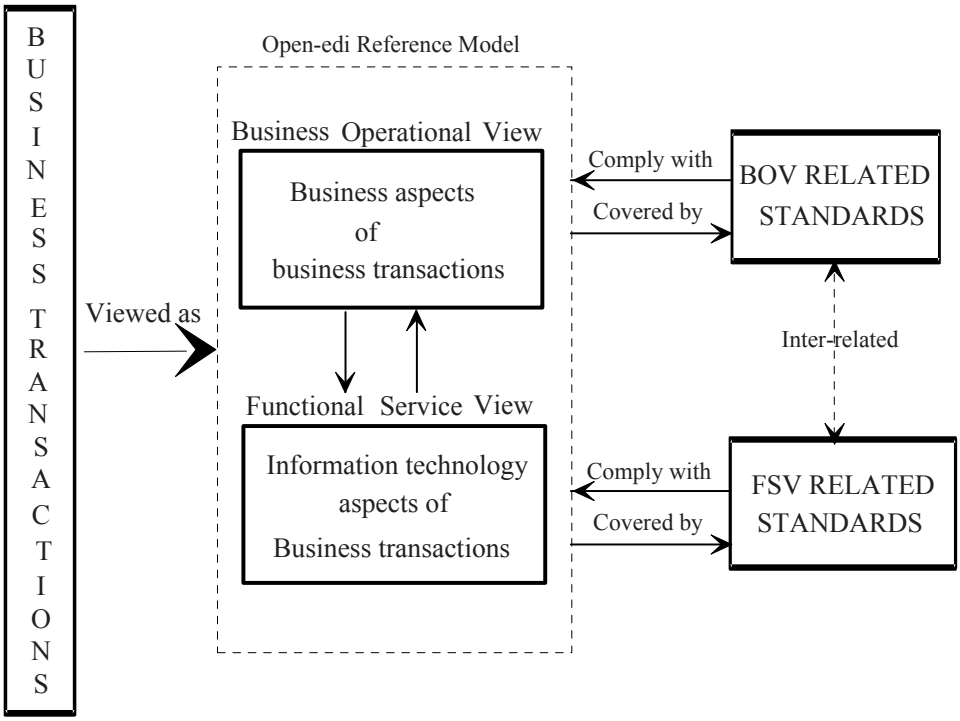

Figure 1 — Open-edi environment

In the BOV, the requirements that the business puts on the exchange of information are described using a modelling technique. ISO/IEC 14462 recognized that there was no single modelling technique identified whilst the IS was in preparation that would satisfy all of the conditions which could be identified that the FSV would need as input. 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.

1) ISO/IEC 14662 Information technology - Open-edi Reference Model/Technologies de l'information - Modèle de référence EDI-ouvert. The English and French versions of this ISO/IEC standard are publicly available. {See <http://www.jtc1.org>}

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To provide for a situation where business users may select from a range of modelling systems, selection criteria identifying the characteristics which any suitable modelling system must 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 must be able to relate to specific Information Bundles. This relationship has to be precise because any supporting computer application 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 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 computer 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 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, this standard is the first of a multi-part standard that 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.” The second part of this standard focuses on identification, registration, referencing and re-use of scenarios, their attributes and components. {See further 0.6}

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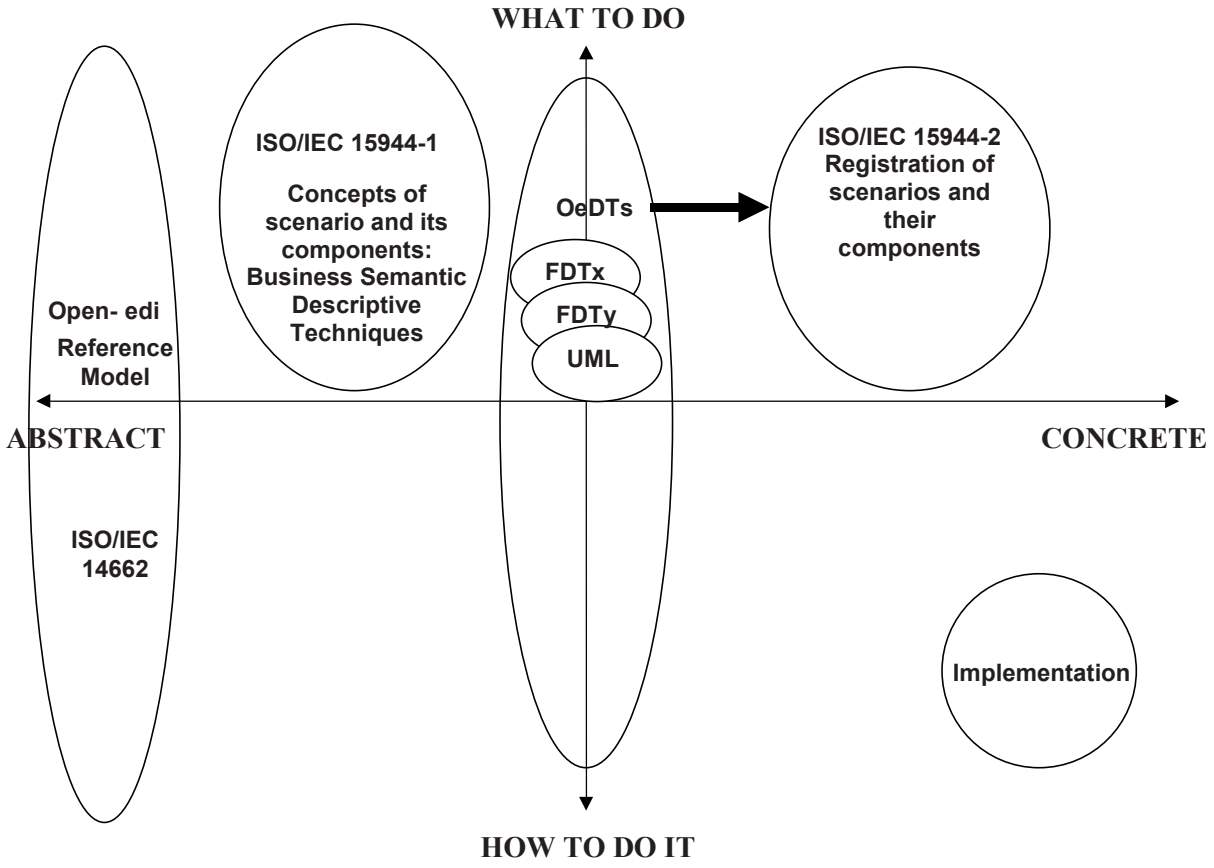

Figure 2 — Aspects of ISO/IEC 15944

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

The evolution of information and communications technologies 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 organizations.

Standards required for Open-edi cover a large spectrum of areas and include commercial aspects, support for national and international laws and regulations, information technology perspectives, telecommunications and interconnections, security service, etc. To these are added public policy requirements of a generic and horizontal nature such as consumer protection, privacy, etc. Annex A in the ISO/IEC 14662 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.

In addition, the widespread adoption and use of Internet and World Wide Web (WWW)-based technologies by organizations 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.

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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[2]:

— commercial frameworks and associated requirements;

— legal frameworks and associated requirements;

— public policy requirements particularly those of a generic nature such as consumer protection, privacy, etc.;

— sectorial and cross-sectorial requirements;

— 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 jurisdiction or desired for providing a good, service, and/or right in a particular market.[3] Here distinguishing between information technology (IT) interfaces and their multiple human interface equivalents is the recommended approach. (For an example, see Annex B below.)

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

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2) This list of sources of requirements is a summary of Annexes A and B of ISO/IEC 14662:1997 Open-edi Reference Model; (titles in English and French):

— Annex A (Informative) Standardization areas and types of standardization activities [ISO/IEC 14662 (E) pages 25-29]./Annexe A (Informative) Domaines de normalisation et types d'activités de normalisation pour l'EDI-ouvert [ISO/IEC 14662 (F) pages 26-30];

— Annex B (Informative) Requirements for Open-edi standards [ISO/IEC 14662 (E) pages 30-33]/Annexe B (Informative) Exigences portant sur les normes d'EDI-ouvert. [ISO/IEC 14662 (F) pages 31-35].

3) See further the Chapter 6 "Horizontal Aspects" (pages 22-28) of the "Report of the ISO/IEC JTC1 Business Team on Electronic Commerce" (ISO/IEC JTC1 N5296).

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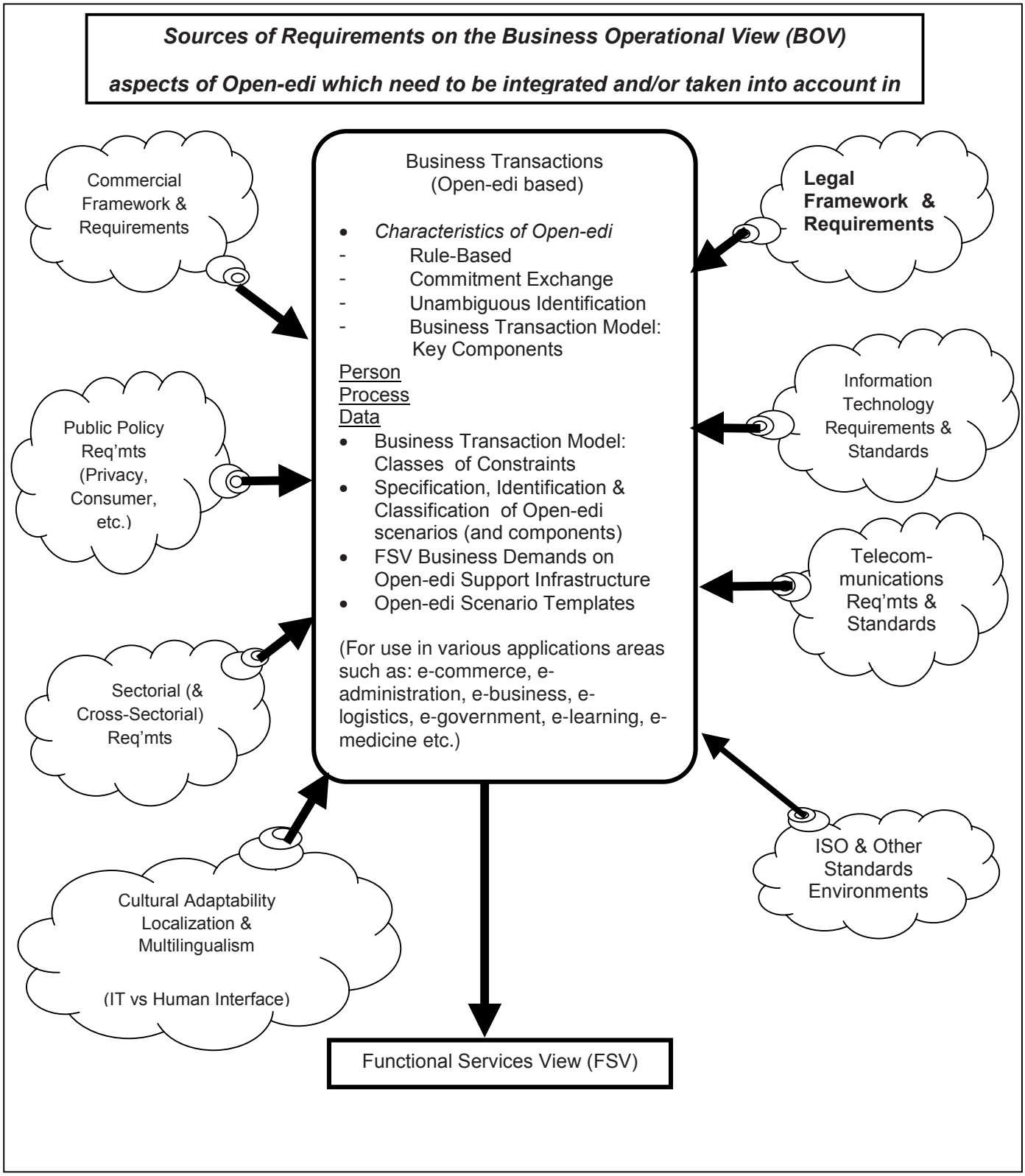

Figure 3 — Integrated View — Business Operational Requirements

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0.3 Business operational view (BOV), Open-edi and E-commerce, E-business, etc.

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

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

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

— using information technology (computers and telecommunications);

— interchanging electronic data involving establishment of commitments among Persons[5)].

From a commercial, legal and standardization perspective, one can view electronic commerce as:

electronic commerce
a category of *business transactions*, involving two or more *Persons*, enacted through electronic data interchange, based on a monetary and for profit basis. (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:

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

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

3) commitments among persons being established through electronic data interchange;

4) computational integrity and related characteristics; and,

5) the above being specifiable through Formal Description Techniques (FDTs)[6)] and executable through information technology systems for use in real world actualizations;

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

These five requirements 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).

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4) The ISO/IEC JTC1 Business Team on Electronic Commerce (BT-EC) in its Report to JTC1 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)".

ISO/IEC JTC1 N5296 "Report to JTC1: Work on Electronic Commerce Standardization to be initiated". 4 May 1998, 74 p.

5) In this standard the term “party(ies)” is used in its generic context independent of roles or categories of “Person”. It assumes that a party has the properties of a “Person”.

6) The Formal Description Technique (FDT) used in support of this standard is "Unified Modelling Language (UML). UML is being progressed as new international standard ISO/IEC 19501 by ISO/IEC JTC1/SC7 titled "*Information technology — Unified Modeling Language (UML) — Part 1: Specification [Technologies de l'information — Langage de modélisation unifié (UML) — Partie 1: Spécification].*

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

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

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

The existing and widely-used ISO/IEC 6523 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 standard. Further, ISO/IEC 14662 did not define “commitment”, nor the discrete properties and behaviors an entity must have to be capable of making a “commitment” as well as bridging legal and IT perspectives in the dematerialized world of the Internet.

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

To address these extended requirements an additional term: 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 reader should understand that:

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

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

— 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 standard. A “party to a business transaction” has the properties and behaviors of a “Person”. {See further below Clause 6, and in particular 6.1.3 and 6.2}.

0.5 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 modeling processes, work flow and information flow. This standard provides methods for identifying primitive or common components so that there is a) high likelihood of reusability and b) ability to locate suitable components in registries. A key purpose of this standard is to enable support of legal and regulatory requirements in business transactions.

The document provides two checklists to guide the reader 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 must be accessible to all organizations in order to minimize resources needed to communicate between parties in a clear and unambiguous manner. Designers must therefore ensure that scenarios and components are designed to be interoperable and re-useable. They must also be clearly described such that a recipient can interpret them without external information.

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This standard focuses on addressing horizontal, generic issue 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 standard 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 standard, a series of informative annexes has been developed and is included. The purpose of these informative annexes is to provide added informative and explanatory text to the normative part of this standard. They have been organized to mirror the sequence of the clauses of the normative part. Users who have difficulty in understanding the necessary short, explicit text of the normative part of this standard are advised to read the related informative and explanatory text in the Annexes.

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

Part 1 of the standard serves as the 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 further Clause 9}. Registration aspects of Open-edi, including requirements, procedures, etc. are covered in Part 2 of the ISO/IEC 15944 standard titled "*Information technology - Business Agreement Semantic Descriptive Techniques - Part 2: Registration of Scenarios, Scenario Attributes and Scenario Components".* Part 2 supports the registration of scenarios, scenario attributes and scenario components as "objects". The objective of Part 2 here is the identification, registration, referencing and re-useability of common objects in a business transaction. Re-useability 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. Part 2 fills this gap.

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Information technology — Business agreement semantic descriptive techniques —

Part 1:
Operational aspects of Open-edi for implementation

1 Scope

Integrated business operational view (BOV)

The Open-edi Reference Model (ISO/IEC 14662, Section 4) states:

> "The intention is that the sending, by an Open-edi Party, of information from a scenario, conforming to Open-edi standards, shall allow the acceptance and processing of that information in the context of that scenario by one or more Open-edi Parties by reference to the scenario and without the need for agreement. However, the legal requirements and/or liabilities resulting from the engagement of an organization in any Open-edi transaction may be conditioned by the competent legal environment(s) or the formation of a legal interchange agreement between the participating organizations. Open-edi Parties need to observe rule-based behavior and possess the ability to make commitments in Open-edi (e.g., business, operational, technical, legal and/or audit perspectives)."

This BOV-related standard addresses the fundamental requirements of the commercial and legal frameworks and their environments on business transactions, and 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 JTC1 of "cultural adaptability" is supported in this standard. This BOV standard also supports requirements arising from the public policy/consumer environment, cross-sectorial requirements and the need to address horizontal issues.[7)] This BOV standard integrates these different sets of requirements. See above Figure 3.

This standard 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 standard serve as a common bridge among 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 standard contains a methodology and tool for specifying common business practices as parts 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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7) See further on these requirements the Recommendations of the ISO/IEC JTC1 Business Team on Electronic Commerce (BT-EC) [Ref: ISO/IEC JTC1 N5296].

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2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 15944. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO/IEC 15944 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 14662:1997, *Information technology — Open-edi reference model*

ISO/IEC 11179-1:1999, *Information technology — Specification and standardization of data elements — Part 1: Framework for the specification and standardization of data elements*

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

ISO/IEC 10181-2:1996, *Information technology — Open Systems Interconnection — Security frameworks for open systems: Authentication framework*

ISO/IEC TR 13335-1:1996, *Information technology — Guidelines for the management of IT Security — Part 1: Concepts and models for IT security*

ISO/IEC *Directives*, Part 1, Section 2.5.6, 1998

ISO/IEC Guide 2:1996, *Standardization and related activities — General vocabulary*

ISO/IEC 2382 (all parts), *Information technology — Vocabulary*

ISO/IEC 9798-1:1997, *Information technology — Security techniques — Entity authentication — Part 1: General*

ISO 1087 (all parts), *Terminology work — Vocabulary*

ISO/IEC 6523 (all parts), *Information technology — Structure for the identification of organizations and organization parts*

ISO/IEC 10646-1:2000, *Information technology — Universal Multiple-Octet Coded Character Set (UCS) — Part 1: Architecture and Basic Multilingual Plane*

ISO 639-1:2001, *Codes for the representation of names of languages — Part 1: Alpha-2 code*

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

ISO 19108, *Geographic information — Temporal schema*

ISO 8601:2000, *Data element and interchange — Information interchange — Representation of dates and times*

3 Terms and definitions

For the purposes of this part of ISO/IEC 15944, the following terms and definitions apply.

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

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NOTE Excluded here 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)
a boundary across which application software uses facilities of programming languages to invoke services

[ISO/IEC 14662:1997 (3.1.1)]

3.3
authentication
the provision of assurance of the claimed identity of an *entity*

[ISO/IEC 10181-2:1996]

3.4
authenticity
the property that ensures that the identity of a subject or resource is the one claimed. Authenticity applies to *entities* such as users, processes, systems and *information*

[ISO/IEC TR 13335-1:1996 (3.3) monolingual (English) only]

3.5
business
a series of processes, each having a clearly understood purpose, involving more than one organization, realized through the exchange of information and directed towards some mutually agreed upon goal, extending over a period of time

[ISO/IEC 14662:1997 (3.1.2)]

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

[ISO/IEC 14662:1997 (3.1.3)]

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

[ISO/IEC 14662:1997 (3.1.4)]

3.8
buyer
a *Person* who aims to get possession of a good, service, and/or right through providing an acceptable equivalent value, usually in money, to the *Person* providing such a good, service, and/or right

3.9
commitment
the making or accepting of a right, obligation, liability or responsibility by a *Person* that is capable of enforcement in the jurisdiction in which the commitment is made

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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 that involves seeking to take into account the views of all parties concerned and to reconcile any conflicting arguments

NOTE Consensus need not imply unanimity. [Based on ISO/IEC Directives, Part 1, Section 2.5.6, 1998; see also ISO/IEC Guide 2: 1996 (1.7)]

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

NOTE 1 Constraints are specified as rules forming part of components of Open-edi scenarios, i.e., as scenario attributes, roles, and/or Information Bundles.

NOTE 2 For constraints to be registered for implementation in Open-edi, they must have unique and unambiguous identifiers.

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

3.12
consumer
a *buyer* who is an *individual* to whom consumer protection requirements are applied as a set of *external constraints* on a *business transaction*

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

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

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

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

NOTE Data can be processed by humans or by automatic means [ISO/IEC 2382:1993]

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

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

[ISO/IEC 11179-3:1994 (3.3)]

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

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

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NOTE Differs from the entry 17.06.02 in ISO/IEC 2382-17. [ISO/IEC 2382-04:1998 (04.07.01)]

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

[ISO/IEC 14662:1997(E) (4.2.1)]

3.18
distinguishing identifier
data that unambiguously distinguishes an *entity* in the authentication process

[ISO/IEC 10181-2:1996]

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

[ISO/IEC 14662:1997 (3.1.5)]

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 An entity exists whether data about it are available or not. [ISO/IEC 2382-17:1996 (17.02.05)]

3.21
entity authentication
the corroboration that the *entity* is the one claimed

[ISO/IEC 9798-1:1997 (3.3.11) monolingual (English) only]

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

[ISO/IEC 2382-17:1996 (17.02.14)]

3.23
external constraint
a *constraint* which takes precedence over *internal constrains* in a *business transaction*, i.e., is external to those agreed upon by the parties to a *business transaction*

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

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

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

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

EXAMPLE 1 only a qualified medical doctor may issue a prescription for a controlled drug;

EXAMPLE 2 only an accredited share dealer may place transactions on the New York Stock Exchange;

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

NOTE 5 Where the Information Bundles (IBs), including their Semantic Components (SCs) of a business transaction are also to form the whole of a business transaction, (e.g., for legal or audit purposes), all constraints must be recorded.

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

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

3.24
Formal Description Technique (FDT) {JTC1 directives}
a specification method based on a description language using rigorous and unambiguous rules both with respect to developing expressions in the language (formal syntax) and interpreting the meaning of these expressions (formal semantics)

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

[ISO/IEC 14662:1997 (3.1.7)]

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

3.27
identifier (in business transaction)
an unambiguous, unique and a linguistically neutral value, resulting from the application of a rule-based *identification* process. Identifiers must be unique within the *identification* scheme of the issuing authority

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

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

[ISO 2382-1:1993 (01.01.01)]

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

[ISO/IEC 14662:1997 (4.1.2.2)]

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

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

[ISO/IEC 14662: 1997 (3.1.8)]

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

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

3.34
medium
physical material which serves as a functional unit, in or on which *information* or *data* is normally recorded, in which *information* or *data* can be retained and carried, from which *information* or *data* can be retrieved, and which is non-volatile in nature

NOTE 1 This definition is independent of the material nature on which the information is recorded and/or technology utilized 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 The inclusion of the "non-volatile in nature" attribute is to cover latency and records retention requirements.

NOTE 3 This definition of "medium" is independent of:

i) form or format of recorded information;

ii) physical dimension and/or size; and,

iii) any container or housing that is physically separate from material being housed and without which the medium can remain a functional unit.

NOTE 4 This definition of "medium" also captures and integrates the following key properties:

i) the property of medium as a material in or on which information or data can be recorded and retrieved;

ii) the property of storage;

iii) the property of physical carrier;

iv) the property of physical manifestation, i.e., material;

v) the property of a functional unit; and,

vi) the property of (some degree of) stability of the material in or on which the information or data is recorded.

3.35
name
designation of an *object* by a linguistic expression

[ISO 1087:1990 (5.3.1.3)]

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3.36
object
any part of the perceivable or conceivable world

NOTE Objects may also be material, (e.g., engine) or immaterial, (e.g., magnetism) [ISO 1087:1990 (2.1)]

3.37
Open-edi
electronic *data interchange* among multiple autonomous *organizations* to accomplish an explicit shared business goal according to *Open-edi standards*

[ISO/IEC 14662:1997 (3.1.9)]

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

[ISO/IEC 14662:1997 (4.1.1)]

3.39
Open-edi Party (OeP)
an *organization* that participates in Open-edi

[ISO/IEC 14662:1997 (3.1.11)]

NOTE Often in this ISO/IEC 15944-1 standard referred to generically as "party" or "parties" for any entity modelled as playing a role in Open-edi scenarios.

3.40
Open-edi scenario
a formal specification of a class of *business transactions* having the same business goal

[ISO/IEC 14662:1997 (3.1.12)]

3.41
Open-edi standard
a standard that complies with the Open-edi Reference Model

[ISO/IEC 14662:1997 (3.1.10)]

3.42
Open-edi system
an *information technology system* which enables an *Open-edi Party* to participate in *Open-edi transactions*

[ISO/IEC 14662:1997(E) (4.2.1)]

3.43
Open-edi transaction
a *business transaction* that is in compliance with an *Open-edi scenario*

[ISO/IEC 14662:1997 (3.1.13)]

3.44
organization
a unique framework of authority within which a person or persons act, or are designated to act, towards some purpose

NOTE The kinds of organizations covered by this International Standard include the following examples:

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EXAMPLE 1 An organization incorporated under law.

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

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

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

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

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

[ISO/IEC 6523-1:1998 (3.2)]

3.46
organization Person
an *organization part* which has the properties of a *Person* and thus is able to make *commitments* on behalf of that *organization*

NOTE 1 An organization can have one or more organization Persons.

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

NOTE 3 An organization Person can be a "natural person" such as an employee or officer of the organization.

NOTE 4 An organization Person can be a legal person, i.e., another organization.

3.47
Person
an *entity*, i.e., a natural or legal person, recognized by law as having legal rights and duties, able to make commitment(s), assume and fulfil resulting obligation(s), and able of being held accountable for its action(s)

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

NOTE 2 Person is capitalized to indicate that it is being utilized as formally defined in the standards and to differentiate it from its day-to-day use.

NOTE 3 Minimum and common external constraints applicable to a business transaction often require one to differentiate among three common subtypes of Person, namely “individual”, “organization”, and “public administration”

3.48
Person authentication
the provision of the assurance of a *recognized Person identity (rPi)* (sufficient for the purpose of the *business transaction*) by corroboration

3.49
Person identity
the combination of *persona* information and *identifier* used by a *Person* in a *business transaction*

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3.50
Person signature
a signature, i.e., a *name* representation, distinguishing mark or usual mark, which is created by and pertains to a *Person*

3.51
persona
the set of *data elements* and their values by which a *Person* wishes to be known and thus identified in a *business transaction*

3.52
persona Registration Schema (pRS)
the formal definition of the data fields contained in the specification of a *persona* of a *Person* and the allowable contents of those fields, including the rules for the assignment of identifiers. (This may also be referred to as a *persona* profile of a *Person*)

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

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

3.55
recognized Person identity (rPi)
the identity of a *Person*, i.e., *Person identity*, established to the extent necessary for a specific purpose in a *business transaction*

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

NOTE 1 This is a generic definition and is independent of any ontology, (e.g., those of “facts” versus “data” versus “information” versus “intelligence” versus “knowledge”, etc.).

NOTE 2 Through the use of the term “information,” all attributes of this term are inherited in this definition.

NOTE 3 This definition covers:

i) any form of recorded information, means of recording, and any medium on which information can be recorded; and,

ii) all types of recorded information including all data types, instructions or software, databases, etc.

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

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

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

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

[ISO/IEC 14662:1997 (4.1.2.1)]

3.61
scenario attribute
the formal specification of *information*, relevant to an *Open-edi scenario* as a whole, which is neither specific to *roles* nor to *Information Bundles*

[ISO/IEC 14662:1997 (4.1.2.3)]

3.62
seller
a *Person* who aims to hand over voluntarily or in response to a demand or request, 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)
a unit of *information* unambiguously defined in the context of the business goal of the *business transaction*

A SC may be atomic or composed of other SCs

[ISO/IEC 14662:1997 (4.1.2.2)]

3.64
standards
documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose

NOTE This is the generic definition of “standards” of the ISO and IEC (and now found in the ISO/IEC JTC1 Directives, Part 1, Section 2.5:1998) {See also ISO/IEC Guide 2: 1996 (1.7)} <<http://www.iso.ch/infoe/intro.html>>]

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

NOTE It is understood that more than two *Persons* can at times be primary parties in a *business transaction*

3.66
unambiguous
the level of certainty and explicitness required in the completeness of the semantics of the *recorded information* interchanged appropriate to the goal of a *business transaction*

3.67
vendor
a *seller* on whom consumer protection requirements are applied as a set of *external constraints* on a *business transaction*

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

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

4 Symbols and abbreviated terms

API Application Program Interface

BOV Business Operational View

CVD Coded Value Domain

DMA Decision Making Application

FDT Formal Description Technique

FSV Functional Service View

IB Information Bundle

IPD Information Processing Domain

IT Information Technology System

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

PRS Persona Registration Schema

RA Registration Authority

RPi Recognized Person identity

RS Registration Scheme

SC Semantic Component (in the context of Open-edi scenarios)

5 Characteristics of Open-edi

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) necessary to support the exchanges of commitments applicable to the parties involved in the business transaction.

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

— actions based upon following predefined rules;

— commitment of the parties involved;

— communications among parties are automated;

— parties control and maintain their states;

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— parties act autonomously;

— multiple simultaneous transactions can be supported.

Each of these characteristics is now described in more detail.

5.1 Actions based upon 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 behavior(s) of the parties as seen by other parties engaging in Open-edi. Open-edi rules are applied to:

— content of information flows; and

— the order and behavior 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 must also have consistent generic procedural views on their interaction. Therefore rule sets have to be agreed in advance and captured in Open-edi scenarios. This is a major component of the agreement required among parties.

5.2 Commitment of the parties involved

Open-edi is a class of electronic information flows which involves predefined types and states of commitments of the parties concerned. These involve tasks or functions to be carried out, obligations to be entered into, etc. In Open-edi, all commitments must 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.

5.3 Communications among parties are automated

Open-edi activities take place automatically among information systems. The actual exchange of information and compliance with rule sets agreed 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.

5.4 Parties control and maintain their states

An Open-edi Party must 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 behavior (or possible ranges of behavior). A state description is defined in terms of those characteristics which must be available to other parties for the purpose of enabling agreed Open-edi scenarios. States must therefore be stable, sustainable and persistent. When a party needs to change its state it must 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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5.5 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 behavior conforming to agreed business processes.

5.6 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 5.1 through 5.6 serve as criteria which must 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 transacation[8)]

6.1 Introduction

6.1.1 Overview

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

— existing commercial frameworks;

— existing legal frameworks;

— those of a public policy/consumer requirements nature;

— sectorial (and cross-sectorial) requirements;

— localization and multilingualism;

— 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, but cannot be captured at a later stage in scenario definition.

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.

Fundamental concepts defined here include:

— the introduction of Person as the entity within an Open-edi Party that carries the legal responsibility for making a commitment;

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8) 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 Annex A}.

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— the need to have processes which, together, deliver the commonly agreed business objectives;

— data exchange, which is the transfer of Information Bundles between and among parties;

— 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 are:

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

2) to serve as source for the “WHAT’s” of business requirements to be specified in Clause 7; “Rules for Scoping Open-edi scenarios;” and as part of the context for Clause 8, "Rules for specification of Open-edi scenario and their components". 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 introduces the Business Transaction Model in terms of its three components and two classes of constraints; “internal” and “external”. 6.2, 6.3, and 6.4 focus on the three component parts of the Business Transaction Model. 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 discussed in 6.6.

6.1.2 Standard based on rules and guidelines

This standard 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 in 0.2).

ISO states that:[9)]

> "standards are documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose."[10)]

This standard 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. 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.[11)]

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9) This is the generic definition of "standards" of the ISO and IEC (and now found in the ISO/IEC JTC1 Directives) <<http:www.iso.ch/infoe/intro.html>> for the English language version and <<http://www.iso.ch/infof.htm>> for the French language version.

10) One can interpret "agreement" in a variety of ways. The ISO/IEC Guide 2, 1996 (1.7) uses the term "consensus" which need not imply unanimity but rather “absence of sustained opposition to substantial issues…”

11) The working principle here 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.

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In this standard, 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[12]. 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.

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 standard 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 below in Figure 4.[13]

12) For example, “Guideline 5G2” equals the second guideline under Rule 5.

13) 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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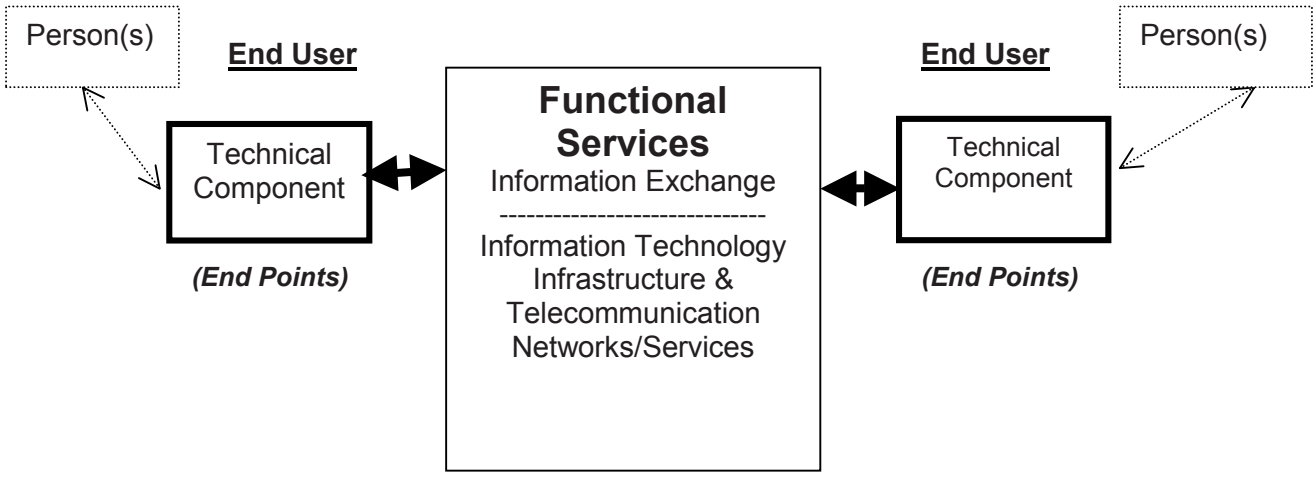

Figure 4 — Illustration of "Technical Components" as End Users of Information Exchange(s) in IT Standards

Guideline 1G1:

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

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 (1) commitment exchange; and, (2) "Persons" are the end users, (the "alpha" and "omega") in their roles as buyers and sellers of goods and services. The term commonly used in the context of business transactions is that of "party". In this standard 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 utilized in the establishment of commitments, formation of rights and obligations, and other commitment exchange. This is illustrated in Figure 5.

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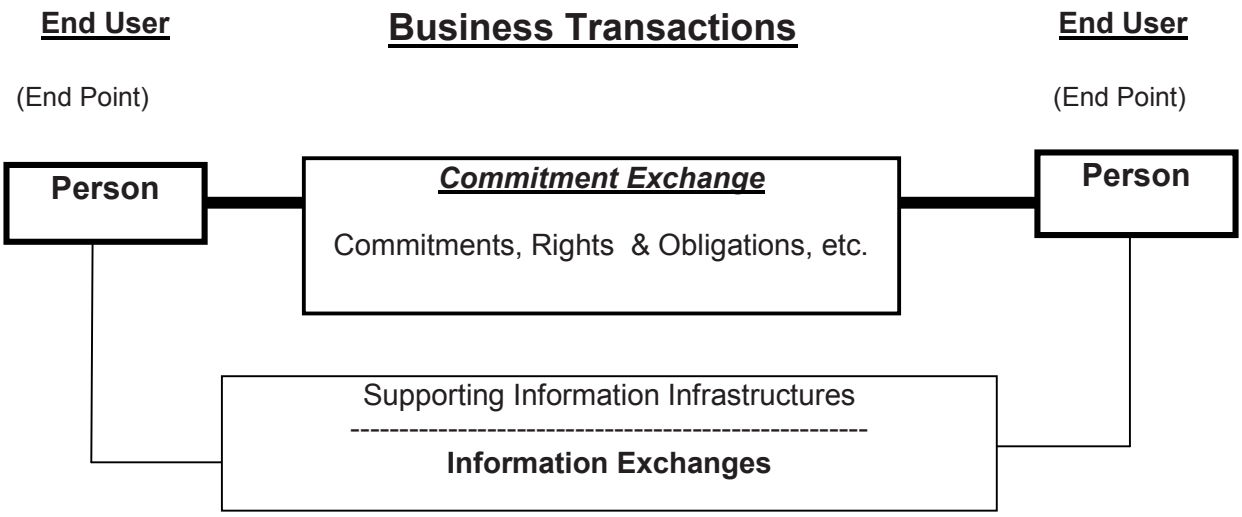

Figure 5 — Illustration of "Persons" as End Users in Commitment Exchange in Business Transactions Based on Existing Commercial and Legal Frameworks

In Open-edi, Person, the entity able to make commitments is represented in dematerialized form and engages in a business transaction via electronic data interchange.[14)]

"Person" is therefore defined as:

Person[15)]
an entity, a natural or legal person, recognized by law as having legal rights and duties, able to make commitment(s), assume and fulfil resulting obligation(s), and able to be held accountable for its action(s).

NOTE Synonyms for "legal person" include "artificial person", "body corporate", etc., depending on the terminology used in competent jurisdictions".

There are three broad categories or subtypes of Persons as players in Open-edi; the Person as "individual", the Person as "organization", and the Person as "public administration".

These three subtypes of Person reflect external constraints which often need to be taken into account. {See further below, 6.2 "Rules governing Person"}

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

1) individual <-> individual

2) individual <-> organization

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14) The Open-edi Reference Model 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.

15) 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 "Rules governing the Person component", and Annex E "Business Transaction Model: Person Component".

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3) individual <-> public administration

4) organization <-> organization

5) organization <-> public administration

6) public administration <-> public administration[16)]

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.[17)]

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 as:

commitment
the making or accepting of a right, obligation, liability or responsibility by a Person that is capable of enforcement in the jurisdiction 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 must 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 or previously defined common, re-useable components (scenarios and scenario components).

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 below provides an integrated view of the BOV and FSV perspectives of Persons as dematerialized entities in a Business Transaction.

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16) At present, e-business involving organization to organization is often referred to as "B2B" and that involving organization and individuals as consumers as "B2C".

17) At the time that the Open-edi Reference Model was developed, 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 below 6.2 "Rules Governing the Person Component".

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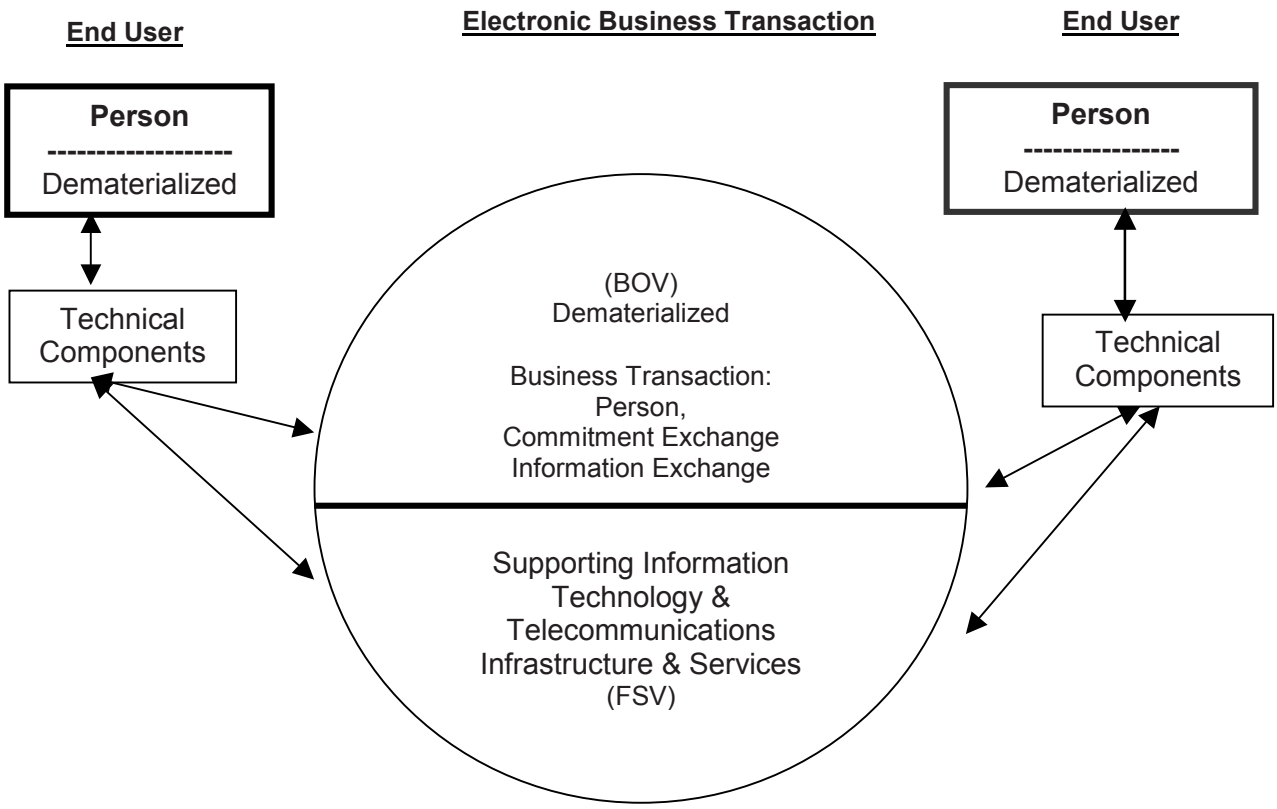

Figure 6 — Integrated View — Commercial/Legal and IT Perspectives of Persons as "End Users" in an Electronic Business Transaction through Technical Components

6.1.4 Business transaction: unambiguous identification of entities[18)]

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). This standard 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:

— "unambiguous"; and,

— "identification".

18) Annex C "Unambiguous Identification of Entities in a Business Transaction" provides the informative and explanatory text for the rules and definitions in 6.1.4.

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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[19)].

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 as:

unambiguous
the level of certainty and explicitness required in the completeness of the semantics of the recorded information interchanged appropriate to the goal of the business transaction

This definition of "unambiguous":

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

— is a common requirement of all industry sectors;

— is medium neutral, i.e., applies irrespective of the combination of IT technologies or platforms utilized; and,

— applies to all three components of the business transaction, 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 must have been established before authentication can take place.

19) 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 "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[20].

The definition for "identification" is:

identification:
a rule-based process, explicitly stated, involving the use of one or more attributes or data elements, whose value (or combination of values) are used to identify uniquely the occurrence 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 as:

identifier (business transaction)
an unambiguous, unique and a linguistically neutral value resulting from the application of a rule-based identification process. Identifiers must be unique within the identification scheme of the issuing authority

{See further, Annex C.5}

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:

name
Designation of an object by a linguistic expression

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

{See further Annex C.6 "Identification versus Designation (or "Identifier" versus "Names")}

20) 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, Clause C.4.}

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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. 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 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 below.

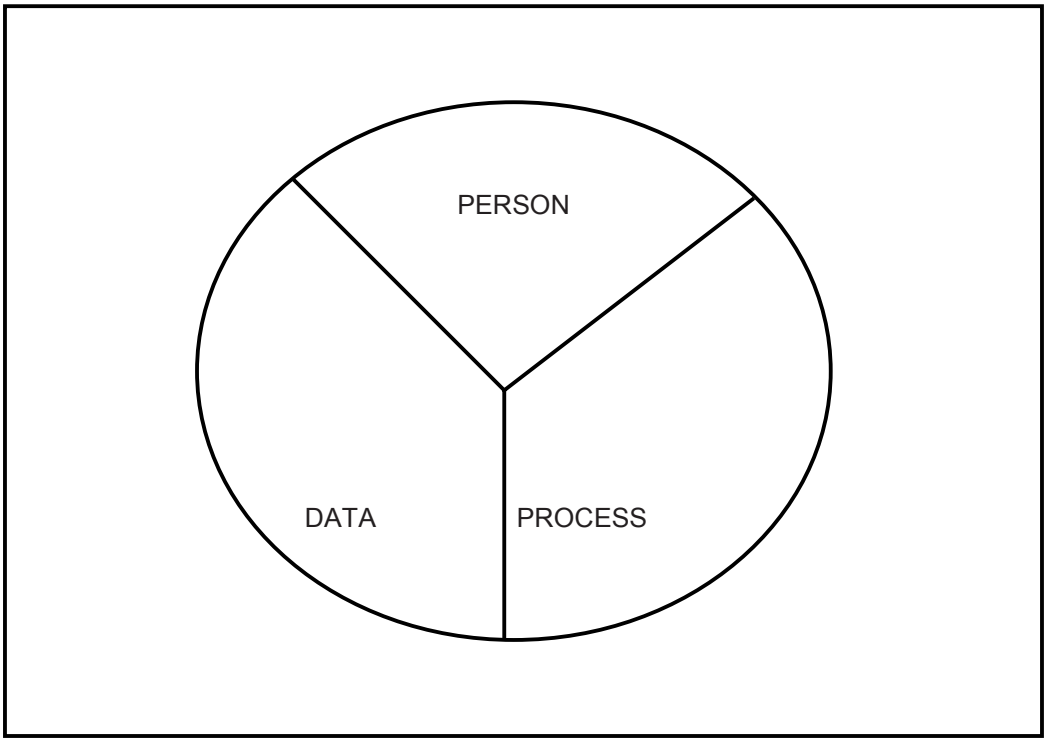

Figure 7 — Business Transaction Model — Fundamental Elements (Graphic Illustration)

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 as:

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

NOTE 1 Constraints are specified as rules forming part of components of Open-edi scenarios, i.e., as scenario attributes, roles, and/or Information Bundles.

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NOTE 2 Constraints to be registered for implementation in Open-edi must have unique and unambiguous identifiers

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 below, 6.2.5 "Person and delegation to 'agent' and/or 'third party'".)

The Open-edi reference model identified two basic classes of constraints, namely "internal constraints" and "external constraints". They are defined as follows:

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

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

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

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

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

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

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

EXAMPLE 1 only a qualified medical doctor may issue a prescription for a controlled drug;

EXAMPLE 2 only an accredited share dealer may place transactions on the New York Stock Exchange;

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

NOTE 5 Where the Information Bundles (IBs), including their Semantic Components (SCs) of a business transaction form the whole of a business transaction, (e.g., for legal or audit purposes), all constraints must be recorded. (For example, there may be a legal or audit requirement to maintain the complete set of recorded information pertaining to a business transaction (the Information Bundles exchanged), as a "record".)

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

The class of "internal constraints" has been derived to provide a simplified view of 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, i.e., 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 must be stated at the time of instantiation but need not exist at the time of registration. {See further, Clause 9 below and Annex I}.

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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 or services delivered do not comprise behavior of a criminal nature.[21)] Whilst laws and regulations exist within and among jurisdictions and are the primary source of "external constraints" on Business Transactions, categorization and specification of sub-classes of external constraints is outside the scope of this standard.

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.

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, financial/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 must be identified and specified where applicable, as part of specification of scenarios and scenario components.[22)] This allows one to build scenarios and scenario components for referencing, registering and reuse of sets of sectorial external constraints such as “customs clearance”, “transport of dangerous goods”[23)], etc. These two basic classes of constraints on business transactions are illustrated below in Figure 8: Business Transaction Model: Classes of Constraints.

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21) ISO/IEC JTC1/SC32 is developing a standard to address the issue of jurisdictions as it impacts specification of external constraints on business transactions (ISO/IEC 18038 - *Information technology - Identification and Mapping of Various Categories of Jurisdictional Domains)*. This standard is directed at being able to identify and reference laws and regulations impacting scenarios and scenario components.

22) 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 sectorial areas are already known. Use of this standard (and related standards) will facilitate the transformation of these external constraints (business rules) into specified, registered and re-useable scenarios and scenario components.

23) Note: There are also requirements for establishing common rules for interchanges between as well as among sectors. These rules are normally imposed by a particular sector on the others. For example, the banking sector may 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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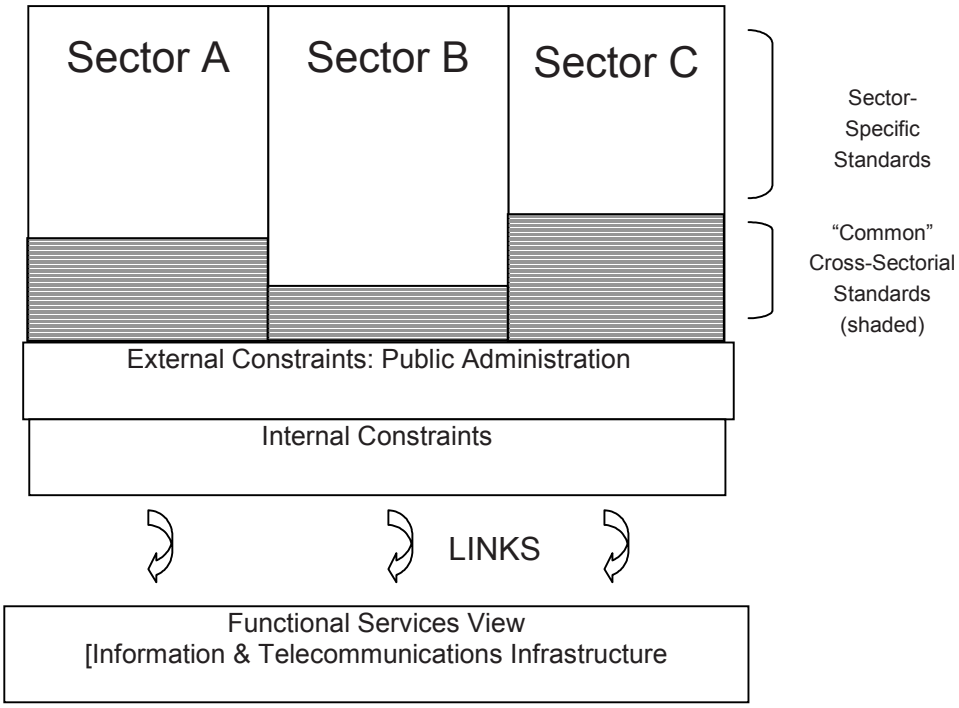

Figure 8 — Business Transaction Model: Classes of Constraints

6.2 Rules governing person[24)]

6.2.1 Introduction

The purpose of this rule is:

1) to incorporate and support a key aspect of the BOV, i.e., the making of business decisions and commitments;

2) to capture the unique attributes of Person as the only entity in business transactions able to make commitments; and,

3) to capture the business operational requirements from both commercial and legal perspectives.

In addition, some common generic aspects of Person with respect to minimum external constraints such as "individual," "organization," and "public administration" are introduced.

6.2.2 Person, personae, identification and person signature[25)]

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.).

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24) Annex E "Business Transaction Model: Person" provides the informative and explanatory text for 6.2.2.

25) Informative and explanatory text on identity and authenticity, "Person", "personae", "Registration Schema", "Registration Authority", etc., are found in relevant clauses of Annex E.

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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 able to make commitments, agree to the rights and obligations entered into, can be held accountable for their actions, etc.

A "Person" is defined as:

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

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

NOTE 2 Person is capitalized to indicate that it is being utilized as formally defined in the standards and to differentiate it from its day-to-day use.

NOTE 3 Minimum and common external constraints applicable to a business transaction often require one to differentiate among three common subtypes of Person, namely “individual”, “organization”, and “public administration”.

The three unique properties of "Person" already identified include:

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

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

3) the ability to be able to be held accountable for actions, behaviors, decisions, etc.

From an (electronic) business transaction perspective all three properties must 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 as:

persona
the set of data elements and their values by which a *Person* wishes or has been designated to be known and thus identified in a *business transaction*

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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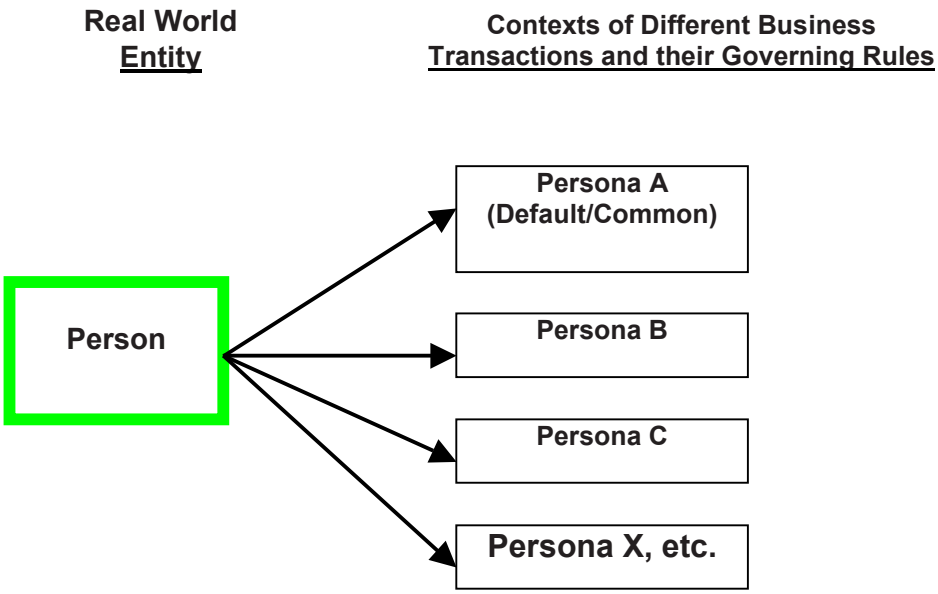

Figure 9 — Links of a Person to its Persona(e) in the Context of Different Business Transactions and their Governing Rules

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 business transaction.

Each business transaction will consider the persona used on its own merits. It is not certain that every 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.

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Guideline 15G1:

A party to a 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. An RA may use the ID of another 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.).

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 geo-political jurisdiction 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 jurisdiction. This is especially true for names for public sector organizations in jurisdictions 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 utilize 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 utilized to capture unique identifiers.)

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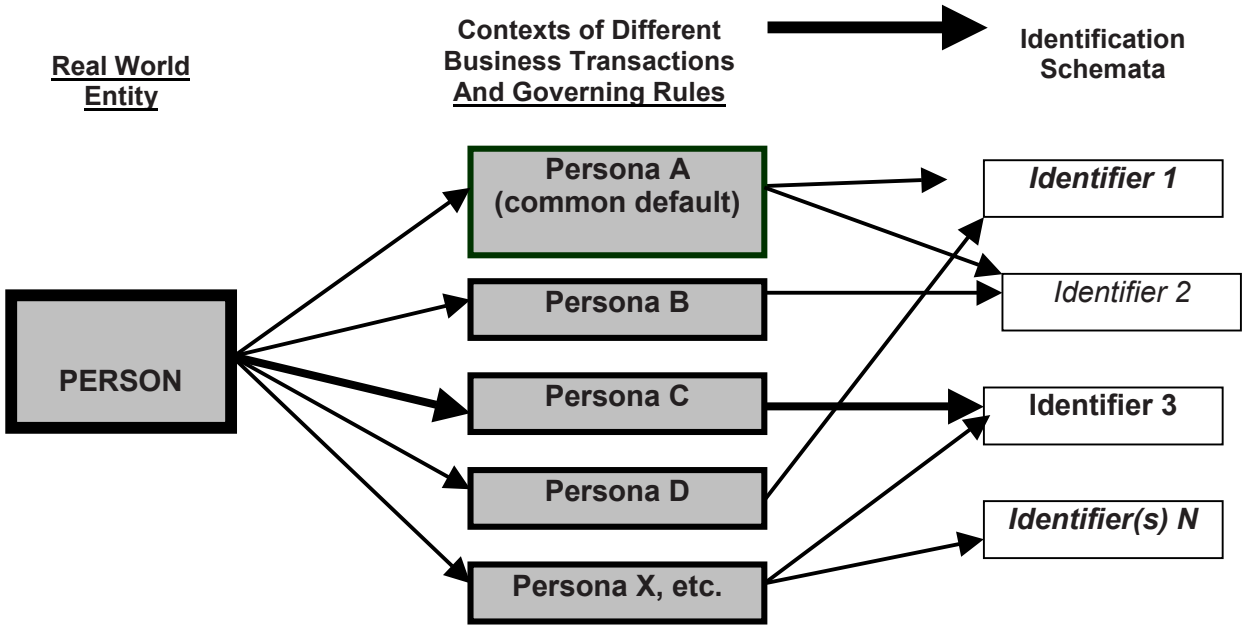

Figure 10 — Illustration of Links of a Person to Persona(e) to Identifier(s) issued through Identification Schemata applicable to the contexts of different business transactions

Rule 16:

In present day business transactions, a Person can and does use different signatures and that must be assumed to continue to be the case.

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.

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" and is defined as follows:

Person signature is defined as:

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

Guideline 21G1:

Parties making commitments in a business transaction are Persons. However, as stated in 6.2.5 below 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 outside the scope of this standard.

The interworking of these 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. (In Figure 11, different fonts and representations are used for: “Person signature” to recognize the wide variety in forms and information technologies utilized to capture “Person signatures.”)

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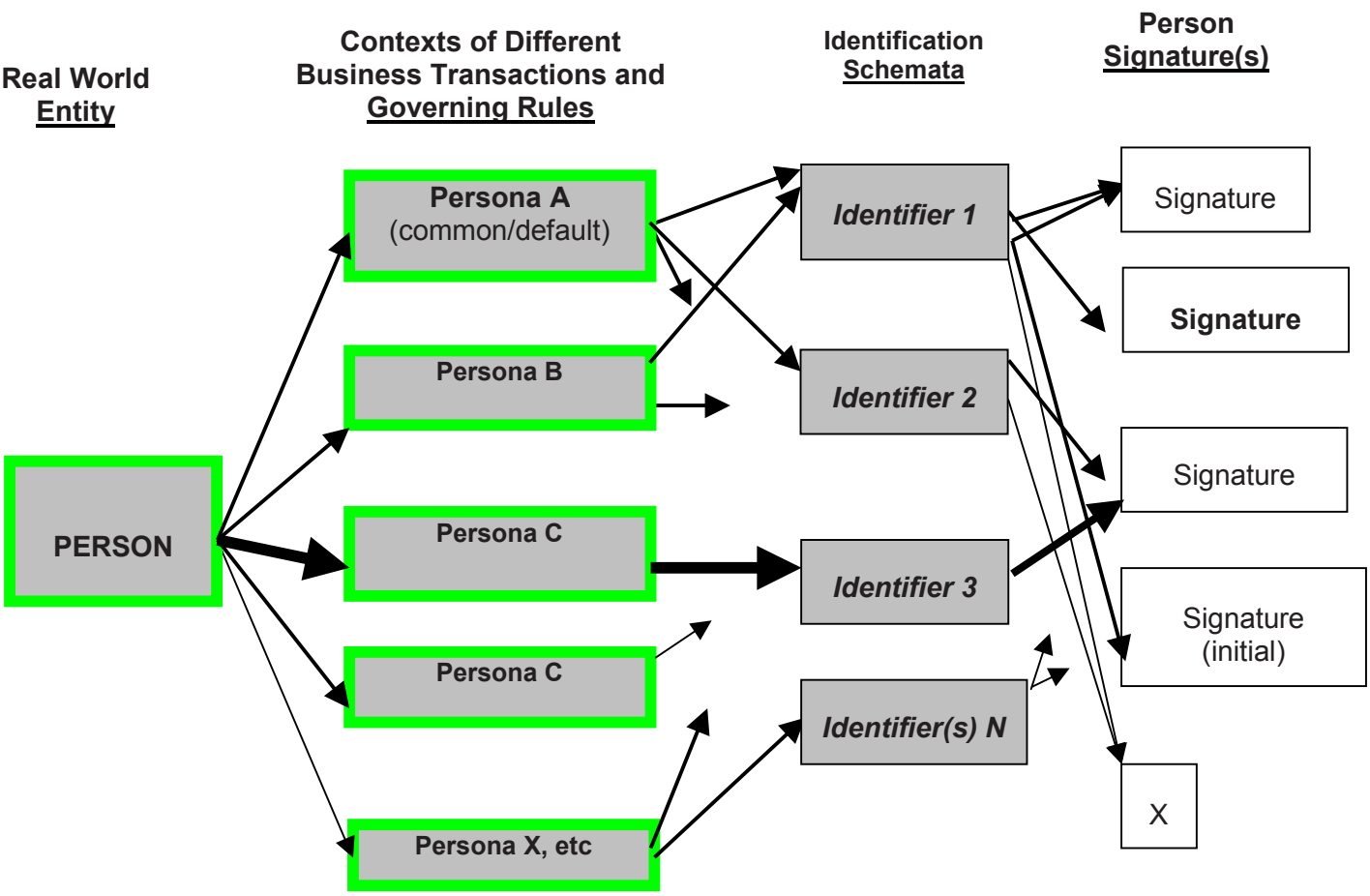

Figure 11 — Illustration of Relationships of Links of a Person to (its) Persona(e) to Identification Schemas and resulting Identifiers to associated Person Signatures — in the Context of Different Business Transactions and Governing Rules

6.2.3 Person - identity and authentication

As determined in 6.2.2 above, 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 as:

Person identity
the combination of persona information and identifier used by a Person in a business transaction

Rule 22:

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.

Figure 12 illustrates the range of links between Person and Person identity.

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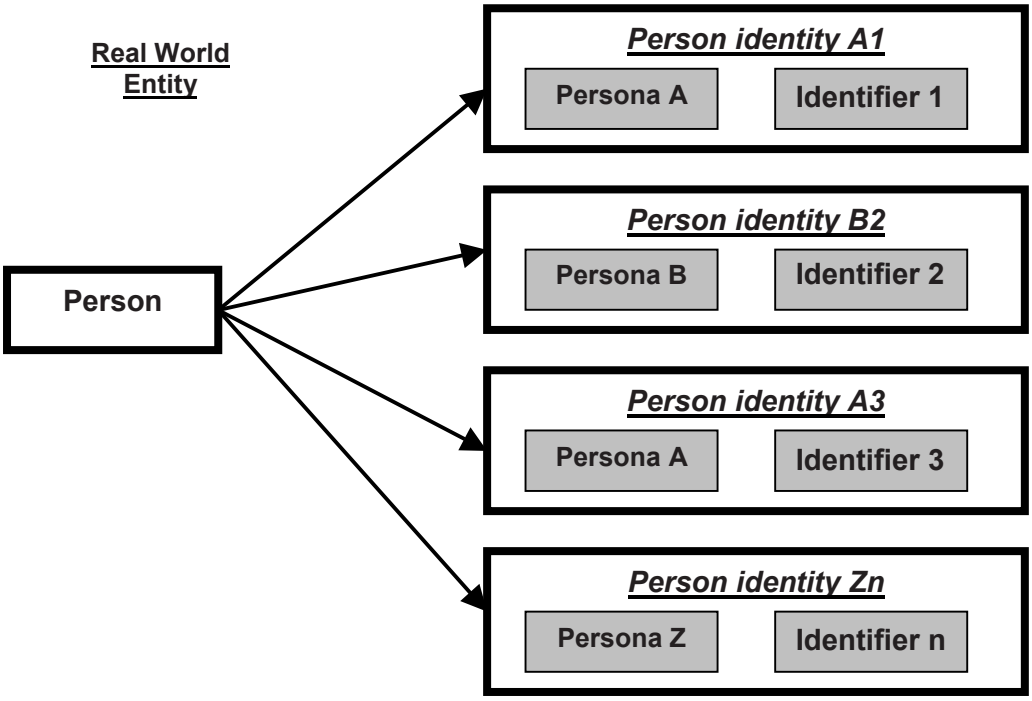

Figure 12 — Illustration of Range of Links between Person and Person Identity(ies)

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/utilize a pre-specified Person identity (e.g. a Blue Cross 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."[26)]

Recognized Person identity" is defined as:

recognized Person identity (rPi)
the identity of a *Person*, i.e., as a *Person identity*, established to the extent necessary for a specific purpose in a *business transaction*

Rule 23:

In a business transaction, a recognized Person identity is established by either:

i) mutual recognition and acceptance; or

ii) by referring to an identifier in a Registration Schema of a Registration Authority.

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26) 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 6325, ISO/IEC 7501 or ISO/IEC 7812 - see further Annex D), or the set of data elements required may be more extensive but must still be finite and prescribed. These and similar specifications are outside the scope of this standard and are expected to be registered as "re-useable" Information Bundles in accordance with ISO/IEC 15944-2.

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This is illustrated in Figure13.

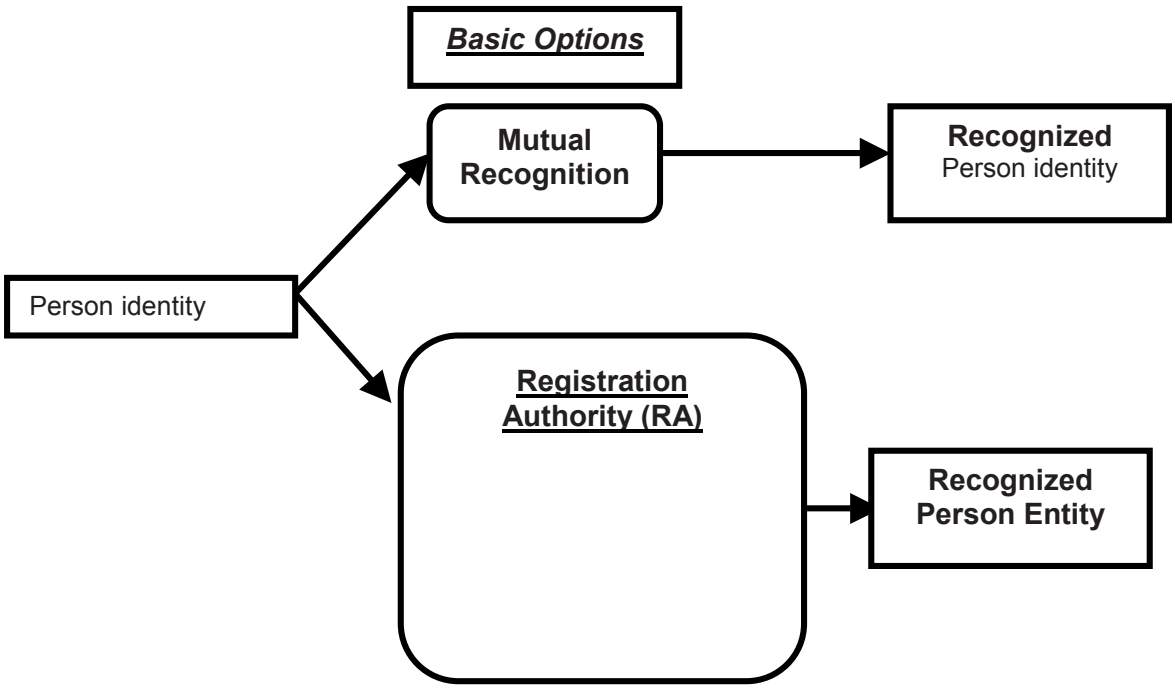

Figure 13 — Illustration of Two Basic Options for Establishment of a Recognized Person Identity based on a Person identity for Use in a Business Transaction

Guideline 23G1:

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

In this standard, persona Registration Schema is defined as:

persona Registration Schema (pRS)
the formal definition of both the data fields contained in the specification of a persona profile of a *Person* and the allowable contents of those fields, including the rules for the assignment of identifiers. (This may also be referred to as a profile of a persona.)

In this standard, Registration Authority is defined as:

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

Rule 24:

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

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