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Part 1: Operational aspects of Open-edi for implementation

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

Partie 1: Aspects opérationnels de l'Edi ouvert pour application

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Foreword

IISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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

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

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

This second edition cancels and replaces the first edition (ISO/IEC 15944-1:2002), of which it constitutes a minor revision. There are no changes of a technical nature between the first and second editions. Changes which have occurred are of an editorial nature only (e.g. a complete Table of Contents, updated references in the footnotes, etc.), reflecting the further development of the ISO/IEC 15944 series during this period as well as the second and third editions of ISO/IEC 14662, *Information technology — Open-edi reference model*.

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

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

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

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

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

— *Part 6: Technical introduction to e-Business modelling* [Technical Report]

— *Part 7: eBusiness vocabulary*

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

The following parts are under preparation:

— *Part 3: Open-edi description techniques (OeDTs)*

— *Part 10: Coded domains*

Traceability framework will form the subject of a future Part 9.

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0 Introduction

0.1 Purpose and overview

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

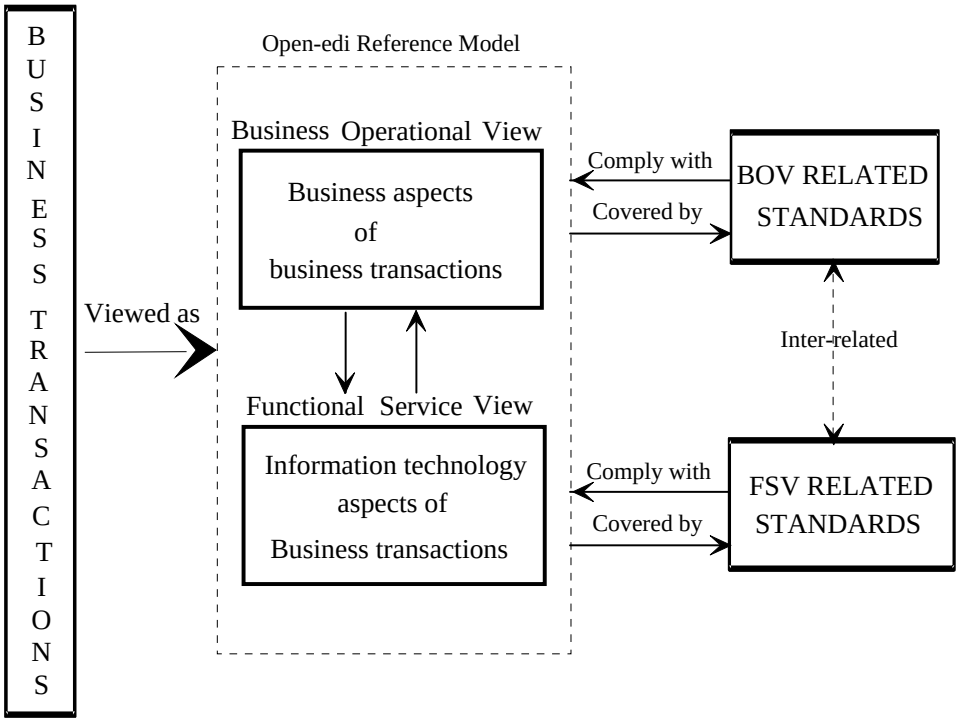


Figure 1 — Open-edi environment

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

To provide for a situation where business users can select from a range of modelling systems, selection criteria identifying the characteristics which any suitable modelling system 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.

1) ISO/IEC 14662:2010(E/F), *Information technology — Open-edi reference model/Technologies de l'information — Modèle de référence EDI-ouvert*. This is an English/French, side-by-side, International Standard.

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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 IT system(s) application(s) has to be able to respond to the information structure that it receives as a result of a message from another Open-edi user. Another example is the need to provide for the ability to trigger an action because an event has not occurred (a message has been sent but no response has taken place). Therefore, it is necessary to identify those characteristics which are not expected to be captured in the BOV but are required by IT systems developers in their work on the FSV.

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

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

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

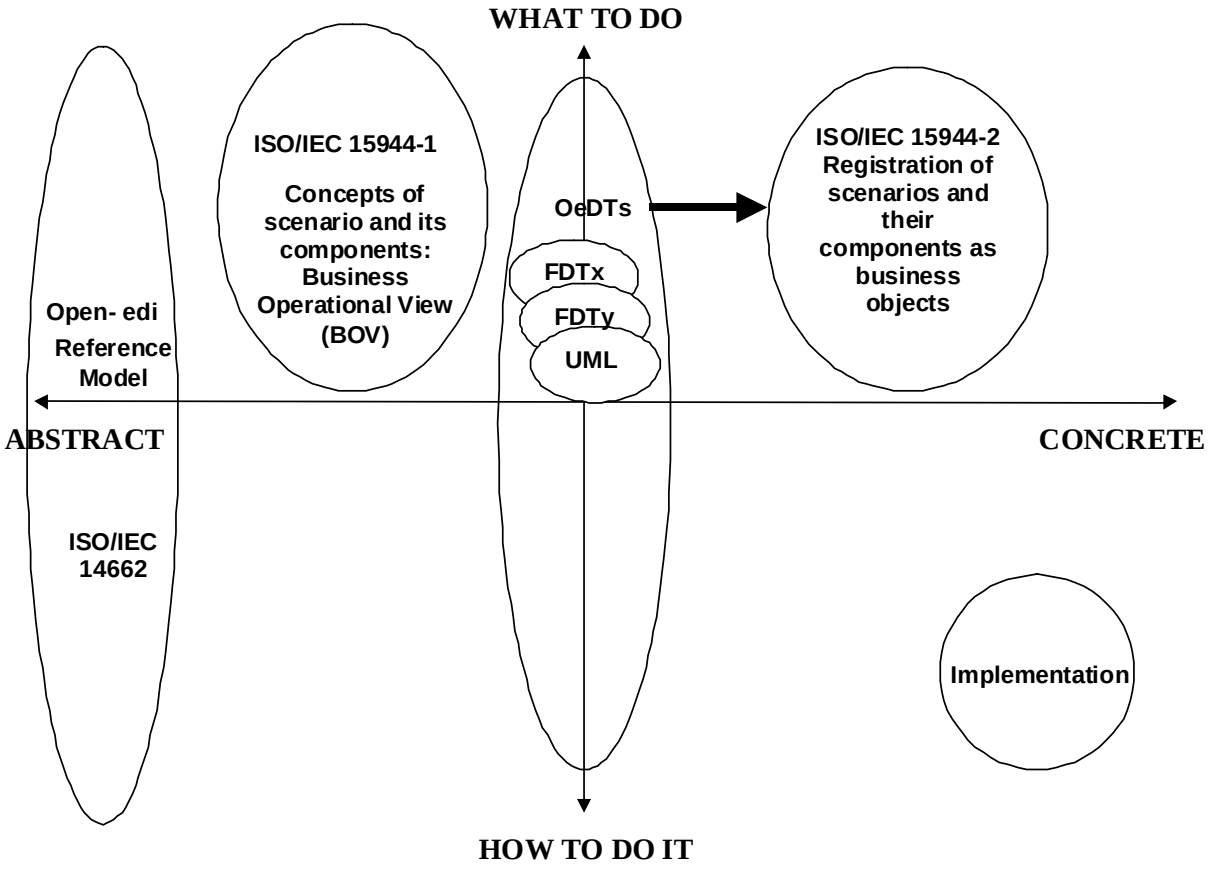


Figure 2 — Aspects of ISO/IEC 15944

2) See 0.6

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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 Persons.

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

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

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

— commercial frameworks and associated requirements;

— legal frameworks and associated requirements;

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

— 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 jurisdictional domain or desired for providing a good, service, and/or right in a particular market.[4)] Here, distinguishing between information technology (IT) interfaces and their multiple human interface equivalents is the recommended approach[5)].

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

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

— Annex A (informative) Standardization areas and types of standardization activities/Annexe A (informative) Domaines de normalisation et types d'activités de normalisation pour l'EDI-ouvert {ISO/IEC 14662 :2010(E/F)}.

— Annex B (informative) Requirements for Open-edi standards/Annexe B (informative) Exigences des normes d'EDI-ouvert {ISO/IEC 14662:2010(E/F)}.

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

5) For an example, see Annex B.

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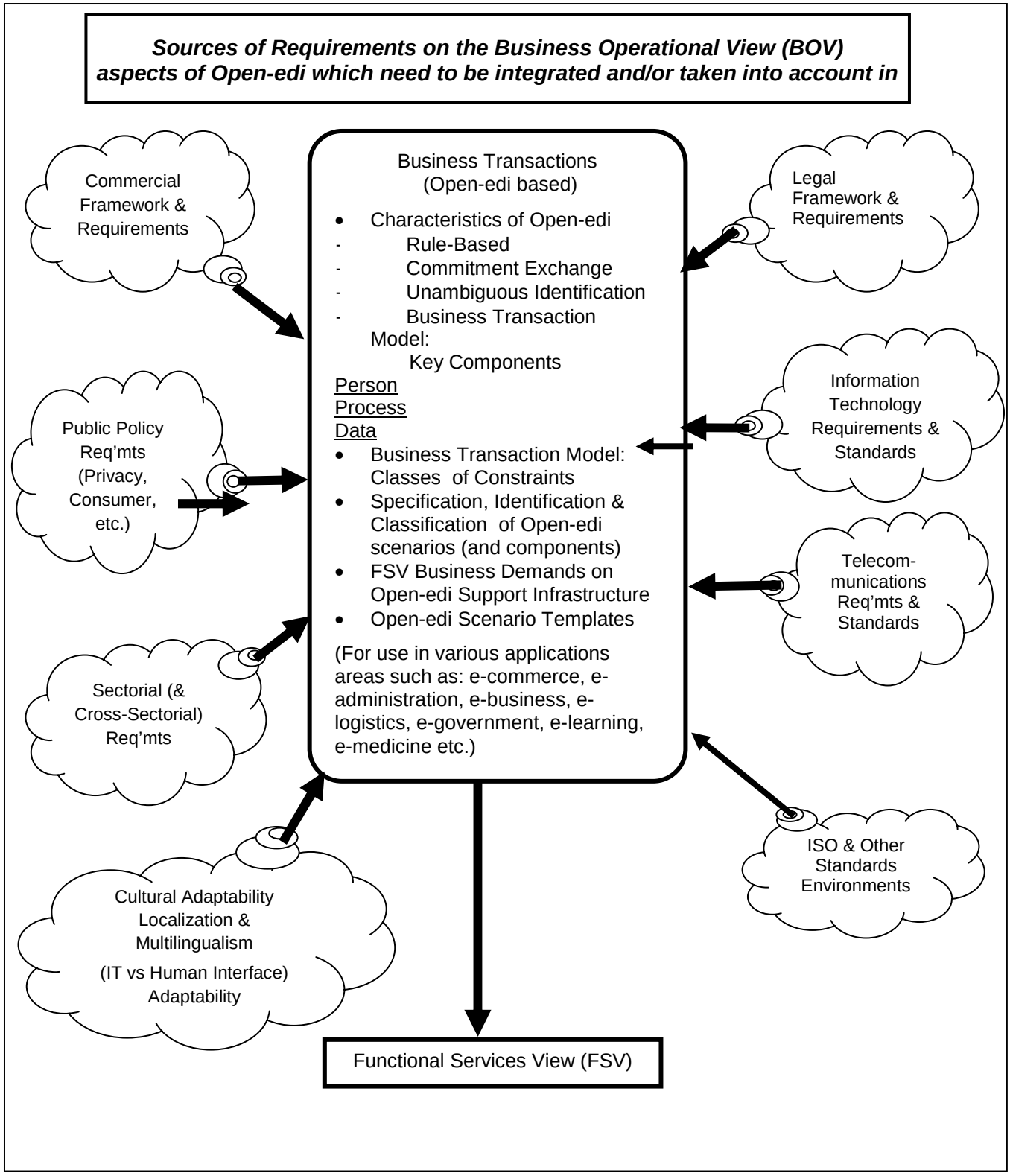


Figure 3 — Integrated View — Business operational requirements

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

The purpose of this subclause is to provide users with an understanding of the relationship between concepts/terms in this part of ISO/IEC 15944 and concepts/terms such as “electronic commerce”, “electronic administration” and “electronic business”.

Concepts/terms such as “edi”, and now e-commerce (and its compatriots e-administration, e-business, e-government, e-logistics, e-travel, e-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.[6)] 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[7)].

From a commercial, legal and standardization perspective, one can view electronic commerce[8)] as:

electronic commerce
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,

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6) 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.

7) In this part of ISO/IEC 15944, 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”.

8) The text which follows is not an “official definition” but working text only. In ISO/IEC 15944-7:2009, the more generic concept of “eBusiness” was defined as “***business transaction**, involving the making of **commitments**, in a defined **collaboration space**, among **Persons** using their **IT systems**, according to **Open-edi standards**”*. For the complete definition including the Notes, see ISO/IEC 15944-7:2009, 3.6. In this context, e-commerce, e-government and e-learning are sub-types of eBusiness.

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5) the above being specifiable through Formal Description Techniques (FDTs)[9] and executable through information technology systems for use in real world actualizations;

are not considered a priority for this part of ISO/IEC 15944 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).

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, in the early 1990s, the "Internet" and "WWW" were at 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:

— "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 part of ISO/IEC 15944. Further, the 1997 edition of ISO/IEC 14662 did not define "commitment", nor the discrete properties and behaviours an entity must have to be capable of making a "commitment" as well as bridging legal and IT perspectives in the dematerialized world of the Internet.

During the development of this part of ISO/IEC 15944, the concept of "commitment" was defined. At the same time, it was recognized that in order to be able to make a commitment, the term Open-edi Party was not specific enough to satisfy scenario specifications when the legal aspects of commitment were considered. In many instances commitments were noted as 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 jurisdictional domains, 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 jurisdictional domain, or where an individual is prevented by a relevant jurisdictional domain from being able to make commitment.

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

The user should understand that:

— the use of Person with a capital "P" represents Person as a defined term in this part of ISO/IEC 15944, 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 part of ISO/IEC 15944. A "party to a business transaction" has the properties and behaviours of a "Person"[10].

9) The Formal Description Technique (FDT) used in support of this part of ISO/IEC 15944 is ISO/IEC 19501:2005, *Information technology — Open Distributed processing — Unified Modeling Language (UML) Version 1.4.2.*

10) See Clause 6, and in particular 6.1.3 and 6.2.

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0.5 Organization and description of the document

This part of ISO/IEC 15944 describes the key concepts required for developing the BOV of a business transaction and scenario. It considers how a scenario may be decomposed into functions and how the different classes of constraints to be applied shall be identified and documented. It provides for methods of modelling processes, work flow and information flow. This part of ISO/IEC 15944 provides methods for identifying primitive or common components so that there is a) a high likelihood of reusability and b) the ability to locate suitable components in registries. A key purpose of this part of ISO/IEC 15944 is to enable support of legal and regulatory requirements in business transactions.

This part of ISO/IEC 15944 provides two checklists to guide the user through the mechanics of determining the scope of a business transaction and determining the adequacy of the scenario definition as well as those of scenario components. The definitions of scenarios and scenario components 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. This part of ISO/IEC 15944 focuses on addressing horizontal, generic issues common to all Open-edi applications and does so from the BOV perspective on business transactions. The diversity of sources of requirements that need to be integrated is illustrated in Figure 3. In addition, this part of ISO/IEC 15944 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 part of ISO/IEC 15944, 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 part of ISO/IEC 15944. They have been organized to mirror the sequence of the clauses of the normative part. Users who have difficulty in understanding the necessarily short, explicit text of the normative part of this part of ISO/IEC 15944 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

This part of ISO/IEC 15944 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".[11)] Registration aspects of Open-edi, including requirements, procedures, etc., are covered in ISO/IEC 15944-2, which supports the registration of scenarios, scenario attributes and scenario components as "objects". The objective of ISO/IEC 15944-2 here is the identification, registration, referencing and re-usability of common objects in a business transaction. Re-usability of scenarios and scenario components is an achievable objective because existing (global) business transactions, whether conducted on a for-profit or not-for-profit basis, already consist of reusable components unambiguously understood among participating parties. However, such existing "standard" components have not yet been formally specified and registered. ISO/IEC 15944-2 fills this gap.

11) See Clause 9.

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Information technology — Business Operational View —

Part 1:
Operational aspects of Open-edi for implementation

1 Scope

The Open-edi Reference Model (ISO/IEC 14662:2010, Clause 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 behaviour and possess the ability to make commitments in Open-edi (e.g., business, operational, technical, legal, and/or audit perspectives)."*

This part of ISO/IEC 15944 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 JTC 1 of "cultural adaptability" is supported in this part of ISO/IEC 15944. It also supports requirements arising from the public policy/consumer environment, cross-sectorial requirements and the need to address horizontal issues.[12)] It integrates these different sets of requirements. See Figure 3.

This part of ISO/IEC 15944 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 part of ISO/IEC 15944 serve as a common bridge between these different sets of business operational requirements, allowing the integration of code sets and rules defining these requirements to be integrated into business processes electronically.

This part of ISO/IEC 15944 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.

12) See further on these requirements the "*Recommendations of the ISO/IEC JTC 1 Business Team on Electronic Commerce (BT-EC)*" [Ref: ISO/IEC JTC 1 N5296].

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2 Normative references

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

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

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