
**Information technology — Business
Operational View —**

**Part 9:
Business transaction traceability
framework for commitment exchange**

Technologies de l'information — Vue opérationnelle des affaires —

*Partie 9: Cadre de traçabilité des transactions d'affaires pour l'échange
d'engagements*

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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.

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

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 32, *Data management and interchange*.

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

- *Part 1: Operational aspects of Open-edi for implementation*
- *Part 2: Registration of scenarios and their components as business objects*
- *Part 4: Business transaction scenarios — Accounting and economic ontology*
- *Part 5: Identification and referencing of requirements of jurisdictional domains as sources of external constraints*
- *Part 6: Technical Introduction of e-Business Modelling [Technical Report]*
- *Part 7: eBusiness vocabulary.*
- *Part 8: Identification of privacy protection requirements as external constraints on business transactions*
- *Part 9: Business transaction traceability framework for commitment exchange*
- *Part 10: IT-enabled coded domains as semantic components in business transactions*

The following parts are under preparation:

- *Part 11: Descriptive Techniques for Foundational Modelling in Open-edi*
- *Part 12: Privacy protection requirements on information life cycle management (ILCM) in EDI*
- *Part 20: Linking business operational view to functional service view*

0 Introduction

0.1 Purpose and overview

Modelling of a business transaction through scenarios and scenario components is done through specifying the applicable constraints using explicitly stated rules. The Open-edi Reference Model identified two basic classes of constraints, namely, “internal constraints” and “external constraints”. External constraints apply to most business transactions.

Jurisdictional domains are the primary source of external constraints on a business transaction. Traceability requirements in turn are a common requirement of most jurisdictional domains, although they may result from explicit scenario demands from or on the parties to a business transaction, as well as the goal, i.e., nature of the business transaction.

In the actualization and post-actualization phases of a business transaction, traceability is needed for the movement of goods, services and/or rights from seller to buyer, and for the associated payment from buyer to seller. Depending on the nature of the business transaction, traceability may also be required by and involve an agent, a third party and/or a regulator (This may be a mandatory process invoked by the power of the regulator).

This Business Operational View (BOV) standard, i.e., this Part of ISO/IEC 15944, addresses the specific aspects of business semantic descriptive techniques needed in support of traceability requirements in Open-edi modelling of business transactions that support of internal constraints as well and especially those which are subject to external constraints.

0.2 ISO/IEC 14662 “Open-edi Reference Model”

The ISO/IEC 14662 Information technology - Open-edi Reference Model provides the conceptual architecture necessary for carrying out electronic business transactions among autonomous parties. That architecture identifies and describes the need to have two separate and related views of the business transaction. 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.

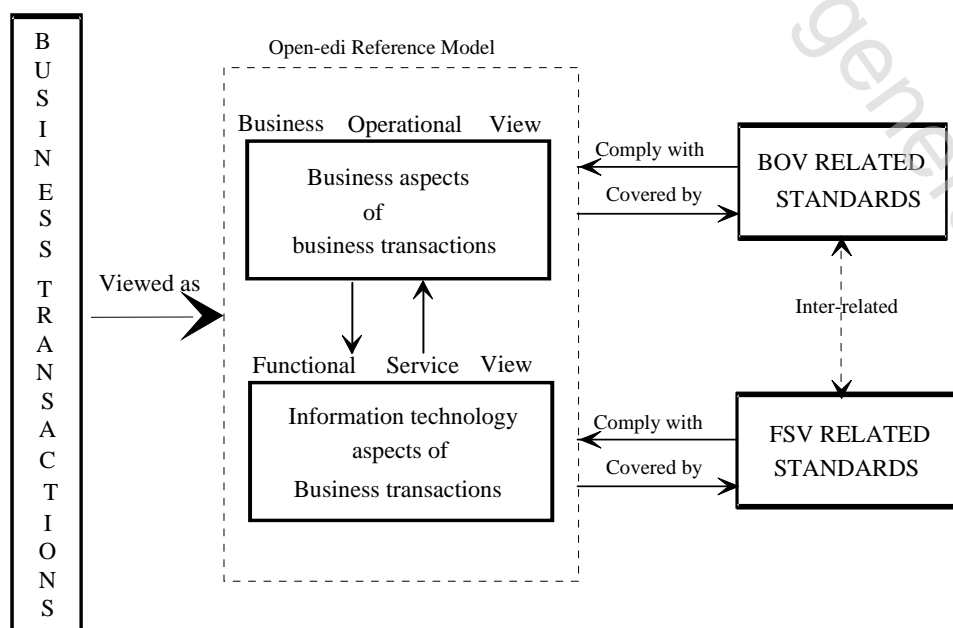


Figure 1 — Open-edi environment

ISO/IEC 14662, Clause 5 contains the following text:

“The intention is that the sending, by an Open-edī Party, of information from a scenario, conforming to Open-edī standards, shall allow the acceptance and processing of that information in the context of that scenario by one or more Open-edī 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-edī transaction may be conditioned by the competent legal environment(s) of the formation of a legal interchange agreement among the participating organizations. Open-edī Parties need to observe rule-based behaviour and possess the ability to make commitments in Open-edī, (e.g., business, operational, technical, legal, and/or audit perspectives)”.

In addition, Annex A of the ISO/IEC 14662 “Open-edī Reference Model” contains a Figure A.1 “Relationships of Open-edī standardization areas with other standards and import of the legal environment”. This Part of ISO/IEC 15944 is a BOV standard which focuses on the business operational view (including internal constraints as well as external constraints) for the application of traceability from an Open-edī perspective, and, as required, follow-up standards development in support of the “Open-edī Reference Model”.

The purpose of this Part of ISO/IEC 15944 includes identifying the means by which laws and regulations of a jurisdictional domain impact scenarios and scenario components as external constraints and how they are modelled and represented.

Finally it is noted that the approach taken in Part 1 of ISO/IEC 15944 in Clause 7 “Guidelines for scoping Open-edī Scenarios” is, as stated in 7.1 of Part 1 of ISO/IEC 15944:

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

This Part of ISO/IEC 15944 standard focuses on addressing generally definable aspects of both internal constraints relating to traceability which is mutually agreed to by parties to a business transaction, and external constraints for which the source is a jurisdictional domain. A useful characteristic of external constraints is that at the sector level, national and international levels, etc., focal points and recognized authorities often already exist. The rules and common business practices in many sectorial areas are already known. Use of ISO/IEC 15944 (and related standards) will facilitate the transformation of these external constraints as business rules¹ into specified, registered, and re-useable scenarios and scenario components.

0.3 Part 1 of ISO/IEC 15944 “Business Operational View (BOV) - Operational aspects of Open-edī for implementation”

Part 1 of ISO/IEC 15944 identifies and enumerates the many requirements of the BOV aspects of Open-edī in support of electronic business transactions. These requirements need to be taken into account in the development of business semantic descriptive techniques for modelling e-business transactions and components thereof as re-useable business objects. They include:

- commercial frameworks and associated requirements;
- legal frameworks and associated requirements;
- public policy requirements, particularly those of a generic nature such as consumer protection, privacy, and accommodation of handicapped/disabled;
- requirements arising from the need to support cultural adaptability. This includes meeting localization and multilingual requirements (e.g., as may be required by a particular jurisdictional domain or desired to provide a good, service and/or right in a particular market).

¹ See 0.5.

- In specifying scenarios, scenario components, and their semantics in the context of making commitments, one needs to distinguish between:
- a) the use of unique, unambiguous and linguistically neutral identifiers (often as composite identifiers) at the information technology (IT) interface level among the IT systems of participating parties on the one hand; and, on the other,
 - b) their multiple human interface equivalent (HIE) expressions in a presentation form appropriate to the Persons involved in the making of the resulting commitments.²

Figure 2 provides an integrated view of these business operational requirements. Figure 2 is based on Figure 3 from Part 1 of ISO/IEC 15944. The focus of this Part of ISO/IEC 15944 is that of internal and external constraints, and those constraints about traceability may be either from legal requirements³, commercial requirements⁴, or public policy requirements⁵, which are the shaded “clouds” in Figure 2, while other sources for external constraints than traceability is represented in Figure 2 as “clouds” not shaded.

² See further 5.4 in ISO/IEC 15944-10. It is the intention of this part of ISO/IEC 15944 that the modelling of scenario and its components about traceability takes the same approach.

³ One example of the legal traceability requirement can be the EU EC N78/2002, which is obligatory and contains traceability requirement for the purpose of food safety.

⁴ The commercial framework is mostly “for profit” activities among private companies and individuals, where features of traceability in a product may be required by or provide added benefit to the customer.

⁵ One example of the traceability public policy requirement can be “The 12th Five Year Plan on National Food Safety Supervision System” issued by state council of China.

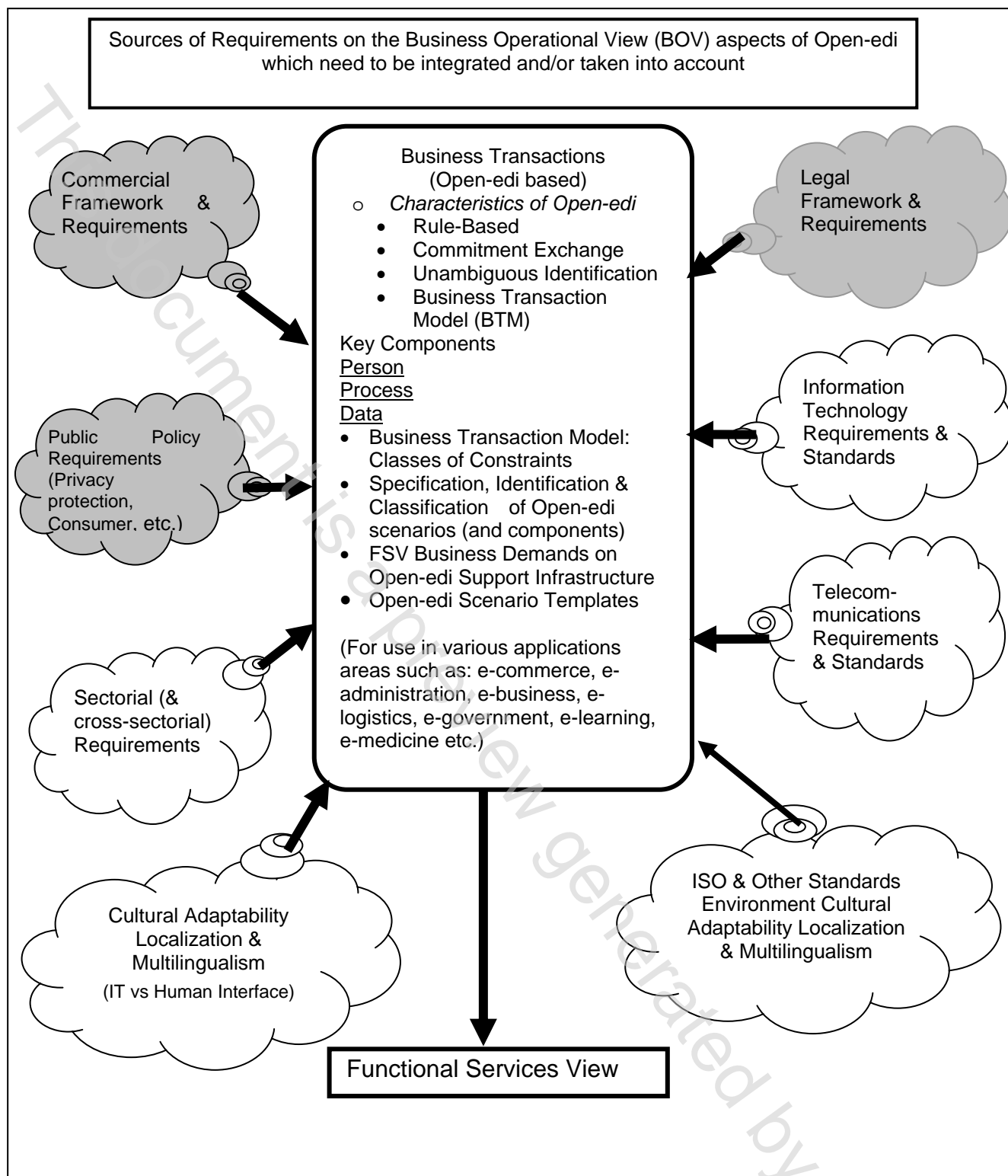


Figure 2 — Integrated view – Business Operational Requirements

0.4 “Traceability” in the context of business transaction and commitment exchange

Traceability in a business transaction originates from the (common) legal practices in jurisdictional domains that require the identification and verification of any non-conformance with applicable legal/regulatory requirements pertaining to the goal of the business transaction including the ability to withdraw and/or recall

products, services and/or rights. The requirements for traceability in a business transaction to support constraints (internal & external) include the need:

- a) to fulfil any local, regional national or international regulations or policies, as applicable;
- b) to meet the requirement of reporting by the seller to the regulator;
- c) to meet the labelling requirements of applicable regulators;
- d) to support safety and/or quality objectives;
- e) to determine the history or origin of the products;
- f) to facilitate the withdrawal and/or recall of products;
- g) to identify the responsible organizations in case of emergency;
- h) to facilitate the verification of specific information about the product;
- i) to meet consumer specification(s);
- j) to meeting post-actualization requirements such as refund policy, product recall, warranty issue, etc.
- k) to meet the requirements of mutual agreement among parties to a business transaction;
- l) to communicate information to relevant stakeholders and consumers.

In the Open-edi context, commitment exchange is added to information exchange, and entities are unambiguously identified. With the requirements imposed internally or externally, the business transactions are automated based on Open-edi system. In order to model the business transactions that meet the requirements of traceability, considerations shall be given to the those specific requirements on traceability to a business transaction, including the principles, methodologies for information modelling, and requirements to components of a business transaction, etc.

This Part of ISO/IEC 15944 adopts a top-down approach for an Open-edi based traceability framework for commitment exchange, and associated accountabilities, among parties to a business transaction. As such, it will assist implementers and standards developers from a business operational perspective in considering or developing the framework, and/or strategies to support traceability requirements in e-commerce, e-logistics, e-learning, e-medicine, e-government, etc.

For example, business analyser(s) and/or system designer(s) should consider and/or incorporate the rules stated in this Part of ISO/IEC 15944 in developing the architecture of business transaction. The incorporation of these rules can be done either by understanding and adopting the requirements reflected in these rules, or by transforming these rules in IT-enabled format and integrating them in the system configuration.

0.5 Representation of rules and guidelines

As defined in 5.1 and 6.1.2 in Part 1 of ISO/IEC 15944, this Part 9 of ISO/IEC 15944 uses the “rule-based” approach, and the common rules are sequentially enumerated and presented in **bold** font, while guidelines which are provided for a rule are numbered sequentially after that rule and are shown in **bold** and *italic* font⁶. The same approach is taken in this Part of ISO/IEC 15944.

Conformance to this Part of ISO/IEC 15944 is based on the conformance to the rules stated in this Part of ISO/IEC 15944.

⁶ For example, in ISO/IEC 15944-1 “Guideline 5G2” equals the second Guidelines under Rule 5.

0.6 Organization and description of document

This Part of ISO/IEC 15944 consists of nine clauses, one normative annex and five informative annexes. The first four clauses are normative to all standards, i.e., scope, normative references, terms and definitions, and symbols and abbreviations. The remaining five clauses of this document are normative and as follows:

- Clause 5 presents the principles and assumptions about traceability put in an Open-edi context. These principles are fundamental to the understanding of other clauses, and thus contain no rules or Guidelines. Also, a categorization of two types of practices of traceability is described in this clause as an assumption.
- Clause 6 provides the traceability framework as a reference model.
- Clause 7 states the requirements of traceability that affect different aspects of a business transaction.
- Clause 8 introduces aspects of Open-edi collaboration space that are affected by traceability requirements.
- Clause 9, as with other Parts of ISO/IEC 15944, provides a template of attributes for scenario and scenario components.
- Annex A (normative) provides the ISO English and ISO French language equivalents for terms and definitions found in Clause 3 which are introduced for the first time, i.e., are not found in the existing Parts of ISO/IEC 15944 as well as ISO/IEC 14662.
- Annex B (informative) introduces the GS1 glossary so that readers are able to understand the concept of interoperability of this Part of ISO/IEC 15944 and the GS1 traceability specifications.
- Annex C (informative) introduces date/time-based referencing on 6.6.4.5 in Part 5 of ISO/IEC 15944 that are used by Open-edi implementations in order to ensure that these traceability attributes are identified correctly.
- Annex D (informative) introduces codes for the identification of business locations by jurisdictional domains including their official (or de facto) languages. Annex D is based on and summarizes normative text found in Part 5 of ISO/IEC 15944 which includes country codes representing UN member states so that Open-edi implementations adhere to the traceability requirements of jurisdictional domain(s) for stating business locations.
- Annex E (informative) provides samples of other international standards or specifications that support traceability; namely: ISO 26324; ISO/IEC 15459, ITU-T X.660, UN/CPC, UN/SPSC and WCO/HS.
- Annex F (informative) provides a mapping of BTEs using identifiers in a traceability framework for the purposes of supporting the design of information systems and other necessary instrument enabling traceability.
- Annex G (informative) introduces samples of regulations as sources of traceability requirements.

The document concludes with a bibliography citing references to both ISO and ISO/IEC international standards (which are not used as Normative References in Clause 2), and other relevant documents.

Information technology — Business Operational View — Part 9: Business transaction traceability framework for commitment exchange

1 Scope

1.1 Statement of scope

This Part of ISO/IEC 15944 presents a framework consisting of several models, including a reference model, a model of concepts, a content model, an information model, as well as rules, templates and other technical specifications for traceability requirements based on internal or external constraints as applicable to a business transaction. The internal constraints are imposed in Open-edi due to mutual agreements among parties to a business transaction and the external constraints are invoked by the nature of a business transaction due to applicable laws, regulations, policies, etc. of jurisdictional domains which need to be considered in Open-edi business transactions. All requirements in this Part of ISO/IEC 15944 originate from external constraints. However, parties to a business transaction may well by mutual agreement apply external constraints of this nature as internal constraints.

The focus therefore of this traceability framework standard is on commitment exchange among autonomous parties to a business transaction.

As such, this statement of scope includes the ability of the traceability framework to

- specify a group of structured and inter-related concepts pertaining to traceability as a legal or regulatory requirement in the Open-edi context, in addition to concepts that appear in other Parts of ISO/IEC 15944 these concepts having the characteristics of cultural adaptability through the use of multilingual terms and definitions;
- provide additional specifications for Open-edi scenarios and scenario components from the perspective of traceability as required by internal or external constraints in business transactions;
- provide a more detailed specification for business transactions regarding aspects of traceability, including refined models of Person, Data and Process in support of the ability for Open-edi to incorporate elements or characteristics of traceability in its information bundles (including their semantic components) and business processes;
- realize specifications and descriptions from the traceability requirements as rules and guidelines, to provide recommendations or guidance on Open-edi practices; and,
- provide revised primitive Open-edi scenario templates for traceability, integrating the modifications to the template from other existing Parts of ISO/IEC 15944.

This Part of ISO/IEC 15944 can be used by Open-edi implementers (including business modellers and system designers) and Open-edi standard developers in specifying Open-edi scenarios, developing Open-edi related standards, and implementing Open-edi rules and guidelines for Open-edi activities.

1.2 Exclusions

1.2.1 Functional Services View (FSV)

This standard focuses on the BOV aspects of a business transaction, especially commitment exchange and does not concern itself with the technical mechanisms needed to achieve the business requirements, i.e., the

various Functional Services View (FSV) aspects, including the specification of requirements of an FSV nature which include security techniques and services, communication protocols, etc. This includes any existing standard (or standards development of an FSV nature) that have been ratified by existing ISO, IEC, UN/ECE and/or ITU standards. As such, this Part of ISO/IEC 15944 does not specify any FSV aspects about traceability, which shall be part of the implementation of BOV standards in an IT system.

1.2.2 Internal behaviour of organizations (and public administration)

Although an organization, (e.g., an e-Business enterprise) may impose traceability requirements on business models and supporting IT systems, this Part and the other Parts of ISO/IEC 15944 focus on the external behaviour of parties to a business transaction. Therefore, excluded from the scope of this Part of ISO/IEC 15944 is the application of traceability requirements within an organization.

The Open-edi Reference Model does not specify these internal behaviours of an organization as not germane to business transactions (which focus on external behaviours pertaining to electronic data interchange among the autonomous parties to a business transaction). Therefore, excluded from the scope of this Part of ISO/IEC 15944 are:

- a) internal use and management of recorded information pertaining to an identifiable individual by an organization (or public administration) within an organization; and,
- b) implementation of internal information management controls, internal procedural controls or operational controls within an organization or public administration necessary for it to comply with applicable traceability requirements in observance of their lawful or contractual rights, duties and obligations as a legal entity in the jurisdictional domain(s) of which they are part.

However, the specifications for the external behaviour of an organization in this standard may well be used in the internal issues. But it is not the intent of this Part of ISO/IEC 15944 to specify the internal requirements of an organization.

1.2.3 Metrological traceability

In ISO/IEC Guide 99:2007⁷, 2.41, the term “traceability” is defined as “property of a measurement result whereby the result can be related to a reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty”. In this context, the word traceability is used as a metrological term. The word “traceability” as used in this Part of ISO/IEC 15944 does not relate to metrology and thus the specification of metrological traceability is not addressed in this Part of ISO/IEC 15944.

1.3 Aspects not currently addressed

During the development of this part of the standard, requirements specified by International Air Transport Association (IATA) were identified as an important source of traceability principles. However, due to the lack of resources or the technical input from IATA at the time of this standard, such requirements were not incorporated in the current version of this part of the standard.

Also, in the case of an individual acting as seller, where both external constraints of privacy protection and traceability apply, requirements on the provision of the personal information of that individual is not specified in this Part of ISO/IEC 15944-9.

The aspects are expected to be addressed in a future edition of this Part or another (new) Part of ISO/IEC 15944.

⁷ ISO/IEC Guide 99:2007 International vocabulary of metrology – Basic and general concepts and associated terms (VIM)

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 8601:2004, *Data elements and interchange formats - Information interchange - Representation of dates and times*

ISO 9000: 2005, *Quality management systems*

ISO/IEC 14662, *Information technology - Open-edition Reference Model*

ISO/IEC 15944-1:2011, *Information Technology - Business Agreement Semantic Descriptive Techniques - Part 1: Operational Aspects of Open-edition for Implementation*

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