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Information technology — Business operational view —

Part 14: Open-edi reference model and cloud computing architecture



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Foreword

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

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

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

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

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

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

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Introduction

0.1 Purpose and overview

Open-edi is defined in ISO/IEC 14662 as *"electronic data interchange among multiple autonomous Persons to accomplish an explicit shared business goal according to Open-edi standards"*. Cloud computing is defined in ISO/IEC 17788 as *"a paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on demand"*. There are many similarities and commonalities among the Open-edi reference model and cloud computing reference architecture.

ISO/IEC 15944 is a multipart eBusiness standard which is based on and focuses on the BOV perspective of the ISO/IEC 14662 Open-edi reference model. This document is intented to serve as a bridge among standards development involved in Open-edi and cloud computing.

The primary purpose of this document is to identify commonalities between:

a) the ISO/IEC 14662 Open-edi reference model (and related ISO/IEC 15944 series); and,

b) ISO/IEC 17789 (and related standards).

0.2 Link to ISO/IEC 14662 and ISO/IEC 15944 perspectives

0.2.1 ISO/IEC 14662 Open-edi reference model[1)]

The ISO/IEC 14662, Open-edi reference model states 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 (copied from ISO/IEC 14662) illustrates the Open-edi environment.

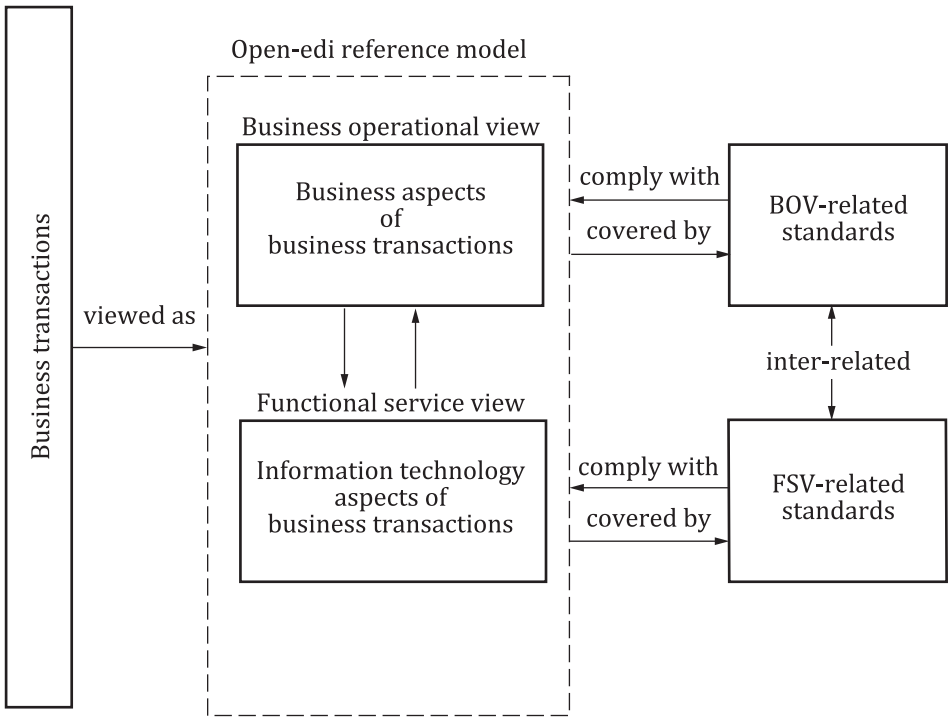


Figure 1 — Open-edi environment

1) The Memorandum of Understanding between ISO, IEC, ITU and UN/ECE (2000) concerning standardization in the field of electronic business is based on this *Model*. See https:// www .unece .org/ fileadmin/ DAM/ oes/ MOU/ 2000/ 24March2000 _IEC _ISO _ITU .pdf.

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0.2.2 ISO/IEC 15944-1

ISO/IEC 15944-1 states the requirements of the BOV aspects of Open-edi in support of electronic business transactions. They are required 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 which apply to individuals, i.e., are rights of individuals, which are of a generic nature such as consumer protection, privacy protection, and accessibility (see further in ISO/IEC 15944-5:2008, 6.3);

— 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). One needs the ability to distinguish, the specification of scenarios, scenario components, and their semantics, in the context of making commitments, between:

  a) the use of unique, unambiguous and linguistically neutral identifiers (often as composite identifiers) at the information technology interface level among the IT systems of participation 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.

Figure 2 (copied from ISO/IEC 15944-1) shows an integrated view of these business operational requirements.

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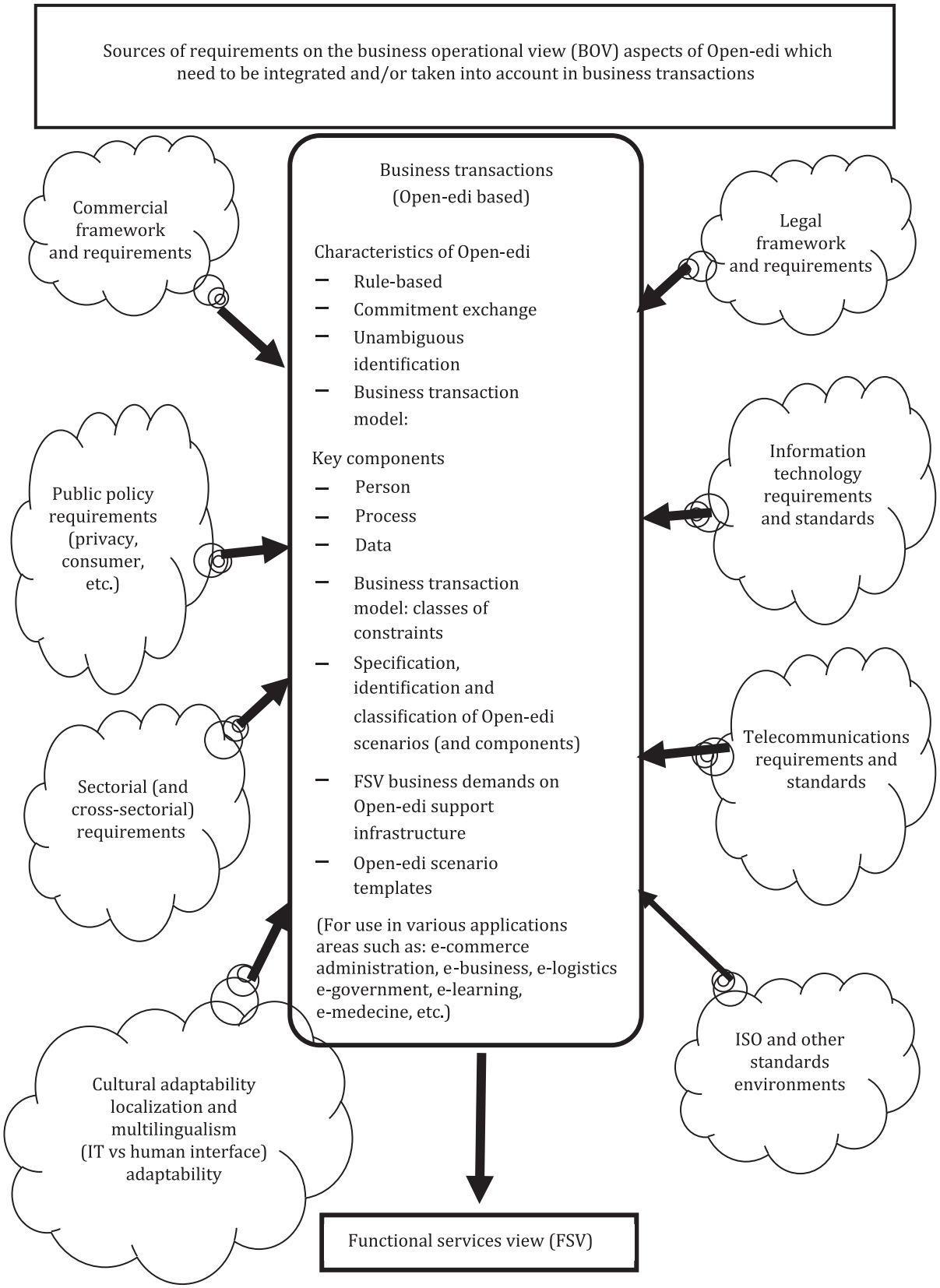


Figure 2 — Integrated view of business operational requirements

In electronic business transactions, whether undertaken on a for profit or not-for-profit basis, the key element is commitment exchange among Persons made through their decision-making applications (DMAs) of their information technology systems (IT systems) accessibility (see further

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in ISO/IEC 14662:2010, 5.2) acting on behalf of Persons. Persons are the only entities able to make commitments.

The **business operational view (BOV)** was therefore defined as:

> *"perspective of **business transactions** limited to those aspects regarding the making of **business** decisions and **commitments** among **Persons** which are needed for the description of a **business transaction**".*
>
> [ISO/IEC 14662:2010, 3.3]

There are three categories of Person as a role player in Open-edi, namely:

1) the Person as individual,

2) the Person as organization, and

3) the Person as public administration[2)].

There are also three basic (or primitive) roles of Persons in business transactions, namely: buyer, seller, and regulator. When modelling business transactions, jurisdictional domains prescribe their external constraints in the role of regulator and execute them as public administration.

0.3 Importance of and role of terms and definitions

The ISO/IEC 15944 series sets out the processes for achieving a common understanding of the business operational view (BOV) from commercial, legal, ICT, public policy and cross-sectoral perspectives. It is therefore important to check and confirm that a common understanding in any one of these domains is also unambiguously understood as identical in the others.

This subclause is included in each part of the ISO/IEC 15944 series to emphasize that harmonized concepts and definitions (and assigned terms) in its Parts are essential to the continuity of the overall standard.

In order to minimize ambiguity in the definitions and their associated terms, each definition and its associated term has been made available in at least one language other than English in the document in which it is introduced. In this context, it is noted that ISO/IEC 15944-7 already also contains human interface equivalents (HIEs) in ISO Chinese, ISO French, and ISO Russian[3)].

0.4 Based on rules and guidelines

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.

This document does not introduce any new rules or guidelines in addition to those that are already found in the ISO/IEC 15944 series.

0.5 Use of Person, organization, individual and party in the context of business transaction and commitment exchange

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2) While public administration is one of the three distinct sub-types of Person, most of the rules in ISO/IEC 15944-1 applicable to organization also apply to public administration. In addition, an unincorporated seller is also deemed to function as an organization. Consequently, the use of organization throughout this document also covers public administration. Where it is necessary to bring forward rules, constraints, properties, etc., which apply specifically to public administration, this is stated explicitly.

3) The designation ISO before a natural language refers to the use of that natural language in ISO standards.

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Throughout this document:

— the use of Person with a capital "P" represents Person as a defined term, 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; and,

— the use of the words person(s) and party (ies) without a capital "P" indicates their use in a generic context independent of Person, as a defined concept in ISO/IEC 14662 and the ISO/IEC 15944 series.

NOTE A party to a business transaction has the properties and behaviours of a Person.

0.6 Organization and description of this document

This document identifies the key concepts of open-edi reference model and cloud computing reference architecture relevant to each other by transforming them into concept models.

Following Clauses 0,1, 2, 3 and 4, which have a common approach and similar content in the ISO/IEC 15944 series, Clause 5 summarizes the Open-edi reference model together with the business operational view and functional service view.

Clause 6 summarizes the cloud computing reference architecture with user view and functional view.

Clause 7 provides concept models of both open-edi reference model and cloud computing reference architecture with ORM2 notations.

Clause 8 analyses and discusses the relationship between the two models and gives a summary of cloud computing and roles of an agent acting on behalf of a seller, and that of a"third party acting on behalf of a seller in executing business transaction with a buyer.

Annex A is a consolidated list of the definitions and their associated terms introduced in this document in ISO English and ISO French. (For the complete set of ISO French (and ISO Russian and ISO Chinese) equivalents of the entries in Clause 3, see ISO/IEC 15944-7.) As stated in the main body of this document, the issue of semantics and their importance of identifying the correct interpretation across official aspects is critical.

Annex B identifies rules stated in the other parts of the ISO/IEC 15944 series that are applicable to this document.

Annex C provides a mapping of key relevant cloud computing concepts and their definitions into an eBusiness context.

Annex D gives a brief introduction to fact-based modelling.

Annex E discusses definitions of role in ISO/IEC 14662 and ISO/IEC 17789.

Annex F lists titles of all parts of the ISO/IEC 15944 series.

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Information technology — Business operational view —

Part 14: Open-edi reference model and cloud computing architecture

1 Scope

This document:

— examines the basic concepts that have been developed for both cloud computing and Open-edi;

— identifies key Open-edi concepts relevant to cloud computing;

— identifies key cloud computing concepts relevant to Open-edi;

— compares Open-edi model and cloud computing architecture and identifies mappings (similarities in whole or in part) between them using formal semantic modelling techniques.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

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

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

3.1
agent
Person (3.39) acting for another *Person* in a clearly specified capacity in the context of a *business transaction* (3.4)

Note 1 to entry: 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)".

[SOURCE: ISO/IEC 15944-1:2011, 3.1]

3.2
business
series of processes, each having a clearly understood purpose, involving more than *Person* (3.39), realised through the exchange of information and directed towards some mutually agreed upon goal, extending over a period of time

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

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3.3
business operational view
BOV
perspective of *business transactions* (3.4) limited to those aspects regarding the making of *business* (3.2) decisions and *commitments* (3.16) among *Persons* (3.39), which are needed for the description of a *business transaction*

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

3.4
business transaction
predefined set of activities and/or processes of *Persons* (3.39) which is initiated by a *Person* to accomplish an explicitly shared *business* (3.2) goal and terminated upon recognition of one of the agreed conclusions by all the involved *Persons* although some of the recognition might be implicit

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

3.5
buyer
Person (3.39) 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

[SOURCE: ISO/IEC 15944-1:2011, 3.8]

3.6
cloud computing
paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on-demand

Note 1 to entry: Examples of resources include servers, operating systems, networks, software, applications, and storage equipment.

[SOURCE: ISO/IEC 17788:2014, 3.2.5]

3.7
cloud service
one or more capabilities offered via *cloud computing* (3.6) invoked using a defined interface

[SOURCE: ISO/IEC 17788:2014, 3.2.8]

3.8
cloud service broker
cloud service partner (3.12) that negotiates relationships between *cloud service customers* (3.9) and *cloud service providers* (3.13)

[SOURCE: ISO/IEC 17788:2014, 3.2.9]

3.9
cloud service customer
party (3.38) which is in a business relationship for the purpose of using *cloud services* (3.7)

Note 1 to entry: A business relationship does not necessarily imply financial agreements.

[SOURCE: ISO/IEC 17788:2014, 3.2.11]

3.10
cloud service customer data
class of data objects *under the control* (3.49), by legal or other reasons, *of* the *cloud service customer* (3.9) that were input to the *cloud services* (3.7), or resulted from exercising the capabilities of the *cloud services* by or on behalf of the *cloud service customer* via the published interface of the *cloud services*

Note 1 to entry: An example of legal controls is copyright.

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