



BSI Standards Publication

Information technology — Business Operational View —

Part 1: Operational aspects of Open-edi for implementation

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

raising standards worldwide™

Full document details: BS ISO/IEC 15944-1:2011

National foreword

This British Standard is the UK implementation of ISO/IEC 15944-1:2011. It supersedes BS ISO/IEC 15944-1:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee IST/40, Data management and interchange.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© BSI 2011

ISBN 978 0 580 73387 1

ICS 35.240.60

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 August 2011.

Amendments issued since publication

Date	Text affected
------	---------------

INTERNATIONAL STANDARD

BS ISO/IEC 15944-1:2011

ISO/IEC
15944-1

Second edition
2011-08-01

Information technology — Business Operational View —

Part 1: Operational aspects of Open-edi for implementation

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



Reference number
ISO/IEC 15944-1:2011(E)

AVA **Documents**
Document Sharing Hub
© ISO/IEC 2011



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2011

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	xii
0 Introduction	xiii
0.1 Purpose and overview.....	xiii
0.2 Requirements on the business operational view aspects of Open-edi	xv
0.3 Business operational view (BOV), Open-edi and e-commerce, e-business, etc.	xvii
0.4 Use of “Person”, “person”, and “party” in the context of business transactions and commitment exchange.....	xviii
0.5 Organization and description of the document.....	xix
0.6 Registration aspects of Open-edi scenarios, scenario attributes and scenario components	xix
1 Scope	1
2 Normative references	2
3 Terms and definitions	2
4 Symbols and abbreviated terms	12
5 Characteristics of Open-edi.....	12
5.1 Actions based on following clear, predefined rules	13
5.2 Commitment of the parties involved	13
5.3 Communications among parties are automated	13
5.4 Parties control and maintain their states	13
5.5 Parties act autonomously	14
5.6 Multiple simultaneous transactions can be supported	14
6 Components of a business transaction	14
6.1 Introduction	14
6.1.1 Overview	14
6.1.2 Standard based on rules and guidelines	15
6.1.3 Business transaction: commitment exchange added to information exchange	16
6.1.4 Business transaction: unambiguous identification of entities.....	20
6.1.5 Business transaction model: key components.....	23
6.1.6 Business transaction model: classes of constraints	23
6.2 Rules governing the Person component	26
6.2.1 Introduction.....	26
6.2.2 Person, personae, identification and Person signature	26
6.2.3 Person - identity and authentication	31
6.2.4 Person and roles: buyer and seller.....	34
6.2.5 Person and delegation to “agent” and/or “third party”	35
6.2.6 Person and external constraints: the “regulator”	36
6.2.7 Person and external constraints: individual, organization, and public administration	36
6.2.8 Person and external constraints: consumer and vendor.....	40
6.3 Rules governing the process component.....	41
6.3.1 Introduction	41
6.3.2 Planning	42
6.3.3 Identification	43
6.3.4 Negotiation	43
6.3.5 Actualization	44
6.3.6 Post-actualization	44
6.4 Rules governing the data component	45
6.4.1 Recorded information	45
6.4.2 Predefined and structured data elements.....	47

6.5	Business requirements on the FSV (Business demands on Open-Edi Support Infrastructure).....	50
6.5.1	Introduction	50
6.5.2	Internal constraints (self-imposed).....	51
6.5.3	External constraints	52
6.5.4	BOV requirements on the FSV for security methods and techniques	53
6.5.5	Liability of repositories	53
6.6	Primitive classification and identification of Open-edi scenarios	54
6.6.1	Introduction	54
6.6.2	Classification of Open-edi scenarios.....	54
6.6.2.1	Requirements for classification of Open-edi scenarios.....	54
6.6.2.2	Market type on business boundary.....	55
6.6.2.3	Settlement type in business process.....	55
6.6.2.4	Roles in business transactions: primitive or complex.....	55
6.6.3	Trade models based on three classification factors.....	56
6.6.3.1	Trade models by market type: defined and undefined.....	56
6.6.3.2	Trade models by settlement type: immediate and separate.....	57
6.6.3.3	Trade models by participation type: bilateral and mediated	58
6.6.4	Classification and scenario types of Open-edi scenarios.....	58
6.6.4.1	Classification on Open-edi scenarios	58
6.6.4.2	Scenario types	59
6.6.4.2.1	Basic primitive trade scenario: (a)	59
6.6.4.2.2	Basic complex trade scenario: (b).....	60
6.6.4.2.3	Defined primitive trade scenario: (i).....	60
6.6.4.2.4	Defined complex trade scenario: (j)	60
6.6.4.2.5	Primitive agreement scenario: (c)	61
6.6.4.2.6	Defined primitive agreement scenario: (k)	61
6.6.4.2.7	Complex agreement scenario: (g)	61
6.6.4.2.8	Defined complex agreement scenario: (m).....	62
6.6.4.2.9	Separate delivery scenario: (d).....	62
6.6.4.2.10	Separate payment scenario: (e).....	62
6.6.4.2.11	Authentication scenario: (f)	62
6.6.4.2.12	Defined authentication scenario: (l)	63
6.6.4.3	Remarks on scenario classification	63
6.6.4.3.1	Continuous transaction:.....	63
6.6.4.3.2	Services transaction:	63
6.6.4.3.3	Auction transaction:	63
6.6.4.3.4	Bidding transaction:	63
6.6.4.3.5	Credit payment transaction:	63
6.6.4.3.6	Regulatory constraints:.....	63
7	Guidelines for scoping Open-edi scenarios	64
7.1	Introduction and basic principles	64
7.2	Rules for scoping Open-edi scenarios	65
7.3	Template for specifying scope of an Open-edi scenario.....	67
7.3.1	Introduction to template.....	67
7.3.2	Template	68
8	Rules for specification of Open-edi scenarios and their components	71
8.1	Introduction and basic principles	71
8.2	OES demands on interoperability	74
8.3	Rules for specification of Open-edi scenarios and scenario attributes	75
8.3.1	Open-edi scenario rules.....	75
8.3.2	Open-edi scenario (OeS) attributes and associated rules.....	75
8.3.2.1	Scenario attribute: OeS identifier	76
8.3.2.2	Scenario attribute: OeS name(s)	76
8.3.2.3	Scenario attribute: OeS purpose	77
8.3.2.4	Scenario attribute: OeS set of roles	77
8.3.2.5	Scenario attribute: OeS set of Information Bundles	77
8.3.2.6	Scenario attribute: OeS set of requirements on Open-edi Parties	77
8.3.2.7	Scenario attribute: OeS set of external constraints on business requirements, i.e., laws and regulations.....	78

8.3.2.8	Scenario attribute: OeS inheritance identifier(s) and cross-references	78
8.3.2.9	Scenario attribute: OeS security service requirements.....	78
8.3.2.10	Scenario attribute: OeS communication - quality of service requirements	79
8.3.2.11	Scenario attribute: OeS role requirements and constraints.....	79
8.3.2.12	Scenario attribute: OeS dependency among roles in a scenario	79
8.3.2.13	Scenario attribute: OeS dependency among Information Bundles in a scenario.....	79
8.3.2.14	Scenario attribute: OeS dependency among Semantic Components of different Information Bundles	79
8.3.2.15	Scenario attribute: OeS demands on Open-edl Parties	79
8.3.2.16	Scenario attribute: OeS demands on Open-edl infrastructure	80
8.4	Rules for specification of Open-edl roles and role attributes.....	80
8.4.1	Rules governing roles	80
8.4.2	Role attributes and associated rules	81
8.4.2.1	Role attribute: role identifier (ID).....	82
8.4.2.2	Role attribute: role name(s)	82
8.4.2.3	Role attribute: role purpose	82
8.4.2.4	Role attribute: role business goal(s).....	83
8.4.2.5	Role attribute: role business rules and constraints.....	83
8.4.2.6	Role attribute: role inheritance identifiers and cross-references	83
8.4.2.7	Role attribute: role external constraints on business requirements.....	84
8.4.2.8	Role attribute: role security service requirements.....	84
8.4.2.9	Role attribute: role communications and quality of service requirements	85
8.4.2.10	Role attribute: Role demands on Open-edl Support Infrastructure (OeSI).....	85
8.4.3	Role demands on Open-edl Parties	85
8.4.4	Interoperability demands among roles	86
8.4.5	Role states.....	86
8.4.6	Role transitions.....	86
8.4.7	Role events.....	87
8.4.8	Role actions	88
8.4.9	Role internal function.....	88
8.4.10	Role demand on Open-edl Support Infrastructure (OeSI)	88
8.5	Rules for specification of Open-edl Information Bundles (IBs) and IB attributes	89
8.5.1	Rules governing Information Bundles (IBs)	89
8.5.2	Information Bundle (IB) attributes and associated rules	90
8.5.2.1	Information Bundle attribute: IB identifier.....	90
8.5.2.2	Information Bundle attribute: IB name(s)	90
8.5.2.3	Information Bundle attribute: IB purpose.....	91
8.5.2.4	Information Bundle attribute: business rules controlling content of IBs	91
8.5.2.5	Information Bundle attribute: IB external constraints on business requirements governing content or concept(s) of an IB	91
8.5.2.6	Information Bundle attribute: IB contents.....	91
8.5.2.7	Information Bundle attribute: IB security service requirements.....	91
8.5.2.8	Information Bundle attribute: IB recorded information retention – business rules and constraints	92
8.5.2.9	Information Bundle attribute: IB recorded information retention - external constraints on business requirements.....	92
8.5.2.10	Information Bundle attribute: IB time validity characteristics	92
8.5.3	IB information for interoperability	93
8.5.4	IB demands on Open-edl Support Infrastructure (OeSI)	93
8.5.5	Rules for the specification of Semantic Components and Semantic Component attributes.....	93
8.5.5.1	Rules governing Semantic Components.....	93
8.5.5.2	Rules governing Semantic Component attributes	95
8.5.5.2.1	Semantic Component attribute: SC identifier	95
8.5.5.2.2	Semantic Component attribute: SC name(s).....	95
8.5.5.2.3	Semantic Component attribute: SC definition	95
8.5.5.2.4	Semantic Component attribute: SC security service requirements	96
8.6	Business requirements on FSV (business demands on Open-edl Support Infrastructure).....	96
9	Primitive Open-edl scenario template	97
9.1	Purpose.....	97

9.2	Template structure and content	97
9.2.1	IT-interface needs perspective	98
9.2.2	Human interface needs perspective	98
9.2.3	Consolidated template of attributes of Open-edi scenarios, roles and Information Bundles	98
10	Requirements on Open-edi description techniques	101
10.1	General requirements on Open-edi description techniques	101
10.2	Requirements on OeDTs for roles	102
10.3	Requirements on OeDTs for Information Bundles	103
11	References	104
Annex A	(normative) Consolidated list of terms and definitions with cultural adaptability: ISO English and ISO French language equivalency	105
A.1	Introduction	105
A.2	ISO English and ISO French	105
A.3	Cultural adaptability and quality control	105
A.4	Organization of Annex A - Consolidated List in Matrix Form	106
A.5	Consolidated List of ISO/IEC 15944-1 Terms and Definitions	107
Annex B	(normative) Codes representing presence-type attributes: mandatory, conditionals, optionals, and not applicable	130
Annex C	(informative) Unambiguous identification of entities in (electronic) business transactions	133
C.1	Introduction	133
C.2	Key issues	133
C.3	Basic assumptions: Entities, objects and Persons	133
C.4	"Unambiguous"	135
C.5	"Identification"	136
C.6	Identification versus designation (or "identifiers" versus "names")	140
Annex D	(informative) Existing standards for the unambiguous identification of Persons in business transactions (organizations and individuals) and some common policy and implementation considerations	143
D.1	Introduction	143
D.1.1	Note on compliance with privacy/data protection, consumer protection, etc.	144
D.1.2	Standards referenced in this Annex	144
D.2	Purpose	145
D.3	Approach and overview	146
D.4	Existing standards for the unambiguous identification of Persons	146
D.4.1	Introduction	146
D.4.2	Key existing standards	147
D.4.2.1	Specific standards already identified	147
D.4.2.2	(Global) Unambiguous identification of "organizations" - ISO/IEC 6523	148
D.4.2.2.1	ISO/IEC 6523 and the identification of "roles" in scenarios and scenario components	152
D.4.2.3	(Global) Unambiguous identification of "buyers and sellers" - ISO/IEC 7812	153
D.4.2.4	(Global) Unambiguous identification of individuals - ISO/IEC 7501	154
D.4.3	Conclusions	155
D.5	Some common policy and implementation considerations for the unambiguous identification of Persons as individuals	156
D.5.1	Introduction	156
D.5.2	Anonymity	157
D.5.3	Privacy/data protection	158
D.5.4	What is an "individual" and what are criteria for an "identifiable individual"?	160
D.5.5	Role of a natural person in a business transaction as "individual or organization" (or "organization Person")?	161
D.5.6	Unambiguous identification of individuals - two basic options	162
Annex E	(informative) Business transaction model: Person component	165
E.1	Introduction	165
E.2	Purpose	167
E.3	"Person" in a business transaction	168
E.4	Personae, identification and Person signature	170

E.4.1	Personae and identification.....	170
E.4.2	Person signature	178
E.5	Person - identification and authentication.....	181
E.6	Person and roles: buyer and seller.....	185
E.7	Person and delegation of commitment to agent and/or third parties	187
E.7.1	Introduction.....	187
E.7.2	Agents.....	188
E.7.3	Third parties	190
E.8	Person and external constraints: regulator	191
E.9	Person and external constraints: individual, organization, and public administration	192
E.9.1	Introduction	192
E.9.2	Individual	195
E.9.3	Organization, organization part and organization Person	196
E.9.4	Organization part	198
E.9.5	Organization Person.....	198
E.9.6	Public administration	201
E.9.7	Summary overview of the three sub-types of Persons and the three roles	201
E.10	Person and external constraints: consumer and vendor.....	202
Annex F	(informative) Business transaction model: process component.....	205
F.1	Introduction	205
F.1.1	Purpose.....	205
F.1.2	Sources of contents	207
F.2	Process component	208
F.2.1	General rules.....	208
F.2.2	Planning phase	209
F.2.3	Identification phase	210
F.2.4	Negotiation phase.....	211
F.2.5	Actualization phase.....	212
F.2.6	Post-actualization phase.....	213
F.3	Process component and construction of scenarios and scenario components.....	213
F.4	Summary of background study supporting the five phases of the process component	214
F.4.1	Initial view of process component.....	214
F.4.2	Results of analysis of buying and selling models	215
F.4.2.1	Overview	215
F.4.2.2	Conclusions.....	218
F.4.3	Bibliography.....	218
F.5	Survey of buying and selling models forming part of background study.....	219
F.5.1	"Depth selling model"	220
F.5.2	"Stages in making a sale".....	221
F.5.3	"The cycle of industrial-buying process"	222
F.5.4	"The dyadic sales process".....	222
F.5.5	"Industrial buyer behaviour"	223
F.5.6	"The stages of the corporate industrial-buying process for selected items of capital equipment"	224
Annex G	(informative) Business transaction model: data component	226
G.1	Introduction	226
G.2	Context: Business transaction.....	227
G.3	Business information to recorded information	228
G.4	Recorded information to electronic data	232
G.5	Predefined and structured data elements.....	234
G.5.1	Data to data elements.....	234
G.5.2	Unambiguity in data elements.....	236
G.5.3	Predefined and structured data elements.....	236
G.5.4	Granularity.....	238
G.6	Linking data element to Information Bundle and Semantic Component.....	239
Annex H	(informative) Effect of classification of scenario constructs	243
H.1	Introduction	243
H.2	Some basic attributes of scenario constructs	243

H.3	Some classification concepts of market	245
H.4	Table H.1 effect of classification on scenario constructs	247
Annex I (informative) Scenario descriptions using the Open-edl scenario template:		
	"Telecommunications Operations Map" example	249
I.1	Introduction	249
I.1.1	Purpose	249
I.1.2	Formal Description Technique (FDT)	249
I.1.3	Disclaimer Notice	249
I.1.4	Summary Introduction to "Telecommunications Operations Map"	250
I.1.5	Terminology	250
I.2	Open-edl Scenario - identification and classification	250
I.2.1	Scenario Scope Attributes	251
I.2.2	Business Model	254
I.2.3	Business Areas	256
I.2.3.1	Service Fulfillment	257
I.2.4	Process Areas	258
I.2.4.1	Order Handling Process Area	258
I.2.5	Business Processes	259
I.2.5.1	Create Service Request Process	259
I.2.5.1.1	Create Service Request Use Case Diagram	259
I.2.5.2	Develop Service Work Order Plan Process	260
I.3	Negotiate Reservation Business Process (Open-edl Scenario)	261
I.3.1	Negotiate Reservation Business Scenario UML Diagram	261
I.3.2	Scenario Identification and Definition Attributes Values	262
I.3.2.1	Negotiate Reservation	262
I.3.2.2	Check Time Slot Availability	263
I.3.2.3	Negotiate Time	264
I.3.2.4	Request Time Slot Reservation	265
I.3.3	Scenario Component Specification (Business collaboration)	266
I.3.3.1	Negotiate Reservation Collaboration	266
I.3.3.2	Partners	267
I.3.3.3	Roles	268
I.3.3.3.1	Business Collaboration Activity Diagram	269
I.3.3.3.2	Business Collaboration Activities	269
I.3.3.3.3	Initial/Terminal States	270
I.3.3.4	Information Bundles	270
I.4	Business Transactions	271
I.4.1	Query Available Time Slots Commercial Transaction Definition	271
I.4.1.1	Activity Diagram	271
I.4.1.2	Query Available Time Slots Business Objective	272
I.4.1.2.1	Start State	272
I.4.1.2.2	Initiating Business Activity: Query Available TimeSlots	272
I.4.1.2.3	Requesting Information Bundle: Available Time Slots Query	273
I.4.1.2.4	Responding Business Activity: Process Available TimeSlot Query	274
I.4.1.2.5	Responding Information Bundle: Available Time Slots Response	275
I.4.1.3	Offer Available Time Slots Commercial Transaction Definition	279
I.4.1.3.1	Activity Diagram	279
I.4.1.3.2	Business Objective	279
I.4.1.3.3	Start State	280
I.4.1.3.4	Initiating Business Activity: Offer Available Time Slots	280
I.4.1.3.5	Requesting Information Bundle: Time Slot Offer	280
I.4.1.3.6	Responding Business Activity: Process Time Slot Offer	282
I.4.1.3.7	Responding Information Bundle: Time Slot Offer Response	282
I.4.1.4	Request Time Slot Reservation Commercial Transaction Definition	284
I.4.1.4.1	Activity Diagram	284
I.4.1.5	Business Objective	284
I.4.1.5.1	Start State	284
I.4.1.5.2	Initiating Business Activity: Request TimeSlot Reservation	285
I.4.1.5.3	Requesting Information Bundle: Time Slot Reservation Request	285

I.4.1.5.4	Responding Business Activity: Process Time Slot Reservation	287
I.4.1.5.5	Responding Information Bundle: Time Slot Reservation Confirmation	288
Annex J (informative)	Open-edi and e-commerce: Areas of activities and participation	291
J.1	Introduction	291
J.2	Table of current participants in the area of standardization pertaining to e-Business	291
Bibliography		293

List of Figures Page

Figure 1	Open-edi environment	xiii
Figure 2	Aspects of ISO/IEC 15944	xiv
Figure 3	Integrated View — Business operational requirements	xvi
Figure 4	Illustration of technical components as end users of information exchange(s) in IT Standards – <u>FSV perspective</u>	17
Figure 5	Illustration of Persons as end users in commitment exchange in business transactions. based on existing commercial and legal frameworks – <u>BOV perspective</u>	18
Figure 6	Integrated View — commercial/legal and IT perspectives of Persons as “end users” in an electronic business transaction through technical components – incorporating BOV and FSV perspectives	20
Figure 7	Business Transaction Model — Fundamental components (Graphic Illustration)	23
Figure 8	Business Transaction Model: Classes of constraints	25
Figure 9	Links of a Person to its persona(e) in the context of different business transactions and their governing rules	27
Figure 10	Illustration of inks of a Person to persona(e) to identifier(s) issued through identification schemata applicable to the contexts of different business transactions	29
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	31
Figure 12	Illustration of range of links between Person and Person identity(ies)	32
Figure 13	Illustration of two basic options for the establishment of a recognized Person identity based on a Person identity for use in a business transaction	33
Figure 14	Illustration of buyer-seller interaction with buyer using an agent	35
Figure 15	Illustration of buyer and seller with a third party	36
Figure 16	Integrated business transaction perspective of Person: Minimum external constraints	37
Figure 17	Illustration of commitment exchange versus information exchange for organization, organization part(s) and organization Person(s)	39
Figure 18	Business Transaction Model: Basic aspects of Person as players and roles - Public administration external constraints	40
Figure 19	Relation of “information”, recorded information” and “medium” in business transactions — Legal, commercial and Open-edi requirements	47
Figure 20	Relation of “recorded information”, “data” and “computer system” in electronic business transactions / Open-edi	48
Figure 21	Relations “data” and “data elements” in electronic business transactions / Open-edi	48
Figure 22	Focus of BOV Open-edi standardization work from data element perspective — Predefined and structured data elements	50
Figure 23	Primitive Trade Model	56
Figure 24	Scenario Classification and Scenario Types	58
Figure 25	Illustration of operation of Open-edi from the point of view of an autonomous organization in terms of the operation of rules, constraints and scenario components	73
Figure D.1	Business Transaction Model - Fundamental components (Graphic Illustration)	144
Figure D.2	Base structure of component parts of an ISO/IEC 6523-based Identifier	149
Figure D.3	Sample of ISO/IEC 6523 allocated ICDs with associated name of coding system and coverage information	151
Figure D.4	Assignment of Major Industry Identifiers (MIIs) under ISO/IEC 7812	154
Figure D.5	Structure of the parts comprising the ISO/IEC 7812 identifier	154
Figure E.1	Business Transaction Model — Fundamental components (Graphic illustration)	166

Figure E.2	UML-based representation of Figure E.1 — Business Transaction Model — Fundamental components	167
Figure E.3	Links of a Person to its persona(e) in the context of different business transactions and their governing rules	171
Figure E.4	UML-based representation of "Figure E.3: Links of a Person to its persona(e) in the context of different business transactions and their governing rules"	171
Figure E.5	Illustration of Links of a Person to persona(e) to identifier(s) issued through identification schemata applicable to the contexts of different business transactions	177
Figure E.6	UML-based representation of "Figure E.5: Illustration of links of a Person to persona(e) to identifier(s) issued through identification schemata applicable to the contexts of different business transactions"	177
Figure E.7	Illustration of relationships of links of a Person to (its) persona(e) to identification schemata and resulting identifiers to associated Person signatures - in the context of different business transactions and governing rules	180
Figure E.8	UML-based representation of "Figure E.7: Illustration of relationships of links of a Person to (its) persona(e) to identification schemata and resulting identifiers to associated Person signatures — in the context of different business transactions and governing rules"	181
Figure E.9	Illustration of range of links between Person and Person identity(ies)	182
Figure E.10	UML-based representation of "Figure E.9: "Illustration of range of links between Person and Person identity(ies)"	182
Figure E.11	Illustration of two basic options for the establishment of a recognized identity based on a Person identity for use in a business transactions	183
Figure E.12	UML-based representation of "Figure 11: Illustration of two basic options for the establishment of a recognized Person identity based on a Person identity for use in a business transactions.....	184
Figure E.13	Illustration of buyer-seller interaction with buyer using an agent	188
Figure E.14	UML-based representation of "Figure 13: Illustration of buyer-seller interaction with buyer using an agent"	189
Figure E.15	Illustration of a buyer and seller with a third party	190
Figure E.16	UML-based representation of "Figure 15: Illustration of buyer and seller with a third Party"	191
Figure E.18	UML-based representation of "Figure E.17: Generic legal perspective of "Person""	193
Figure E.17	Generic legal perspective of "Person" (Graphic illustration)	193
Figure E.20	UML-based representation of "Figure E.19: Integrated business transaction perspective of Person: Minimum external constraints"	195
Figure E.19	Integrated business transaction perspective of Person: Minimum external constraints.....	195
Figure E.21	Illustration of commitment exchange versus information exchange for organization, organization part(s) and organization Person(s).....	200
Figure E.22	UML-based representation of part of "Figure E.21: Illustration of commitment exchange versus information exchange for organization, organization part(s) and organization Person(s)"	201
Figure E.23	Business Transaction Model: - Basic players and roles public administration constraints.....	202
Figure F.1	Business Transaction Model — Fundamental components (Graphic Illustration).....	206
Figure F.2	UML-based representation of "Figure F.1 - Business Transaction Model — Fundamental components"	206
Figure F.3	Summary table of buying and selling models	216
Figure G.1	Business Transaction Model — Fundamental components (Graphic Illustration).....	226
Figure G.2	UML-based representation of "Figure G.1 — Business Transaction Model — Fundamental components"	227
Figure G.3	Relation of "information, "recorded information" & "medium" in business transactions — Legal, commercial and Open-edi requirements	231
Figure G.4	UML-based representation of Figure G.3 "Relation of "information, "recorded information" & "medium" in business transactions — Legal, commercial and Open-edi requirements" ..	231
Figure G.5	Relations of "recorded information", "data" and "computer system" in electronic business transactions/ Open-edi	233
Figure G.6	UML-based representation of Figure G-5 "Relations of "recorded information", "data" and "computer system" in electronic business transactions/ Open-edi"	233
Figure G.7	Relations "data" and "data elements" in electronic business transactions/Open-edi	234

Figure G.8	UML-based representation of Figure G.7 “Relations “data” and “data elements” in electronic business transactions/Open-edi”	235
Figure G.9	Focus of BOV Open-edi standardization work from data element perspective — Predefined and structured data elements.....	237
Figure H.1	Effect of classification on scenario constructs.....	247
Figure I.1	Telecommunications Operational Map	255
Figure I.2	Telecommunications Operational Map (Business Area Categories)	256
Figure I.3	Process Area (Service Fulfilment)	258
Figure I.4	Sub-set of Order Handling Processes.....	259
Figure I.5	Create Service Request	260
Figure I.6	Service Work Order Request for a Field Labor Provider.....	261
Figure I.7	UML Diagram for Negotiate Reservation Business Scenario	262
Figure I.8	UML diagram for Negotiate Reservation Collaboration	267
Figure I.9	UML diagram of Business Colaboration Activity Diagram	269
Figure I.10	UML Diagram for Query Available Time Slots Commercial Transaction.....	271
Figure I.11	UML Diagram for Requesting Information Bundle: Available Time Slots Query.....	273
Figure I.12	UML Diagram for Responding Information Bundle: Available Time Slots Response.....	275
Figure I.13	UML Diagram for Other Available Time Slots Commercial Transaction.....	279
Figure I.14	UML Diagram for Requesting Information Bundle: Time Slot Offer.....	281
Figure I.15	UML Diagram for Responding Information Bundle: Time Slot Offer Response	282
Figure I.16	UML Diagram for Request Time Slot Reservation Commercial Transaction	284
Figure I.17	UML Diagram for Requesting Information Bundle: Time Slot Reservation Request	286
Figure I.18	UML Diagram for Responding Information Bundle: Time Slot Reservation Comfirmation	288

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 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.

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.

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.

0 Introduction

0.1 Purpose and overview

ISO/IEC 14662¹⁾ 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).

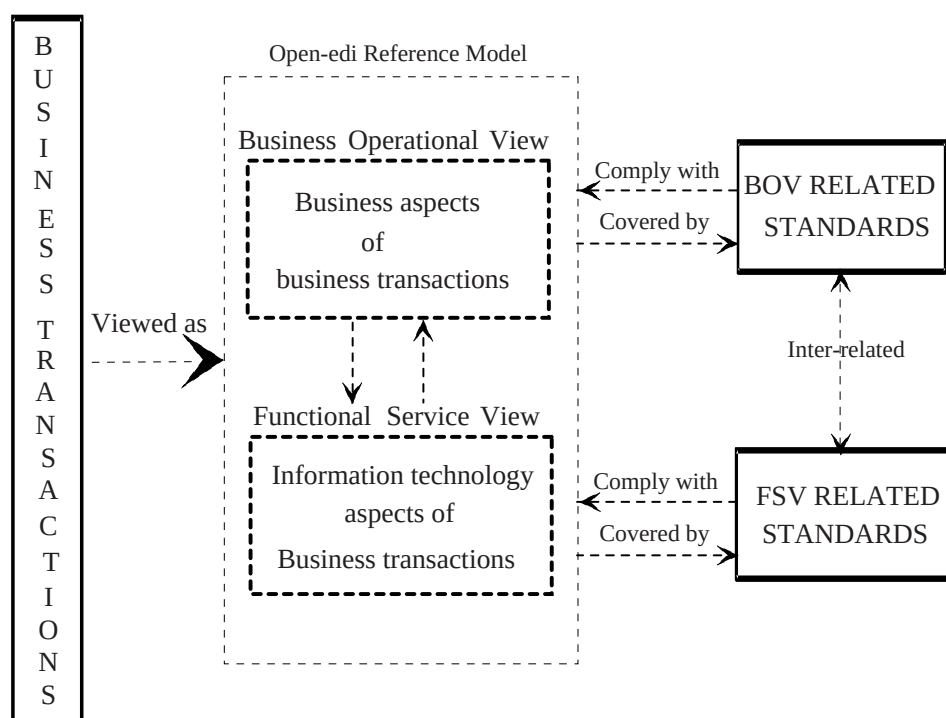


Figure 1 — Open-edi environment

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.

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⁾

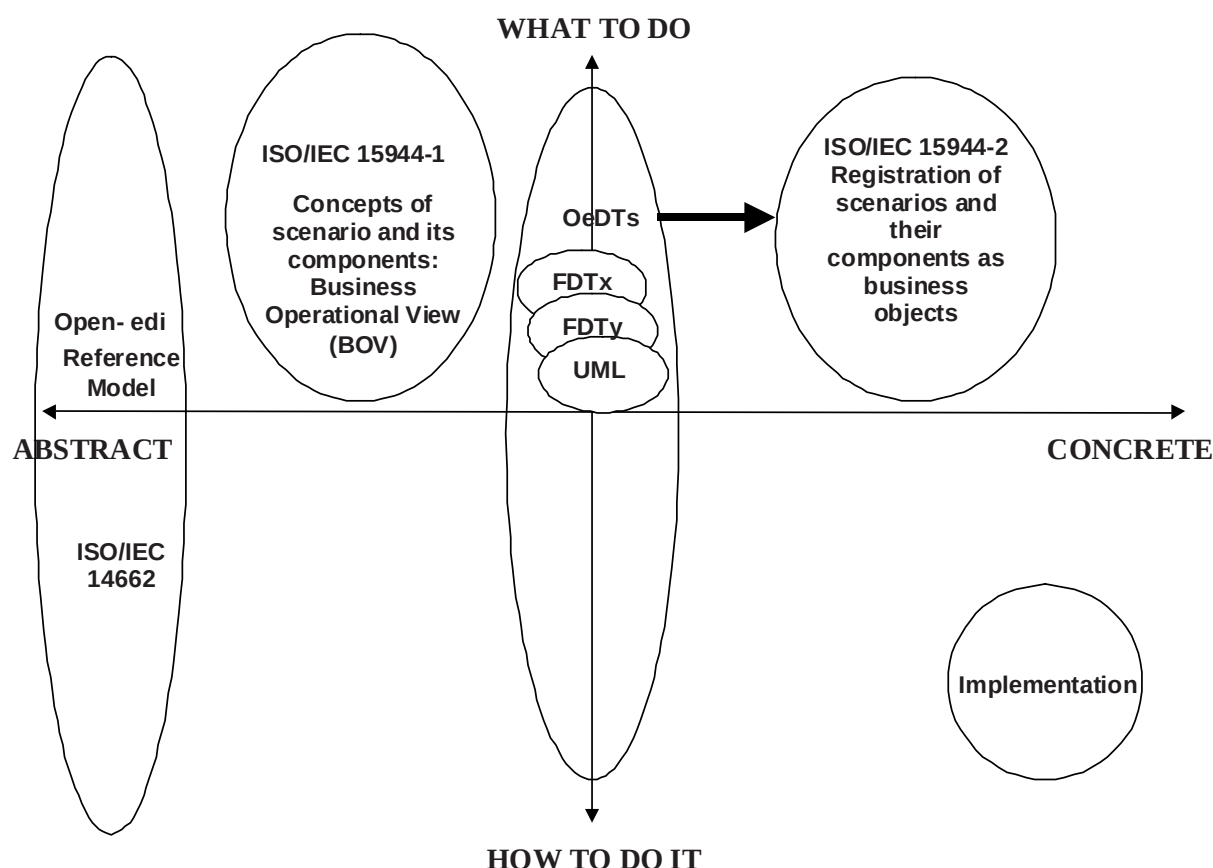


Figure 2 — Aspects of ISO/IEC 15944

²⁾ See 0.6

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

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-edī 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-edī reference model serves as the basis for coordination of work of different standardization areas and types of standardization for Open-edī.

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-edī.

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-edī 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 approach⁵⁾.

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

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-edī 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.

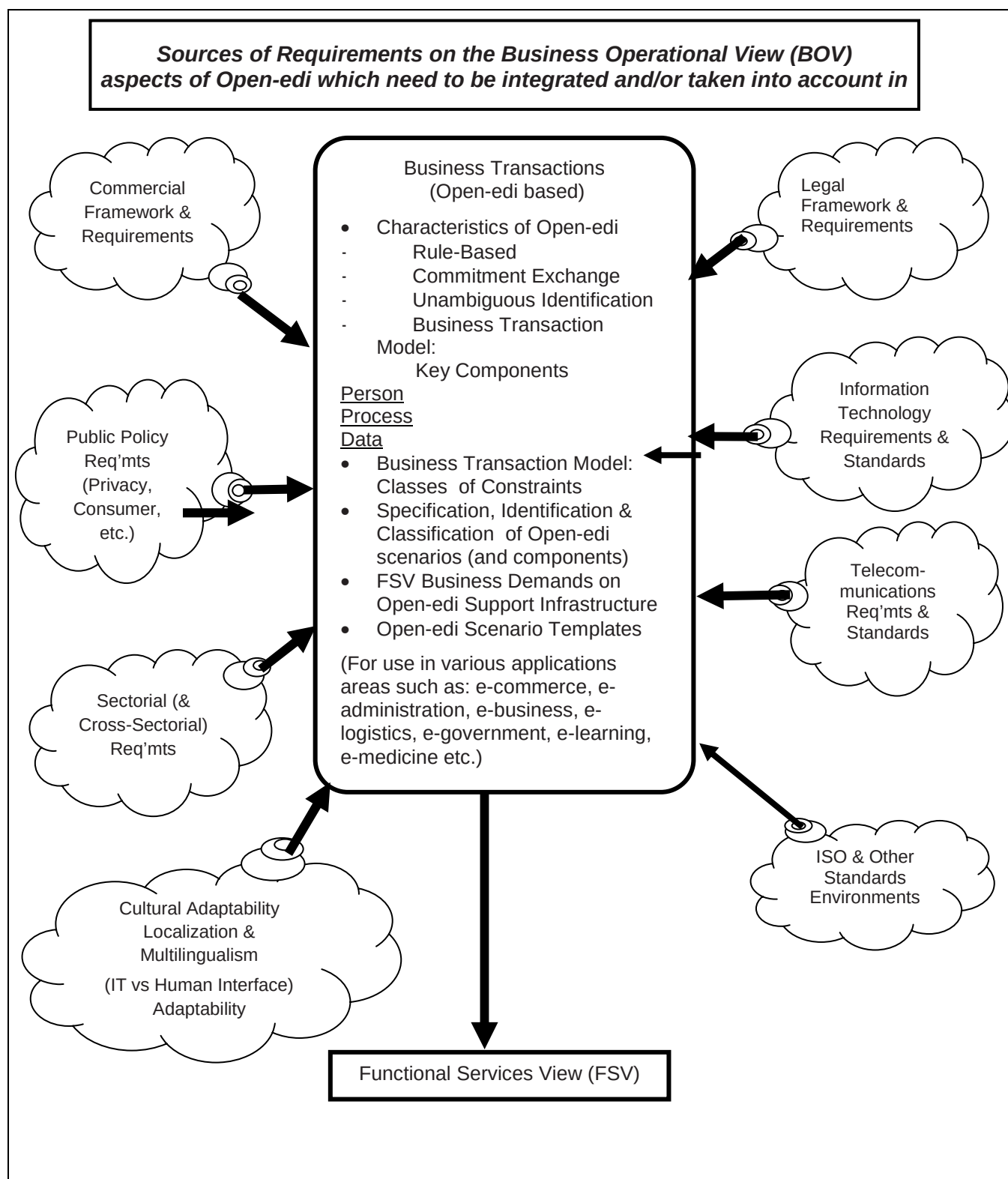


Figure 3 — Integrated View — Business operational requirements

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 Persons⁷⁾.

From a commercial, legal and standardization perspective, one can view electronic commerce⁸⁾ 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,

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.

- 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-edition 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-edition 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-edition 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-edition 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.

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.

Information technology — Business Operational View —

Part 1: Operational aspects of Open-edī for implementation

1 Scope

The Open-edī Reference Model (ISO/IEC 14662:2010, Clause 4) states:

"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) or the formation of a legal interchange agreement between 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)."

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-edī 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].

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-edl reference model*

3 Terms and definitions¹³⁾

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

3.1 agent

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

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)

boundary across which application software uses facilities of programming languages to invoke services

NOTE 1 These facilities may include procedures or operations, shared data objects and resolution of identifiers.

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

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

[ISO/IEC JTC 1 Directives: 2007 (J.1.1)]

3.3 authentication

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

[ISO/IEC 10181-2:1996 (3.3)]

3.4 authenticity

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

NOTE Authenticity applies to entities such as users, processes, systems and information.

[ISO/IEC 13335-1:2004 (3.3)]

13) Annex A provides the French language equivalents for all the terms and definitions presented in this clause. For the Chinese and Russian language equivalents, see ISO/IEC 15944-7:2009, *Information technology — Business Operational View — eBusiness Vocabulary*.

3.5

business

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

[ISO/IEC 14662:2010 (3.2)]

3.6

Business Operational View (BOV)

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)]

3.7

business transaction

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

[ISO/IEC 14662:2010 (3.4)]

3.8

buyer

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

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

[ISO/IEC 14662:2010 (3.5)]

3.10

consensus (standardization perspective)

general agreement, characterized by the absence of sustained opposition to substantial issues by any important part of the concerned interests and by a **process** 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.

3.11

constraint

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

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 jurisdictional domain, 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 jurisdictional domain.

3.13 data

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 2382-1:1993 (01.01.02)]

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

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

[ISO/IEC 11179-1:2004 (3.3.8)]

3.16 data element (in organization of data)

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.

NOTE Differs from the entry 17.06.02 in ISO/IEC 2382-17:1999.

[ISO/IEC 2382-4:1999 (04.07.01)]

3.17 Decision Making Application (DMA)

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 14662:2010 (3.7)]

3.18 distinguishing identifier

data that unambiguously distinguishes an **entity** in the **authentication process**

[ISO/IEC 10181-2:1996 (3.11)]

3.19

Electronic Data Interchange (EDI)

automated exchange of any predefined and structured **data** for **business** purposes among information systems of two or more **Persons**

NOTE This definition includes all categories of electronic business transactions.

[ISO/IEC 14662:2010 (3.8)]

3.20

entity

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

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

NOTE An entity exists whether data about it are available or not.

[ISO/IEC 2382-17:1999 (17.02.05)]

3.21

entity authentication

corroboration that an **entity** is the one claimed

[ISO/IEC 9798-1:2010 (3.14)]

3.22

(entity) identification

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

[ISO/IEC 2382-17:1999 (17.02.14)]

3.23

external constraint

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 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 jurisdictional domain or mutually agreed 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 are also to form the whole of a business transaction (e.g., for legal or audit purposes), all constraints must be recorded.

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

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

3.24

Formal Description Technique (FDT)

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

[ISO/IEC 14662:2010 (3.9)]

3.25

Functional Service View (FSV)

perspective of **business transactions** limited to those information technology interoperability aspects of **IT Systems** needed to support the execution of **Open-edition transactions**

[ISO/IEC 14662:2010 (3.10)]

3.26

identification

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)

unambiguous, unique and a linguistically neutral value, resulting from the application of a rule-based **identification process**

NOTE 1 Identifiers must be unique within the identification scheme of the issuing authority.

NOTE 2 An identifier is a linguistically independent sequence of characters capable of uniquely and permanently identifying that with which it is associated. {See ISO 19135:2005 (4.5)}

3.28

individual

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)

formal description of the semantics of the **recorded information** to be exchanged by **Open-edition Parties** playing **roles** in an **Open-edition scenario**

[ISO/IEC 14662:2010 (3.11)]

3.31

Information Processing Domain (IPD)

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

[ISO/IEC 14662:2010 (3.12)]

3.32

Information Technology System (IT System)

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

[ISO/IEC 14662:2010 (3.13)]

3.33

internal constraint

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 used to record the information [e.g. paper, photographic (chemical), magnetic, optical, ICs (integrated circuits), as well as other categories no longer in common use such as vellum, parchment (and other animal skins), plastics (e.g., bakelite or vinyl), textiles (e.g., linen, canvas), metals, etc.].

NOTE 2 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 dimensions and/or size;
- 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;
- 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 5127:2001 (1.1.2.13)]

3.36

object

anything perceivable or conceivable

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

[ISO 1087-1:2000 (3.1.1)]

3.37

Open-edi

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

[ISO/IEC 14662:2010 (3.14)]

3.38

Open-edi Description Technique (OeDT)

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 processable form

[ISO/IEC 14662:2010 (3.16)]

3.39

Open-edi Party (OeP)

Person that participates in **Open-edi**

NOTE Often referred to generically in this part of ISO/IEC 15944 and other eBusiness standards (e.g. parts of the ISO/IEC 15944 multipart "eBusiness" standard) as "party" or "parties" for any entity modelled as a Person playing a role in Open-edi scenarios.

[ISO/IEC 14662:2010 (3.17)]

3.40

Open-edi scenario (OeS)

formal specification of a class of **business transactions** having the same **business** goal

[ISO/IEC 14662:2010 (3.18)]

3.41

Open-edi standard

standard that complies with the **Open-edi** Reference Model

[ISO/IEC 14662:2010 (3.19)]

3.42

Open-edi system

information technology system (IT system) which enables an **Open-edi Party** to participate in **Open-edi transactions**

[ISO/IEC 14662:2010 (3.22)]

3.43

Open-edi transaction

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

[ISO/IEC 14662:2010 (3.23)]

3.44

organization

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

NOTE The kinds of organizations covered by this part of ISO/IEC 15944 include the following examples:

EXAMPLE 1 An organization incorporated under law.

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

- 1) partnerships;
- 2) social or other non-profit organizations or similar bodies in which ownership or control is vested in a group of individuals;
- 3) sole proprietorships;
- 4) 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

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

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 to be 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 jurisdictional domains.

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

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

[ISO/IEC 14662:2010 (3.24)]

3.48

persona

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

3.49

persona Registration Schema (pRS)

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**

NOTE This may also be referred to as a persona profile of a Person.

3.50

Person authentication

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

3.51

Person identity (Pi)

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

3.52

Person signature

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

3.53

process

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

3.54

public administration

entity, 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)

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 used, 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)

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

3.58

Registration Schema (RS)

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**

3.59

regulator

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

3.60

role

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

[ISO/IEC 14662:2010 (3.25)]

3.61

scenario attribute

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 14662:2010 (3.26)]

3.62

seller

Person who aims to hand over voluntarily or in response to a demand, a good, service, and/or right to another **Person** and in return receives an acceptable equivalent value, usually in money, for the good, service, and/or right provided

3.63

Semantic Component (SC)

unit of **recorded information** unambiguously defined in the context of the **business** goal of the **business transaction**

NOTE A SC may be atomic or composed of other SCs.

[ISO/IEC 14662:2010 (3.27)]

3.64

standard

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

NOTE This is the generic definition of "standard" of the ISO and IEC as found in ISO/IEC Guide 2:2004 (1.7).

3.65

third party

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

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

3.67

vendor

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

4 Symbols and abbreviated terms

API	Application Program Interface
BOV	Business Operational View
BTM	Business Transaction Model
CD	Coded Domain
DMA	Decision Making Application
EDI	Electronic Data Interchange
FDT	Formal Description Technique
FSV	Functional Service View
IB	Information Bundle
IPD	Information Processing Domain
IT System	Information Technology System
IS	International Standard
OeDT	Open-edl Description Technique
OeP	Open-edl Party
OeS	Open-edl Scenario
OeSE	Open-edl Support Entity
OeSI	Open-edl Support Infrastructure
OeUD	Open-edl User Data
Pi	Person identity
pRS	persona Registration Schema
RA	Registration Authority
rPi	recognized Person identity
RS	Registration Schema
SC	Semantic Component (in the context of Open-edl scenarios)

5 Characteristics of Open-edl

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

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

- actions based on following predefined rules;
- commitment of the parties involved;
- communications among parties are automated;
- parties control and maintain their states;

- parties act autonomously;
- multiple simultaneous transactions can be supported.

Each of these characteristics is now described in more detail.

5.1 Actions based on following clear, predefined rules

Open-edī 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-edī and the available expected behaviour(s) of the parties as seen by other parties engaging in Open-edī. Open-edī rules are applied to both the:

- content of information flows; and,
- the order and behaviour of information flows themselves.

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

5.2 Commitment of the parties involved

Open-edī is a class of electronic information flows which involves predefined types and states of commitments of the parties concerned. These commitments involve tasks or functions to be carried out, obligations to be entered into, etc. In Open-edī, 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-edī activities take place in automated modes among IT systems of the participating parties. The actual exchange of information and compliance with rule sets agreed for the Open-edī exchange must be implemented by using an automaton or computer program. As a result, the use of Open-edī 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-edī system could not provide for human intervention, but these would not form part of the Open-edī scenario itself. It is always possible for one or more Open-edī 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-edī 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-edī activity to take place. A state description is the characteristic of a party at a given point in time which allows the prediction of its external behaviour (or possible ranges of behaviour). A state description is defined in terms of those characteristics which must be available to other parties for the purpose of enabling agreed Open-edī 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.

5.5 Parties act autonomously

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

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

5.6 Multiple simultaneous transactions can be supported

Open-edl systems can enable an Open-edl Party to participate in multiple distinct Open-edl 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-edl. These criteria apply irrespective of the area of application for Open-edl.

6 Components of a business transaction¹⁴⁾

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; and,
- 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-edl scenario, a clear understanding of the parameters of any commitment being made.

¹⁴⁾ 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-edl", and "Electronic Data Interchange (EDI)". See further Clause 3 or Annex A which also includes the French language equivalents. For the Chinese and Russian language equivalents, see ISO/IEC 15944-7:2009 *Information technology — Business Operational View — eBusiness Vocabulary*.

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;
- 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 is two-fold, namely;

- 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 "WHATs" 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 sub-clauses of this clause cover aspects which apply to business transactions as a whole and introduce the Business Transaction Model (BTM) in terms of its three components and two classes of constraints; "internal" and "external". Clauses 6.2, 6.3, and 6.4 focus on the three component parts of the Business Transaction Model. Clause 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 Clause 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:¹⁵⁾

"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."¹⁶⁾

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".

15) This is the generic definition of "standard" of the ISO and IEC (and stated in the ISO/IEC JTC1 Directives, Part 2, Section 2.5:1998), in turn based on ISO Guide 2:1996 (1.7)). This definition for "standard" is used consistently in the development of all Parts of the multipart ISO/IEC 15944 standard.

16) One can interpret "agreement" in a variety of ways. The 8th edition of the ISO/IEC Guide 2, 2004 (1.7) uses the term "consensus" which need not imply unanimity. An earlier version of Guide 2 also included the phrase "but rather "absence of sustained opposition to substantial issues..." . {See further above, text of Clause 3.10}

As noted in Clause 5.1, Open-edi is based on rules which are predefined and mutually agreed to by the parties concerned. They are precise criteria and agreed upon requirements of business transactions representing common business operational practices and functional requirements. These rules also serve as a common set of understanding bridging the varied perspectives of the commercial framework, the legal framework, the information technology framework, standardizers, consumers, etc.¹⁷⁾

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 font¹⁸⁾. 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 4.¹⁹⁾

17) 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.

18) For example, "Guideline 5G2" equals the second guideline under Rule 5.

19) 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.

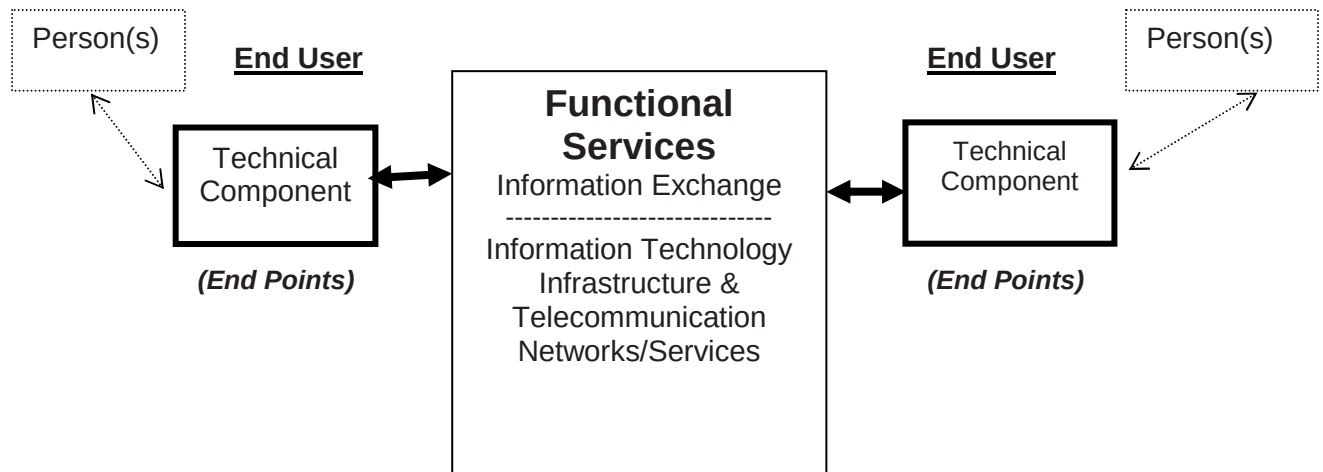


Figure 4 — Illustration of technical components as end users of information exchange(s) in IT Standards – FSV perspective

Guideline 1G1:

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

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

- 1) commitment exchange; and,
- 2) "Persons" who 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 used in the establishment of commitments, formation of rights and obligations, and other commitment exchange. This is illustrated in Figure 5.

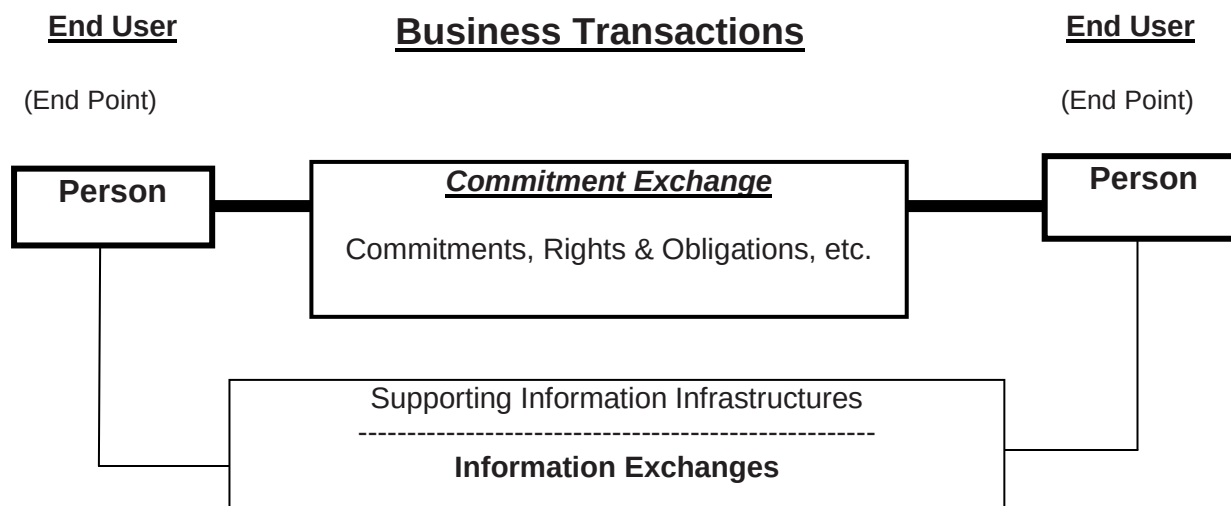


Figure 5 — Illustration of Persons as end users in commitment exchange in business transactions based on existing commercial and legal frameworks – BOV perspective

In Open-edl, a Person, is the only entity able to make commitments, and is represented in dematerialized form and engages in a business transaction via electronic data interchange.²⁰⁾

"Person" is therefore defined as:

Person²¹⁾

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 to be 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 jurisdictional domains".

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

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

There are three broad categories or sub-types of Persons as players in Open-edl; 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"}

20) The Open-edl Reference Model defines Open-edl as "electronic data interchange among multiple autonomous organizations to accomplish an explicit shared business goal according to Open-edl 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.

21) 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 Clause 6.2 "Rules governing the Person component", and Annex E "Business Transaction Model: Person component".

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

- 1) individual <-> individual
- 2) individual <-> organization
- 3) individual <-> public administration
- 4) organization <-> organization
- 5) organization <-> public administration
- 6) public administration <-> public administration²²⁾

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.²³⁾

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

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

Rule 3:

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

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

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

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

23) 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 further below Clause 6.2 "Rules Governing the Person component".}

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 of 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.

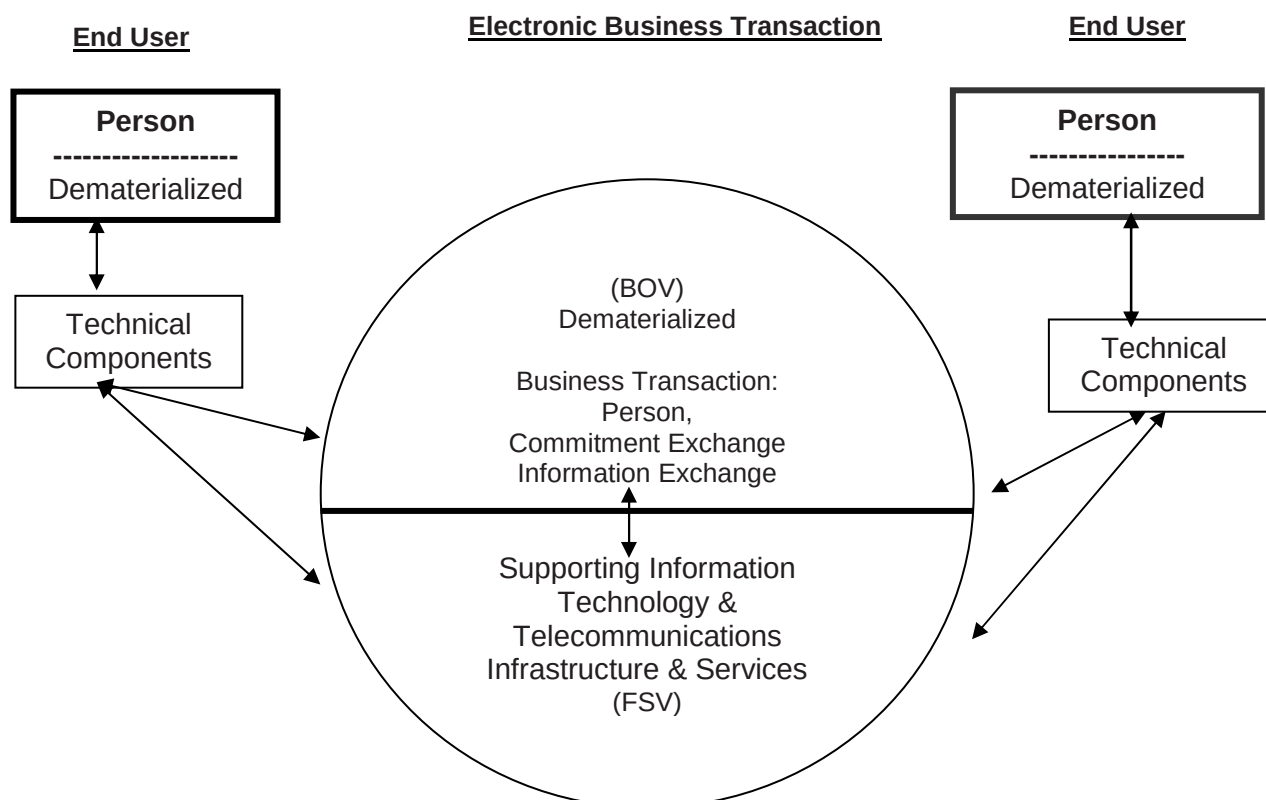


Figure 6 — Integrated View — commercial/legal and IT perspectives of Persons as “end users” in an electronic business transaction through technical components – incorporating BOV and FSV perspectives

6.1.4 Business transaction: unambiguous identification of entities²⁴⁾

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.

²⁴⁾ 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.

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".

In global business transactions common business practices and standards exist for the identification of entities comprising a business transaction including Persons²⁵).

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

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 used; 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.

25) 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".

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 process²⁶⁾.

The definition for "identification" is:

identification:

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 (in business transaction)

unambiguous, unique and a linguistically neutral value resulting from the application of a rule-based **identification process**

NOTE 1 Identifiers must be unique within the identification scheme of the issuing authority

NOTE 2 An identifier is a linguistically independent sequence of characters capable of uniquely and permanently

Rule 7²⁷⁾:

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.

Rule 8:

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

26) 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 below Annex C, Clause C.4}

27) See further Annex C.6 "Identification versus designation (or "identifier" versus "names")

6.1.5 Business transaction model: key components

Rule 9:

A business transaction requires Person, process and data.

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

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

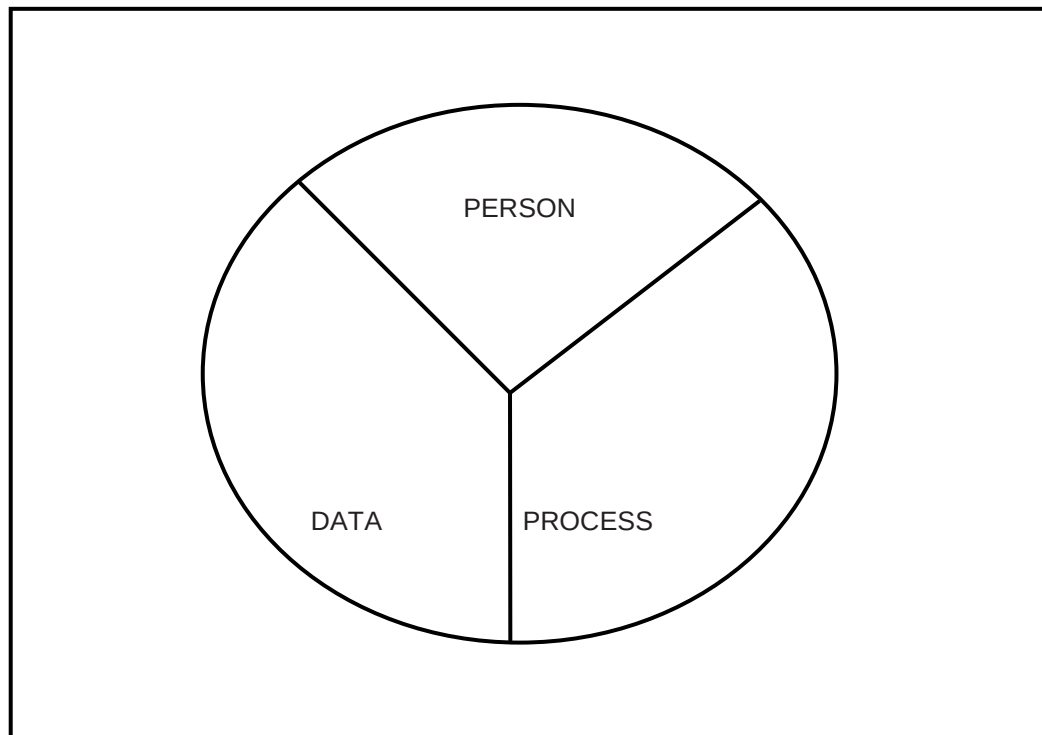


Figure 7 — Business Transaction Model — Fundamental components (Graphic Illustration)

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

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 Constraints to be registered for implementation in Open-edi 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”.

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, Clause 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

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

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 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 jurisdictional domain 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 are also to form the whole of a business transaction, (e.g., for legal or audit purposes), all constraints must be recorded.

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

NOTE 6 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".

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}

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 behaviour of a criminal nature.²⁸⁾ Whilst laws and regulations exist within and among jurisdictional domains and are the primary source of "external constraints" on business transactions, categorization and specification of sub-classes of external constraints is 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.

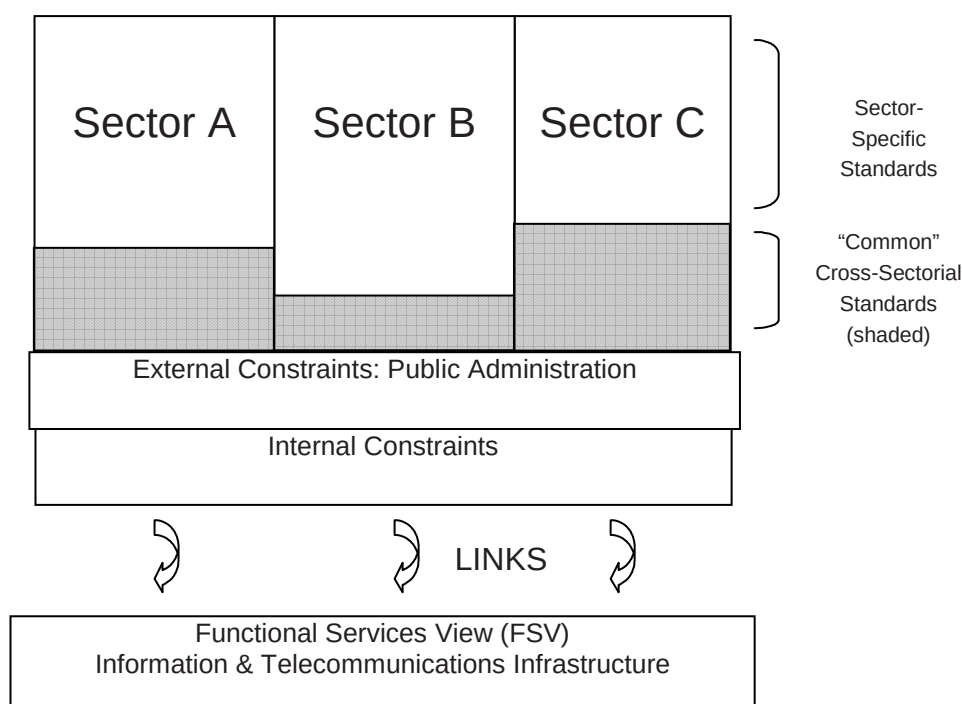


Figure 8 — Business Transaction Model: Classes of constraints

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

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

identified and specified where applicable, as part of specification of scenarios and scenario components.²⁹⁾ 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”³⁰⁾, etc. These two basic classes of constraints on business transactions are illustrated below in Figure 8: Business Transaction Model: Classes of constraints.

6.2 Rules governing the Person component³¹⁾

6.2.1 Introduction

The purpose of the rules in this Clause includes:

- 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 signature³²⁾

Rule 10:

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

Rule 11:

Irrespective of the use of any particular information technology and related devices in Open-edl, "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.

29) 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.

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

31) Annex E.1 “Business Transaction Model: Person component” provides the informative and explanatory text for 6.2.

32) Informative and explanatory text on identity and authenticity, “Person”, “personae”, “Registration Schema”, “Registration Authority”, etc., are found in relevant clauses of Annex E, i.e., Clauses E.4 and E.5.

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, behaviours, 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

set of **data elements** and their values by which a **Person** wishes 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.

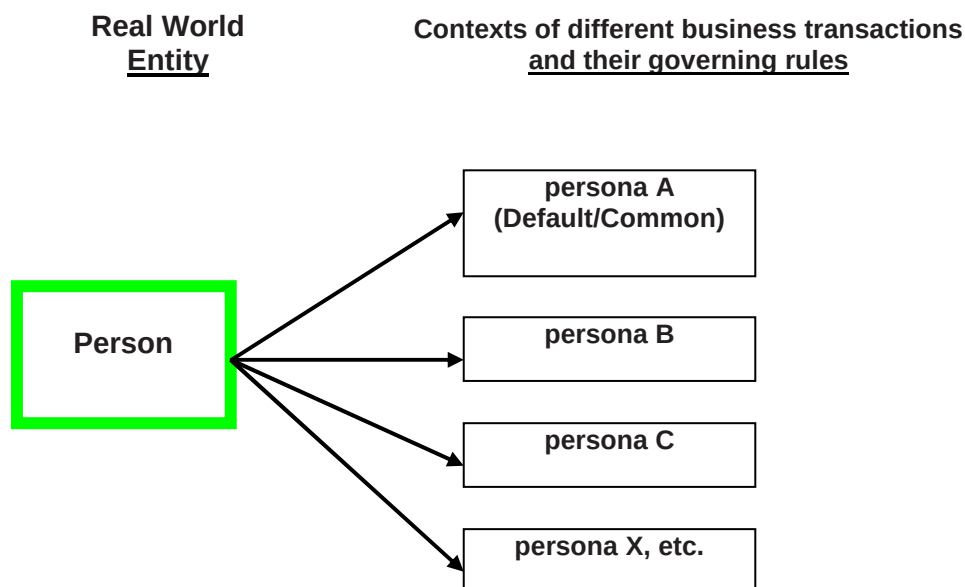


Figure 9 — Links of a Person to its persona(e) in the context of different business transactions and their governing rules

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.

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 Registration Schema if necessary.

Guideline 15G2:

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

Guideline 15G3:

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

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 jurisdictional domain may well have more than one official language. Consequently, an organization may well have two or more official names, i.e., a linguistically equivalent name in each official language of that jurisdictional domain. This is especially true for names for public sector organizations in jurisdictional domains having more than one official language.