
**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*



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-edi Parties	79
8.3.2.16	Scenario attribute: OeS demands on Open-edi infrastructure	80
8.4	Rules for specification of Open-edi 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-edi Support Infrastructure (OeSI).....	85
8.4.3	Role demands on Open-edi 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-edi Support Infrastructure (OeSI).....	88
8.5	Rules for specification of Open-edi 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-edi 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-edi Support Infrastructure).....	96
9	Primitive Open-edi 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-edi 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-edi 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-edi 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 FiguresPage

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 Confirmation	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).

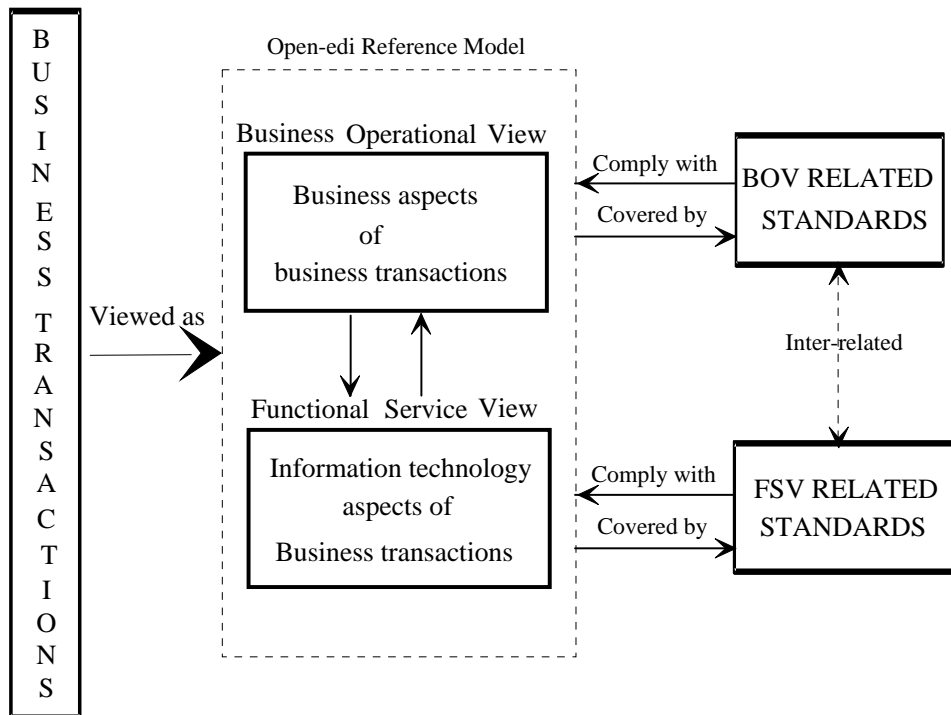


Figure 1 — Open-edi environment

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⁾

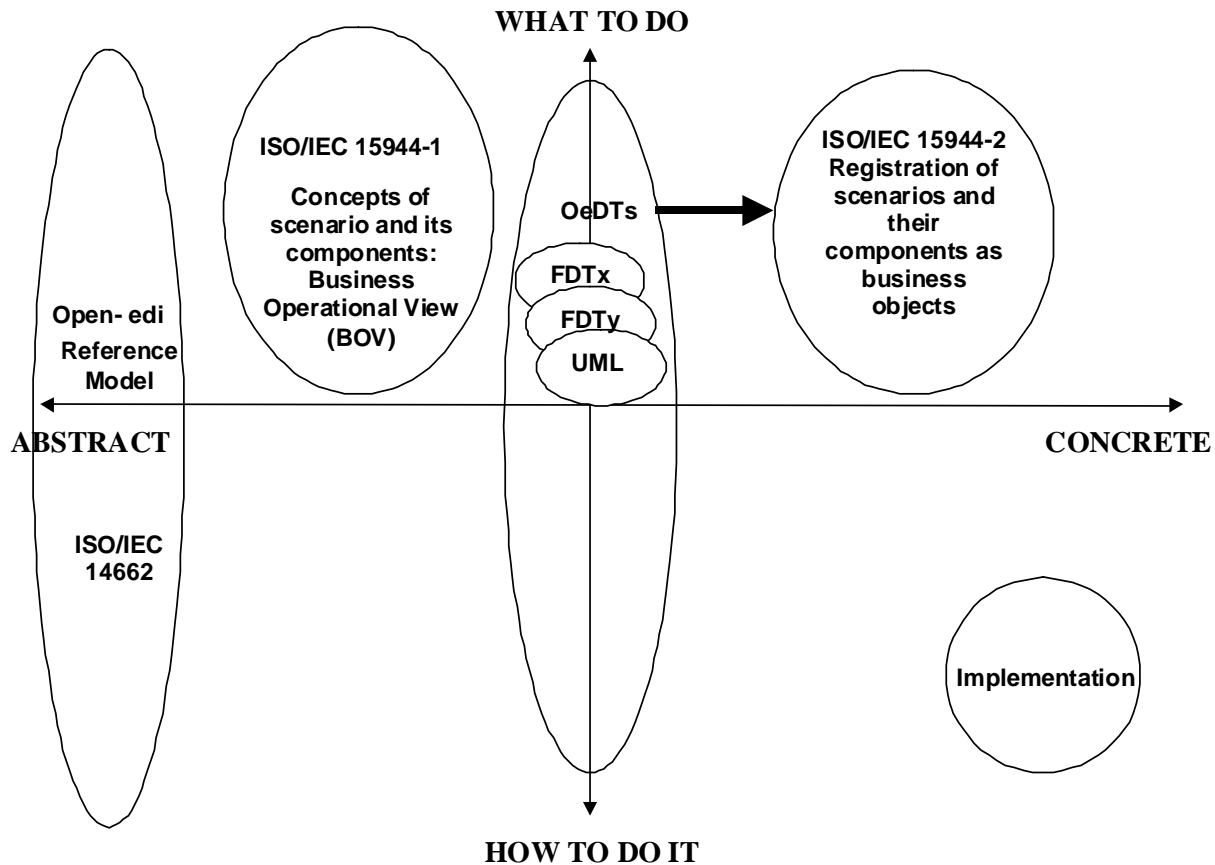


Figure 2 — Aspects of ISO/IEC 15944

2) See 0.6

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

The evolution of information and communications technologies has created a need and opportunity for different user groups to engage in business relationships using these technologies. This requires automated methods to carry out EDI among Persons.

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

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

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

- commercial frameworks and associated requirements;
- legal frameworks and associated requirements;
- public policy requirements, particularly those of a generic nature such as consumer protection and privacy;
- sectorial and cross-sectorial requirements;
- requirements arising from the need to support cultural adaptability requirements. This includes meeting localization and multilingualism requirements, i.e. as may be required to meet requirements of a particular jurisdictional domain or desired for providing a good, service, and/or right in a particular market.⁴⁾ Here, distinguishing between information technology (IT) interfaces and their multiple human interface equivalents is the recommended 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-edi standards/Annexe B (informative) Exigences des normes d'EDI-ouvert {ISO/IEC 14662:2010(E/F)}.

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

5) For an example, see Annex B.

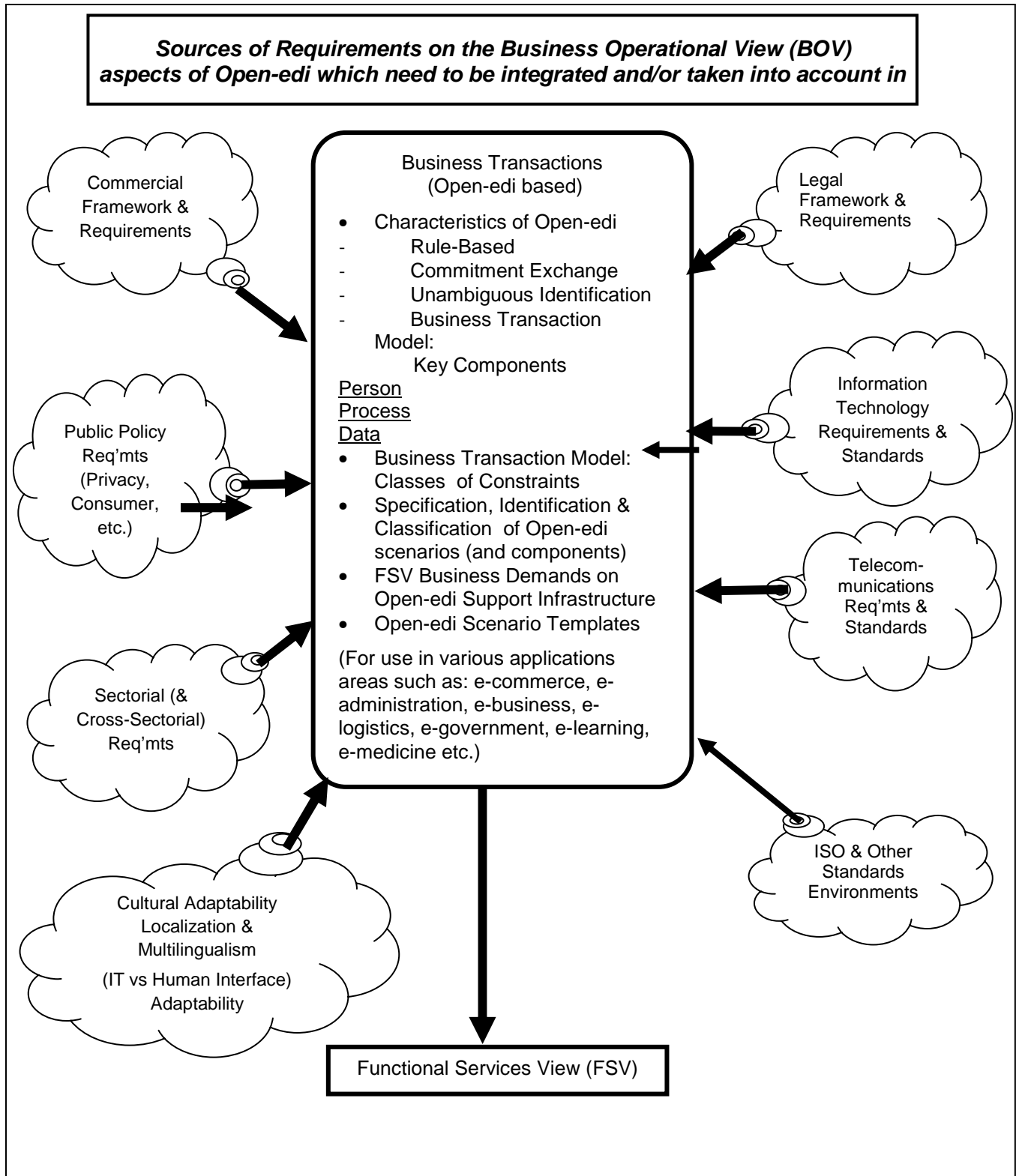


Figure 3 — Integrated View — Business operational requirements

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-edi Reference Model standard was being developed, in the early 1990s, the “Internet” and “WWW” were at an embryonic stage and their impact on private and public sector organizations was not fully understood. The Business Operational View (BOV) was therefore initially defined as:

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

The existing and widely-used ISO/IEC 6523 standard definition of “organization” was used in ISO/IEC 14662. The fact that today Open-edi through the Internet and WWW also involves “individuals” has now been taken into account in this part of ISO/IEC 15944. Further, the 1997 edition of ISO/IEC 14662 did not define “commitment”, nor the discrete properties and behaviours an entity must have to be capable of making a “commitment” as well as bridging legal and IT perspectives in the dematerialized world of the Internet.

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

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

The user should understand that:

- the use of Person with a capital “P” represents Person as a defined term in this part of ISO/IEC 15944, i.e. as the entity within an Open-edi Party that carries the legal responsibility for making commitment(s);
- “individual”, “organization” and “public administration” are defined terms representing the three common sub-types of “Person”;
- the words “person(s)” and/or “party(ies)” are used in their generic contexts independent of roles of “Person” as defined sub-types in this part of ISO/IEC 15944. A “party to a business transaction” has the properties and behaviours of a “Person”¹⁰⁾.

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

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

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-edi for implementation

1 Scope

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

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

This part of ISO/IEC 15944 addresses the fundamental requirements of the commercial and legal frameworks and their environments on business transactions, and also integrates the requirements of the information technology and telecommunications environments.

In addition to the existing strategic directions of "portability" and "interoperability", the added strategic direction of ISO/IEC JTC 1 of "cultural adaptability" is supported in this part of ISO/IEC 15944. It also supports requirements arising from the public policy/consumer environment, cross-sectorial requirements and the need to address horizontal issues.¹²⁾ It integrates these different sets of requirements. See Figure 3.

This part of ISO/IEC 15944 allows constraints [which include legal requirements, commercial and/or international trade and contract terms, public policy (e.g. privacy/data protection, product or service labelling, consumer protection), laws and regulations] to be defined and clearly integrated into Open-edi through the BOV. This means that terms and definitions in this part of ISO/IEC 15944 serve as a common bridge between these different sets of business operational requirements, allowing the integration of code sets and rules defining these requirements to be integrated into business processes electronically.

This part of ISO/IEC 15944 contains a methodology and tool for specifying common business practices as parts of common business transactions in the form of scenarios, scenario attributes, roles, Information Bundles and Semantic Components. It achieves this by 1) developing standard computer processable specifications of common business rules and practices as scenarios and scenario components; and thus 2) maximizing the re-use of these components in business transactions.

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

2 Normative references

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

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