INTERNATIONAL STANDARD

ISO 15944-4

First edition
2007-11-01

Information technology — Business Operational View —

Part 4: Business transaction scenarios — Accounting and economic ontology

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

Partie 4: Scénarios de transactions d'affaires — Ontologie comptable et économique

Reference number
ISO/IEC 15944-4:2007(E)

© ISO/IEC 2007

--`,,```,,,,````-`-`,,`,,`,`,,`---

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS

Not for Resale

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2007

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

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS

© ISO/IEC 2007 – All rights reserved

Not for Resale

Contents

Page

Foreword ... iv

0 Introduction ... v
0.1 Purpose and Overview ... v
0.2 Definition of Open-edi Business Transaction Ontology (OeBTO) ... vi
0.3 Use of the "Independent" and "Trading Partner" Perspective in the Open-edi Ontology Work ... vii
0.4 The "Open-edi Business Transaction Ontology" (OeBTO) ... viii
0.5 Organization and description of this part of ISO/IEC 15944 ... ix

1 Scope ... 1

2 Normative references ... 1

3 Terms and definitions ... 1

4 Abbreviated terms ... 11

5 The Declarative Component of an OeBTO – Primitive and Derived Data Classes ... 11
5.1 Person and Economic Resources ... 11
5.2 The Normative Data Categories for a Business Transaction Involving an Economic Exchange: Resources, Events, and Persons Plus Their Fundamental Relationships ... 15
5.2.1 Entity Definitions: ... 17
5.2.2 Relationship Definitions: ... 17
5.3 Addition of Business Event to Basic Exchange Pattern: ... 17
5.4 Extension of the OeBTO into Types ... 18
5.5 Locations and Claims ... 20
5.6 Adding Commitments to Economic Exchanges ... 20
5.7 Business Transactions with Contracts ... 22
5.8 Typifying Agreements and Business Transactions ... 23

6 The Procedural Component of an OeBTO – Business Transaction State Machines ... 25
6.1 Relating Ontological Components to the Open-edi Business Transaction Phases ... 25

7 The Constraint Component of an OeBTO – Incorporating Business Rules into Business Transactions ... 36
7.1 Business Rules and Open-edi Constraints ... 36
7.2 OeBTO Constraint Examples ... 37
7.3 Summary ... 37

Annex A (normative) **Consolidated List of Terms and Definitions with Cultural Adaptability: ISO English and ISO French Language Equivalency** ... 39
A.1 Introduction ... 39
A.2 ISO English and ISO French ... 39
A.3 Cultural adaptability and quality control ... 39
A.4 List of Terms in French Alphabetical Order ... 40
A.5 Organization of Annex A, "Consolidated matrix of terms and definitions" ... 42
A.6 Consolidated Matrix of ISO/IEC 15944-4 Terms and Definitions in English and French ... 44

Annex B (informative) **REA Model Background** ... 60
B.1 REA (Resource-Event-Agent) Ontology Introduction) ... 60
B.2 The Basic REA Ontology ... 60
B.3 Adding Commitments to the Basic Exchange Ontology ... 61
B.4 Adding Types to the Basic REA Exchange Ontology ... 62
B.5 The Suitability of the REA Ontology within the Open-edi Model ... 63

Annex C (normative) **Business Transaction Model (BTM): two classes of constraints** ... 66

Bibliography ... 69

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

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 15944-4 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

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

- *Part 1: Operational aspects of Open-edi for implementation*
- *Part 2: Registration of scenarios and their components as business objects*
- *Part 4: Business transaction scenarios — Accounting and economic ontology*
- *Part 5: Identification and referencing of requirements of jurisdictional domains as sources of external constraints*

The following part is under preparation:

- *Part 6: Technical introduction of eBusiness modeling* [Technical Report]

eBusiness vocabulary will form the subject of a future Part 7.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

0 Introduction

0.1 Purpose and overview

This work is motivated with important ideas from the ISO Open-edi specifications as represented in ISO/IEC 15944-1, *Information technology — Business agreement semantic descriptive techniques — Part 1: Operational aspects of Open-edi for implementation*. In ISO/IEC 15944-1 and in some of its earlier foundational expositions, such as ISO/IEC 14662, there were important concepts defined and interrelated such as business transaction, fundamental activities of a business transaction, commitment, Person, role, scenario and others. A need for relating all of these concepts in a formal framework for the Open-edi work is apparent.

This is a question of ontology: a formal specification of the concepts that exist in some domain of interest and the relationships that hold among them [8]. In this case, the domains of interest are those that encompass Open-edi activities; that is: law, economics and accounting in an extended sense — not the internal accounting of one particular firm, but the accountabilities of each of the participants in an external business transaction.

Ontologies are generally classified as either upper-level ontologies — dealing with generalized phenomena like time, space and causality — or domain ontologies, dealing with phenomena in a specific field like military operations, manufacturing, medical practice or business. The economic and accounting ontology being used in electronic business eXtended Markup Language (ebXML), in the UN/CEFACT modeling methodology, and E-Commerce Integration Meta-Framework (ECIMF) work is entitled the Resource-Event-Agent Ontology (REA) [1)]. REA is used here as an ontological framework for specifying the concepts and relationships involved in business transactions and scenarios in the Open-edi sense of those terms. The resulting framework is titled the Open-edi business transaction ontology (OeBTO).

The REA ontology is actually an elementary set of concepts derived from basic definitions in accounting and economics. These concepts are illustrated most simply with a UML class diagram. See Figure 1, which illustrates the simple Resource-Event-Agent structure that gives REA its name. A business transaction or exchange has two REA constellations joined together, noting that the two parties to a simple market transfer expect to receive something of value in return when they trade. For example, a seller, who delivers a product to a buyer, expects a requiting cash payment in return.

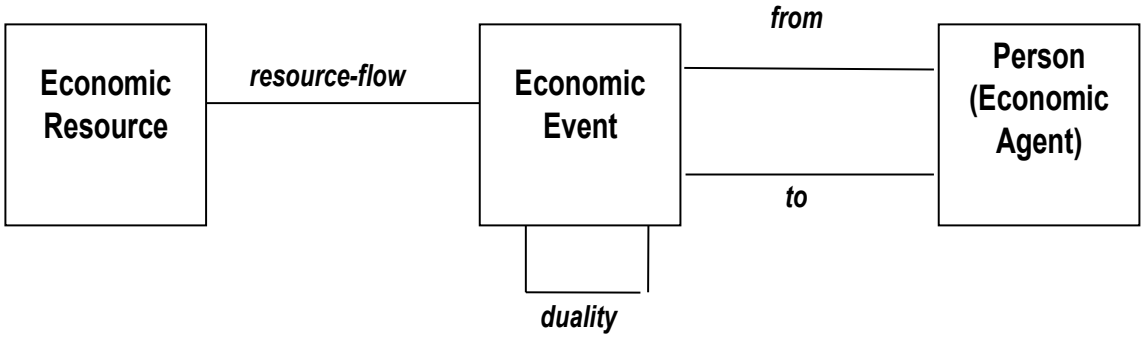


Figure 1 — Basic Economic Primitives of the Open-edi Ontology

There are some specific points of synergy between the REA ontology and the ISO Open-edi specifications as represented in ISO/IEC 15944-1.

ISO/IEC 15944-1:2002, 3.9 defines commitment as *"the making or accepting of a right, obligation, liability or responsibility by a Person..."*. Commitment is a central concept in REA. Commitments are promises to execute future economic events, for example to fulfill an order by executing a delivery event.

1) Elements of the REA ontology as they are used in other standards work are explained in Annex B.

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

ISO/IEC 15944-1:2002, 6.1.3, Rule 1 states: *"Business transactions require both information exchange and commitment exchange."* REA firmly agrees with and helps give definition to this assertion. Reciprocal commitments are exchanged in REA via economic contracts that govern exchanges, while information exchange is tracked via business events that govern the state transitions of business transaction entities that represent various economic phenomena.

ISO/IEC 15944-1:2002, 6.3.1, Rule 39 states: *"Conceptually a business transaction can be considered to be constructed from a set of fundamental activities. They are planning, identification, negotiation, actualization and post-actualization."* For REA, actualization is the execution of economic events that fulfill commitments. Planning and identification involve business partners with types of economic resources, events and persons, while negotiation is finalized by an economic contract which is a bundle of commitments. The UN/CEFACT Business Process Group has also defined negotiation protocols that assist in forming commitments. The Open-edi set of activities and the REA economic concepts will help each other tie together all the activities into a cohesive business transaction, and then unite that transaction definition with its related information models.

Finally, with regard to the preliminary agreement between Open-edi and REA, the two major sets of ideas that characterize the Open-edi work — the specification of Business Transactions and the configuration of Scenarios — correspond well at the aggregate level to what the REA ontology calls the accountability infrastructure and the policy infrastructure. A business transaction specifies in a descriptive sense actual business events what has occurred or has been committed to. Conversely, a scenario is more prescriptive: it configures what could be or should be. The realm of both descriptions and prescriptions is important to Open-edi and to REA, and they can work well in developing standards for each.

0.2 Definition of Open-edi Business Transaction Ontology (OeBTO)

According to the most widely accepted definition from Tom Gruber [7], "ontology is a formal, explicit specification of a shared conceptualization." [2)] The individual components of this meaning are each worth examining.

— formal = machine-readable;

— explicit specification = concepts, properties, relations, constraints and axioms are explicitly defined;

— of a shared = consensual knowledge;

— conceptualization = abstract model of some phenomenon in the real world.

At present, the REA model is certainly an explicit specification of a shared conceptualization of economic phenomena in the accounting community. A formal, machine-readable specification is not proposed in this part of ISO/IEC 15944; however, such extensions may follow in other standards work.

This part of ISO/IEC 15944 focuses on integrating the Gruber definition of ontology with an REA-based approach. It does so from an accounting and economic ontology perspective within an Open-edi Reference Model context. This is achieved through the introduction of the concept (or construct) of "Open-edi Business Transaction Ontology (OeBTO)", which is defined as follows:

> formal, rule-based specification and definition of the concepts pertaining to business transactions and scenarios and the relationships that hold among those concepts

2) See also the expert contribution by Dr. Jake V. Knoppers in the JTC1/SC32/WG1 document N0220, "Draft Definition for Open-edi Business Transaction Ontology (OeBTO)", 2002-05-06.

--`,,```,,,,````-`-`,,`,,`,`,,`---

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

0.3 Use of the "independent" and "trading partner" perspective in the Open-edi ontology work

In normal business use, the naming perspective for the ontological primitives would be that of the entrepreneur or of one of the two trading partners engaged in collaborative commerce. The other trading partner would ordinarily have a mirror-image view. Thus a sale, a cash receipt or a resource inflow for a particular entrepreneur would become a purchase, a cash disbursement or a resource outflow for a corresponding trading partner. From this perspective, business events and their accompanying economic phenomena would be modeled twice, once in the database of each trading partner. However, for Open-edi purposes, or for that matter for any other independent modeling of business collaborations like the BRV level of the UN/CEFACT modeling methodology, this redundancy is not acceptable because it allows the states of the two representations to become inconsistent. This difference in naming perspective is explained below and illustrated in Figure 2.[3)]

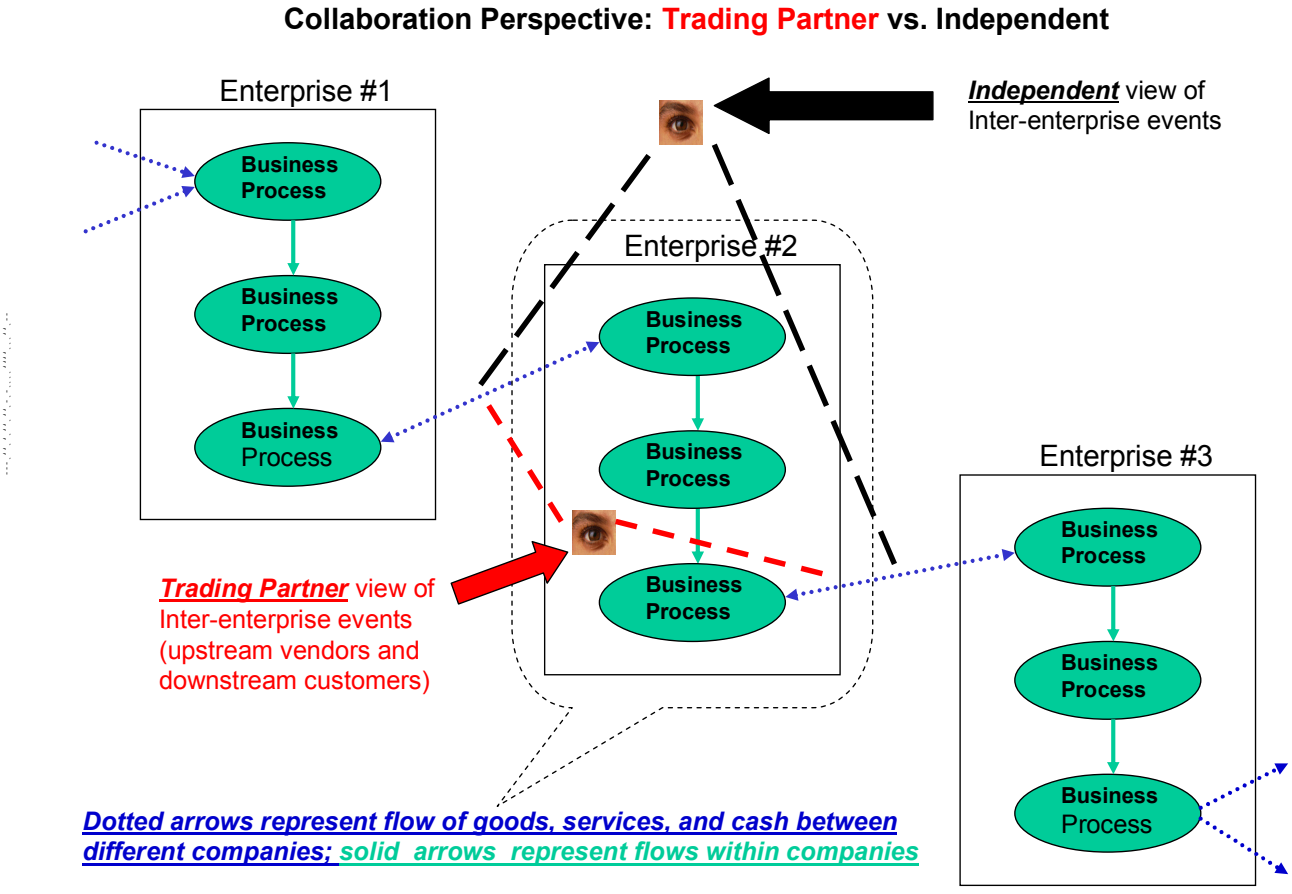


Figure 2 — Different Views of Business Collaboration

3) Figure 2 was contributed by the Japanese delegation to SC 32, led by Katsuhiro Morita during the Open-edi group meeting in Victoria in October 2001. (See further, the JTC1/SC32/WG1 document N1 N0190 "AIW15944-4, Information technology — Business Agreement Descriptive techniques Part 4: Open-edi Ontology", 2001-10-22.). Some naming conventions have been added since that first contribution (See further Annex H in document SC32/WG1 N0123).

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Figure 2 illustrates three independent value chains for three different enterprises. Each company has a connected network of business processes that takes its initial input of resources (called factor inputs for their production functions) and transforms them via cumulative flows of goods, services and cash into an output for that firm's downstream customers. For Open-edi collaboration modeling, these internal processes are not relevant until a resource flow crosses enterprise boundaries, as is illustrated for Enterprise #2 which accepts materials from Enterprise #1 and which delivers materials to Enterprise #3 (most probably in both cases for cash payments in return). The two dotted lines with double-headed arrows show these inter-enterprise events.

The independent or collaboration perspective of resource flows is anchored on the view of the eye outside of Enterprise #2. This view sees both exchanges as conceptually similar with flows of materials being requited by flows of funds. Such a perspective is quite different from that of the eye inside of Enterprise #2, which sees the flow between Enterprise #1 and Enterprise #2 as a "purchase" and the flow between Enterprise #2 and Enterprise #3 as a "sale". Note that an eye inside of Enterprise #1 (not shown on diagram) would have modeled the "purchase" of Enterprise #2 as a "sale" of Enterprise #1, hence the redundancy and the inevitable inconsistency.

Business process modeling can take either of the perspectives shown by the eyes of Figure 2, but the independent perspective is clearly the choice for Open-edi. This leads to the concept of a business collaboration that is illustrated in Figure 3 [4)]. Most generally, there is a value exchange between two Persons, with one assuming the role of a "buyer" (has money, desires goods or services) and the other assuming the role of a "seller" (has goods or services, desires money). It is also possible to anchor the independent view on time, with one event being the initiating flow and the requiting event being the responding flow. For internal database purposes of corporate accountability, "trading partner perspective" terms are directly derivable from "independent perspective" terms.

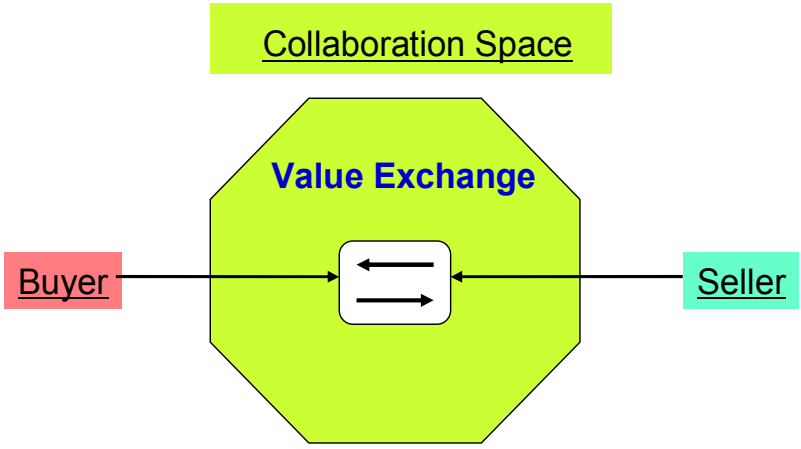


Figure 3 — Concept of a Business Collaboration

0.4 The "Open-edi Business Transaction Ontology" (OeBTO)

Subclause 0.2 and 0.3 have suggested:

- that the components of the REA domain ontology model are sufficiently well-defined, stable and well-known that they can clearly serve as the basis for an ontological specification of the concepts involved in collaborative exchanges between trading partners; and

4) Figure 3 was contributed by the Japanese delegation to SC 32, led by Katsuhiro Morita, during the Open-edi group meeting in Seoul, in May 2002.

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
© ISO/IEC 2007 – All rights reserved
Not for Resale

- that the components of that model must be viewed from the outside perspective of a modeler viewing the economic phenomena independently.

Because the primitive economic terms are being adopted here for use with the operational aspects of Open-edi from ISO/IEC 15944-1, the ontology to be defined will be termed the "Open-edi Business Transaction Ontology" (OeBTO). Its definition is:

> formal, rule-based specification and definition of the concepts pertaining to business transactions and scenarios and the relationships that hold among these concepts

From the definitional foundations of both ISO/IEC 15944-1 and the REA model, it follows that the OeBTO will follow these principles:

- As a business transaction ontology, a distinguishing characteristic of OeBTO is that in addition to information exchange, it incorporates commitment exchange among autonomous Persons.
- An OeBTO requires the use of clear and pre-defined rules, principles and guidelines (see 5.1 of ISO/IEC 15944-1:2002).
- An OeBTO is neutral in terms of technology, representation, and application.
- The scope of OeBTO covers all areas of business transactions (public/private, industry sectors, international, regional, etc.).
- The semantics of the concepts represented in the OeBTO are explicitly specified and constrained.

0.5 Organization and description of this part of ISO/IEC 15944

Clause 1 and Clause 2 provide scope and normative references for OeBTO. The basic OeBTO definitions are first enumerated in Clause 3, while Clause 4 provides a table of symbols and abbreviations. Clause 5 provides the declarative substance for this part of ISO/IEC 15944 — a set of UML class diagrams and conceptual explanations that circumscribe the Open-edi Business Transaction Ontology. Clause 6 explains the mechanics of a business transaction state machine — the procedural component of an OeBTO — while Clause 7 explains the (internal) constraint component of OeBTO — its repository for business rules.

At the end of this part of ISO/IEC 15944 are some helpful Annexes that provide elaboration on the points raised in the main body. Normative Annex A is a consolidated list of all the terms and definitions used in this part of ISO/IEC 15944 in both ISO English and ISO French. The other normative annex is Annex C, which is common to Parts 2, 4 and 5 of ISO/IEC 15944. Annex B is informative text providing more detailed background information on the REA Model. This part of ISO/IEC 15944 concludes with a bibliography.

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Information technology — Business Operational View —

Part 4:
Business transaction scenarios — Accounting and economic ontology

1 Scope

This part of ISO/IEC 15944 provides a set of UML class diagrams and conceptual explanations that circumscribe the Open-edi Business Transaction Ontology. It explains the mechanics of a business transaction state machine — the procedural component of an OeBTO — and the (internal) constraint component of OeBTO — its repository for business rules.

This part of ISO/IEC 15944 addresses collaborations among independent trading partners as defined in ISO/IEC 15944-1. This part of ISO/IEC 15944 applies to both binary collaborations (buyer and seller) and mediated collaborations (buyer, seller, third-party). The ontological features described herein propose standards only for the BOV — that is, the business aspects of business transactions as they are defined in ISO/IEC 15944-1.

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 15944-1:2002, *Information technology — Business agreement semantic descriptive techniques — Part 1: Operational aspects of Open-edi for implementation*

ISO/IEC 15944-5:2006, *Information technology — Business Operational View — Part 5: Identification and referencing of requirements of jurisdictional domains as sources of external constraints*

3 Terms and definitions

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 Services View (FSV) where they are defined as an “Information Processing Domain (IPD)”.

[ISO/IEC 15944-1:2002 (3.1)]

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

3.2
attribute
characteristic of an **object** or **entity**

[ISO/IEC 11179-3:2003 (3.1.3)]

3.3
bilateral transaction
subtype of a **business transaction** where the **Persons** include only the **buyer** and the **seller,** or alternatively other **Persons** acting as **agents** for the **buyer** and/or **seller**

3.4
business
series of **processes**, each having a clearly understood purpose, involving more than one **Person**, realized through the exchange of **recorded information** and directed towards some mutually agreed upon goal, extending over a period of time

NOTE Adapted from ISO/IEC 14662:2004 (3.1.2).

3.5
business event
occurrence in time that **partners** to a **business transaction** wish to monitor or control

NOTE 1 Business events are the workflow tasks that business partners need to accomplish to complete a business transaction among themselves. As business events occur, they cause a business transaction to move through its various phases of planning, identification, negotiation, actualization and post-actualization.

NOTE 2 Occurrences in time can either

— be internal as mutually agreed to among the parties to a business transaction; and/or,

— reference some common publicly available and recognized date/time referencing schema (e.g. one based on using ISO 8601 and/or ISO 19135).

3.6
business location
geographic site where an **economic event** is deemed to occur with its attendant transfer of an **economic resource** from one **Person** to another

3.7
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 14662:2004 (3.1.3)]

3.8
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

NOTE Adapted from ISO/IEC 14662:2004 (3.1.4).

3.9
business transaction entity
computable representation of any real-world entity that participates, occurs or is materialized during a **business transaction**

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

3.10
business transaction entity type
abstract specification of a **business transaction entity**, detailing its recommended characteristics, its recommended methods and its recommended life-cycle states

NOTE A business transaction entity type will usually specify the types of business events that cause a business transaction entity of this type to proceed through its different states as the business transaction itself progresses through its phases of planning, identification, negotiation, actualization and post-actualization.

3.11
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

[ISO/IEC 15944-1:2002 (3.8)]

3.12
collaboration space
business activity space where an **economic exchange** of valued resources is viewed independently and not from the perspective of any business partner

NOTE In collaboration space, an individual partner's view of economic phenomena is de-emphasized. Thus, the use of common business and accounting terms like purchase, sale, cash receipt, cash disbursement, raw materials and finished goods is not allowed because they view resource flows from a participant's perspective.

3.13
commitment
making or accepting of a right, obligation, liability or responsibility by a **Person** that is capable of enforcement in the jurisdiction in which the **commitment** is made

[ISO/IEC 15944-1:2002 (3.9)]

3.14
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".

[ISO/IEC 15944-1:2002 (3.11)]

3.15
custody
association between a **Person** and an **economic resource** where the **Person** has physical control only over the resource or controls access

NOTE Having custody of a good, service and/or right does not imply and is differentiated from having economic control of the same (e.g. a Person may have economic control of a good even though it is not under its custody).

3.16
data
〈**business transaction**〉 representations of **recorded information** that are being prepared or have been prepared in a form suitable for use in a computer system

[ISO/IEC 15944-1:2002 (3.14)]

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

3.17
defined market model
trade model where the **buyer** and **seller** accept the entry terms of a specified market in advance and where that market has an accepted and recognized source for business rules and conventions

NOTE In a defined market, the phases of a business transaction — planning, identification, negotiation, actualization and post-actualization — are governed by the rules and conventions of the particular defined market.

3.18
duality
association between **economic events** where one is the legal or economic consideration for the other in an exchange

NOTE Duality is the conceptual analog of double entry in traditional bookkeeping. For example, a shipment from a partner requires a matching flow in, like a payment, to balance accounts between the parties.

3.19
economic agreement
arrangement of reciprocated **economic commitments** between two **partners** where the abstract specification of terms of trade is incomplete and not subject to legal enforcement

3.20
economic bundle
association between **economic commitments** and the **economic contract** that bundles those promises and binds them to the two **partners** who negotiated them

3.21
economic claim
expectation of one **Person** to receive a future inflow of **economic resources** from another **Person** because of an **economic exchange** which is currently incomplete

3.22
economic commitment
type of **commitment** by one **Person** to transfer **economic resources** to another **Person** at some specified point in the future

3.23
economic contract
bundling of reciprocated **economic commitments** between two **partners** where the abstract specification of the proposed **economic exchange** is deemed to be complete

3.24
economic control
association between a **Person** and an **economic resource** where the **Person** either owns the **economic resource** or is otherwise able to derive economic benefit (utility) from it

3.25
economic event
occurrence in time wherein ownership of an **economic resource** is transferred from one **Person** to another **Person**

NOTE Occurrences in time can either

— be internal as mutually agreed to among the parties to a business transaction; and/or

— reference some common publicly available and recognized date/time referencing schema (e.g. one based on using ISO 8601 and/or ISO 19135).

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

3.26
economic event type
abstract specification of an **economic event** where its grouped properties can be designated without attachment to an actual, specific occurrence in time

NOTE Example of attributes at the type level for events might be expected-duration or standard-pricing-percentage.

3.27
economic exchange
type of a **business transaction** where the goal is an exchange of **economic resources** between two **Persons** where both parties derive higher utility after the completed **business transaction**

NOTE An economic exchange usually involves two economic events with different types of economic resources flowing in opposite directions. For example, an exchange of cash for a good involves a shipment with a requited payment following.

3.28
economic resource
good, right or service of value, under the control of a **Person**

3.29
economic resource type
abstract specification of an **economic resource** where its grouped properties can be designated without attachment to an actual, specific **economic resource**

NOTE Example attributes at the type level for an economic resource like an automobile might include its designated fuel capacity or its maximum expected range.

3.30
economic role
abstract specification of a **Person** for economic purposes where its grouped properties can be designated without attachment to an actual **Person**

NOTE An example economic role might be qualified buyer or approved shipper, i.e. from an economic perspective only.

3.31
economic specification
association between an **economic commitment** and the abstract properties of an **economic event**, an **economic resource**, a **partner** or a **business location**

3.32
entity
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)]

3.33
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 jurisdiction or mutually agreed to common business conventions (e.g. INCOTERMS, exchanges, etc.).

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

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 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".

[ISO/IEC 15944-1:2002 (3.23)]

3.34
fulfillment
association between an **economic commitment** and an **economic event** where the event executes the promised resource flow from one **Person** to another

NOTE For example, a delivery to a customer would fulfill that customer's sale order.

3.35
governed
association between an **economic agreement** and the **business transaction** whose conduct and phases are subject to that **economic agreement**

3.36
individual
Person who is a human being, i.e. a natural person, who acts as a distinct indivisible entity or is considered as such

[ISO/IEC 15944-1:2002 (3.28)]

3.37
information bundle
IB
formal description of the semantics of the information to be exchanged by **Open-edi Parties** playing **roles** in an **Open-edi scenario**

[ISO/IEC 14662:2004 (4.1.2.2)]

3.38
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 modeling and re-use of scenario components of a business transaction for which there are no external constraints or restrictions on the nature of the conduct of a business transaction other than those mutually agreed to by the buyer and seller.

[ISO/IEC 15944-1:2002 (3.33)]

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

3.39
location type
abstract specification of an **economic location** where its grouped properties can be designated without attachment to an actual place

NOTE An example location type might be an accepted shipping facility or approved hospital location.

3.40
materialized
association between an **economic event** and an **economic claim** where the occurrence of the **economic event** causes the **economic claim** to come into existence

3.41
mediated transaction
subtype of a **business transaction** where a **third party** mediates between the **partners** as mutually agreed to by the **partners**

3.42
object
anything perceivable or conceivable

NOTE Objects may be material (e.g. an engine, a sheet of paper, a diamond), immaterial (e.g. a conversion ratio, a project plan) or imagined (e.g. a unicorn).

[ISO 1087-1:2000 (3.1.1)]

3.43
Open-edi
electronic data interchange among multiple autonomous **Persons** to accomplish an explicit shared **business** goal according to Open-edi standards

[ISO/IEC 14662:2004 (3.1.9)]

3.44
Open-edi Business Transaction Ontology
OeBTO
formal, rule-based specification and definition of the concepts pertaining to **business transactions** and **scenarios** and the relationships that hold among those concepts

3.45
Open-edi Party
OeP
Person that participates in **Open-edi**

NOTE 1 Adapted from ISO/IEC 14662:2004 (3.1.11).

NOTE 2 Often in ISO/IEC 15944 referred to generically as “party” or “parties” for any entity modeled as a Person as playing a role in Open-edi scenarios.

3.46
Open-edi scenario
OeS
formal specification of a class of **business transactions** having the same **business** goal

[ISO/IEC 14662:2004 (3.1.12)]

3.47
organization
unique framework of authority within which a person or persons act, or are designated to act, towards some purpose

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

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

a) an organization incorporated under law;

b) 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;

c) 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)]

3.48
organization part
department, service or other **entity** within an **organization**, which needs to be identified for information interchange

[ISO/IEC 6523-1:1998 (3.2)]

3.49
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.

[ISO/IEC 15944-1:2002 (3.46)]

3.50
participates
association between an **economic event** and each of the two **Persons** participating in the **economic event**

NOTE Usually there is a “from” association and a “to” association, depending upon the direction of the flow of the economic resource.

3.51
partner
subtype of **Person** that includes **buyer** and **seller**

3.52
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 fulfill 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 jurisdictions.

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

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

NOTE 3 Minimum and common external constraints applicable to a business transaction often require one to differentiate among three common subtypes of Person, namely “individual”, “organization” and “public administration”.

[ISO/IEC 15944-1:2002 (3.47)]

3.53
process
series of actions or events taking place in a defined manner leading to the accomplishment of an expected result

[ISO/IEC 15944-1:2002 (3.53)]

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**

[ISO/IEC 15944-1:2002 (3.54)]

3.55
reciprocal
association between **economic commitments** where the promise by one **partner** to execute an **economic resource** transfer in the future is reciprocated by the other **partner** promising a requited transfer in the opposite direction

3.56
recorded information
information that is recorded on or in a medium irrespective of form, recording medium or technology utilized, 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:

— any form of recorded information, means of recording, and any medium on which information can be recorded; and

— all types of recorded information including all data types, instructions or software, databases, etc.

[ISO/IEC 15944-1:2002 (3.56)]

3.57
regulator
Person who has the authority to prescribe **external constraints** which serve as principles, policies or rules governing or prescribing the behavior of **Persons** involved in a **business transaction** as well as the provisioning of goods, services and/or rights interchanged

[ISO/IEC 15944-1:2002 (3.59)]

3.58
resource-flow
association between an **economic event** and an **economic resource**

NOTE A common example would be a resource-flow between some inventory and the shipment that caused control of that inventory to flow from one Person to another.

--`,,```,,,,````-`-`,,`,,`,`,,`---

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

3.59
responsibility
association between **Persons** where one is responsible for the other or between a **Person** and an **organization Person** where that **Person** is assigned

NOTE Subtypes of Persons include individuals, organizations and public administrations. An "individual" is non-divisible but organizations and public administrations are and as such will assign specific responsibilities to organization Persons (see further 6.2.7 and Figure 17 in ISO/IEC 15944-1:2002).

3.60
role
specification which models an external intended behaviour (as allowed within a **scenario**) of an **Open-edi Party**

[ISO/IEC 14662:2004 (4.1.2.1)]

3.61
seller
Person who aims to hand over voluntarily or in response to a demand or a request, 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

[ISO/IEC 15944-1:2002 (3.62)]

3.62
Semantic Component
SC
unit of **recorded information** unambiguously defined in the context of the **business** goal of the **business transaction**

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

[ISO/IEC 14662:2004 (4.1.2.2)]

3.63
settlement
association between a requiting **economic event** and an **economic claim** where the occurrence of the event causes the **economic claim** to expire

3.64
site
association between an **economic event** and the **business location** where the transfer of **economic resources** involved in that event is deemed to have occurred

3.65
third party
Person besides the two primarily concerned in a **business transaction** who is **agent** of neither and who fulfills 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.

[ISO/IEC 15944-1:2002 (3.65)]

3.66
typification
association between a concrete **entity** and the abstract specification of its grouped properties

--`,,```,,,,````-`-`,,`,,`,`,,`---
© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

3.67
undefined market model
trade model where participants are not registered in advance and where that market does not have accepted and recognized sources for business rules and conventions

4 Abbreviated terms

BOV	Business Operational View
BTE	Business Transaction Entity
BTET	Business Transaction Entity Type
ebXML	electronic business eXtended Markup Language
ECIMF	E-Commerce Integration Meta-Framework
EDI	Electronic Data Interchange
IB	Information Bundle
OCL	Object Constraint Language
OeBTO	Open-edi Business Transaction Ontology
OeP	Open-edi Party
OeS	Open-edi Scenario
REA	Resource-Event-Agent
SC	Semantic Component
UML	Unified Modeling Language
UMM	Uniform Modeling Methodology
UN	United Nations
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business

5 The Declarative Component of an OeBTO – Primitive and Derived Data Classes

5.1 Person and Economic Resources

One of the most fundamental ideas in Open-edi is the category of Person as an entity recognized as having legal rights and duties, able to make commitments, and fulfill resulting obligations. Based on applicable external constraints, a Person can be decomposed into three separate subtypes, namely, “individual”, “organization”, and “public administration”[5]. These subtypes are illustrated in the UML class diagram of Figure 4.

In this part of ISO/IEC 15944, the focus is on the OeBTO from an internal constraints perspective only[6]. However, users of this part of ISO/IEC 15944 should note that where and whenever Person is utilized, it covers the three sub-types of individual, organization, and public administration.

---

5) See further in ISO/IEC 15944-1:2002, 6.2 “Rules governing Person” and in particular, 6.2.7 “Person and external contraints: individual, organization and public administration.”

6) With respect to incorporating external constraints, see further ISO/IEC 15944-5:2006; in particular, see 5.2.2 “Collaboration space — internal constraints only” and 5.2.3 “Collaboration space — the role of “regulator” representing “external contraints”, and Annex G.

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

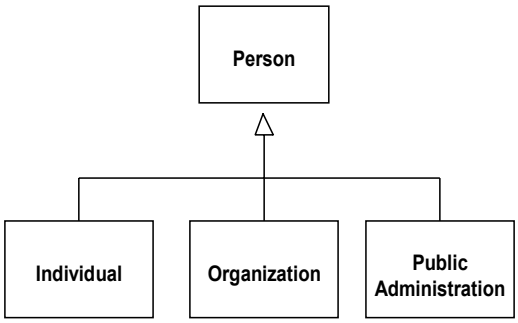


Figure 4 — Subtypes of Person Based on External Constraints

Rule 1:

Irrespective of the use of any particular information technology and related devices, 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., i.e. Persons are the only entities able to participate in a business transaction and able to make commitments for exchanges of value[7)].

Persons are the entities who drive the economic exchanges forward in Open-edi collaborations. Ontologically and normatively, they are considered as *homo economicus* in the classical microeconomic sense; that is, they are parties interested in commercial activity as a means of maximizing utility.

Besides Person, a second very important notion in the OeBTO is the concept of an Economic Resource which is something of value under the control of a Person. These two fundamental categories appear on the left of Figure 5, connected by an economic control relationship which indicates that the Person either owns the resource or is otherwise able to derive economic value (utility) from it.

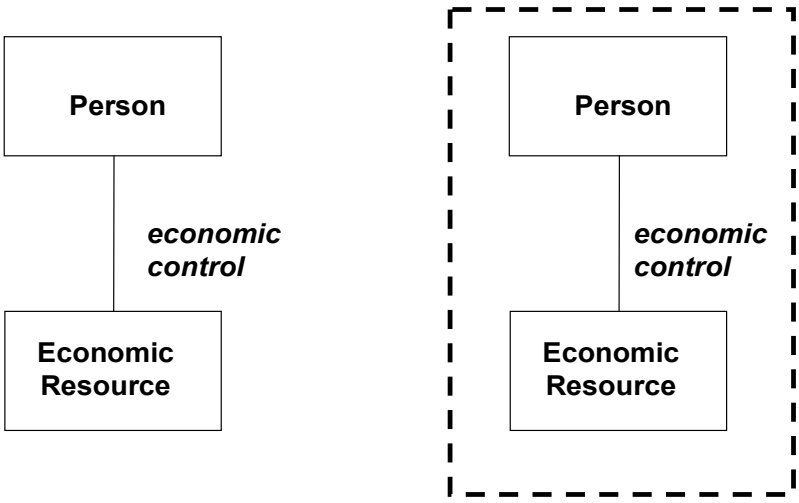


Figure 5 — Person and Economic Resource as the Basis for Exchange

7) This Rule 1 is based on ISO/IEC 15944-1:2002, 6.2, Rule 11.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Onto the right side of Figure 5 (inside the dotted lines) is now added an additional Person and economic resource association, thus setting the stage for a possible exchange where both parties might view control of the other Person's resource as a means of deriving higher utility than present circumstances render. This "value exchange" as it is titled in the collaboration space of Figure 3 is the basis for what Open-edi calls a business transaction between the two Persons.

Rule 2:

An Open-edi Business Transaction is an economic exchange occasioned by the presence of two Persons as trading partners, each possessing a resource of value desirable to the other party. These Persons shall be autonomous parties with competing economic interests, able to commit to a requited exchange with the other Person.

The Open-edi Business Transaction Ontology does not construct exhaustive classification hierarchies for the primitive classes of Person and economic resource, but it does provide a limited taxonomy for both. The hierarchical decomposition of both of these ontology items beyond 2-3 levels becomes very dependent upon the context of industry structure. Particular decompositions beyond the second or third level may be joined to the minimum classification structures illustrated here to give more detailed taxonomies for a particular industry domain.

In addition to being classified on identity, Persons may also be classified on the basis of their roles, which are the abstract specification of the functions they perform in business transactions. This functional decomposition through three levels is illustrated in the UML class diagram of Figure 6 and explained below.

- *Partner* which itself further specializes to *Buyer* (has money, desires goods) and *Seller* (has goods, desires money).
- *Regulator* which represents Persons who impose external constraints on Business Transactions.
- *Third Party* which specializes to a number of other classes such as *Escrow, Guarantor, Mediator,* and *Notary.*
- *Agent* which is a special sub-type in Open-edi that can act for any other Person in a clearly specified capacity, most commonly for a buyer or a seller.

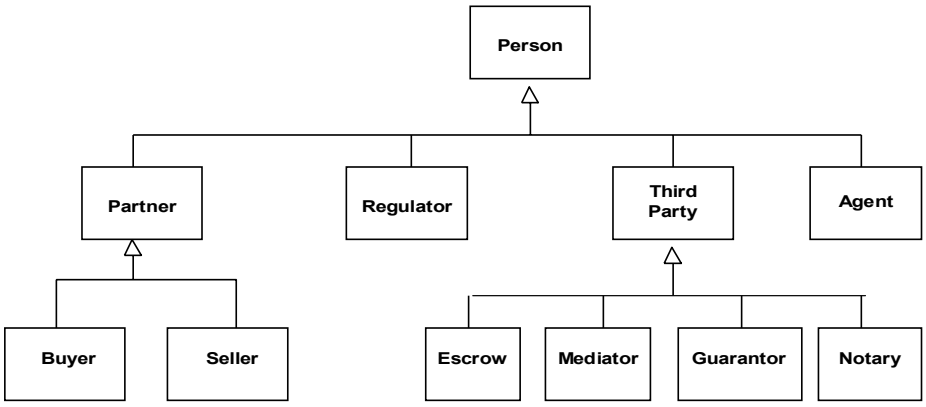


Figure 6 — Subtypes of Person Based on Roles in a Business Transaction

When fully-specified business transactions occur, Persons are able to play roles as indicated by the different sub-typing shown in Figure 6. Again, this taxonomy could be extended with industry-specific specializations of these role levels[8)].

8) Because of this industry specificity, these hierarchical decompositions should be viewed as informative rather than normative. This is especially true of the decomposition of "third party" where industry specificity gives rise to many different types of role names.

--`,,```,,,,````-`-`,,`,,`,`,,`---
© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Figure 7 illustrates some of the possible sub-typing for the other OeBTO primitive – economic resource – illustrated in Figure 5. This taxonomy has a second level derived directly from the text of 15944-1 which categorizes resources as:

- *Goods* which are tangible resources to include:
  - *Materials* including capital assets (like trucks), basic raw materials and natural resources (like steel or petroleum) plus sub-components of a larger assembled product (like seats for an automobile).
  - *Real Estate* like office buildings or warehouses.
  - *Funds* like money or marketable securities.
- *Services* which are the provision of value-adding activities by a provider to a consumer to include:
  - *Human Services* like temporary workers or consultants.
  - *Transportation Services* like packing/picking or actual shipments.
  - *Regulatory Services* such as the right to import/export or the right to do business in a certain segment or area.
  - *Warranty Services* such as the automatic provision of replacement goods under faulty judgments.
  - *Insurance Services* such as guaranteed payment under exigent circumstances.
- *Rights* which are intangible resources to include examples like Intellectual Products (IPR) and Rights-of-way.[9)]

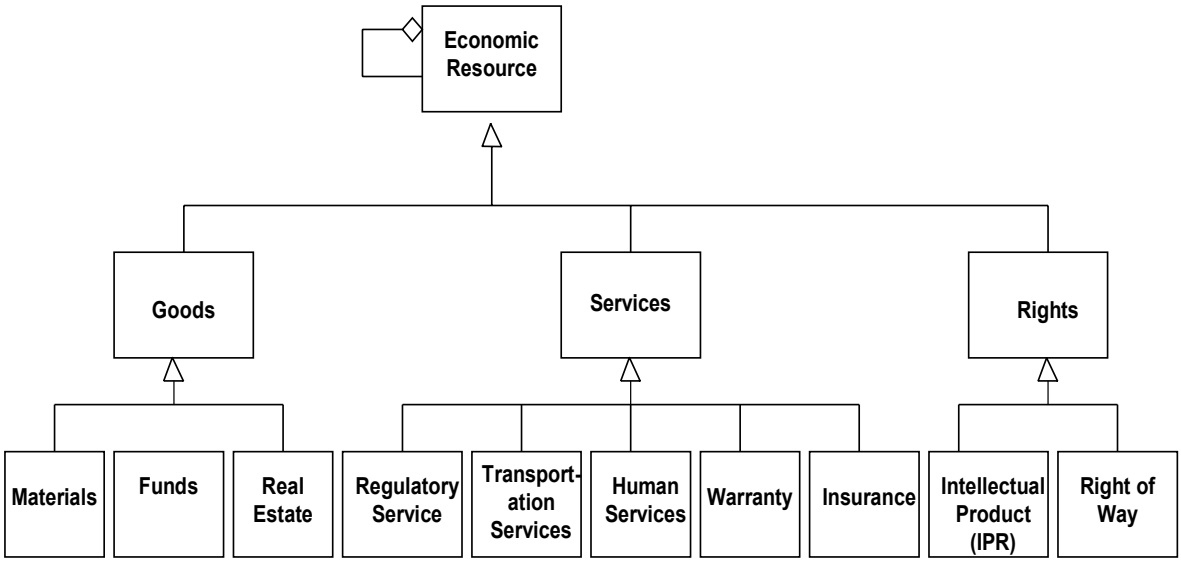


Figure 7 — Subtypes (possible) for Economic Resource

Rule 3:

Economic Resources may be classified as goods, rights, or services. Particular industry level classifications can further specialize this first level of decomposition.

Figure 7 also shows a recursive association that is especially important in ontological terms because it reflects an important aspect of economic reality -- that economic resources often have component structures. This means that their value is often derived from an assemblage of other resources. For a product example, those components could be the physical material, its advertised cache, its delivered-to-the-door-status, and its warranty.

9) Again as in Figure 6, these hierarchical decompositions should be viewed as informative rather than normative. This is especially true of the third level decomposition in Figure 7 which is clearly designed as an example enumeration.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Rule 4:

Economic Resources in the vast majority of trading cases will have component structures that can be identified and treated differentially in economic exchanges.

As an example of the logic of Rule 4, example goods that are termed free-on-board at source (FOB source) would be missing a delivery component that free-on-board destination (FOB destination) would have included.

In Open-edi, a business transaction involves an economic exchange of resources between Persons with competing economic interests, each attempting to maximize his or her own economic utility. As portrayed in 15944-1 and shown in Figure 8, there are two additional fundamental elements of a Business Transaction Model besides PERSON (discussed amply above). The first of these is the DATA involved in the transaction, and the ontological categories for capturing that data will be the topic for the rest of this Clause 5. The other fundamental element is the PROCESS involved in a business transaction and that will be the main topic for the following Clause 6. Clause 7 illustrates the constraint component where the business rules concerning both data and processes are enumerated.

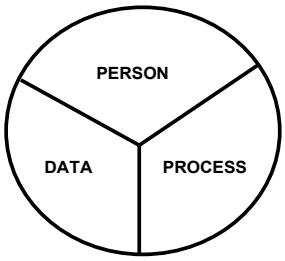


Figure 8 — Fundamental Parts of a Business Transaction

5.2 The Normative Data Categories for a Business Transaction Involving an Economic Exchange: Resources, Events, and Persons Plus Their Fundamental Relationships

The UML class diagram of Figure 9 illustrates the high level semantic view of the essentials of an economic exchange. In Open-edi, the full details of this exchange are realized within the scope of a single business transaction as trading partners identify each other, negotiate commitments, and engage in the actual exchange of resources with value.

As a starting point for ontological definition, this collaboration space diagram concentrates on the object answers to four fundamental questions:

- **Who** is involved in the collaboration (Persons)?
- **What** is being exchanged in the collaboration (Economic Resources)?
- **When** (and under what trading conditions) do the components of the exchange occur (Economic Events)?
- **Why** are the trading partners engaged in the collaboration (duality relationships between resource flows)?

The normative infrastructure of the Open-edi Business Transaction Ontology (OeBTO) encompasses these essential question components, as explained in 5.3 that follows. Section 5.4 illustrates the ontological components that result from typifying the OeBTO normative infrastructure, while 5.5 deals with the non-normative extensions of claims and business locations. 5.6 discusses the elaborate commitment structures of the OeBTO, and 5.7 accounts for the extended ontology objects of scenarios and markets.

Figure 9 illustrates the basic economic primitives of OeBTO in a UML class diagram. An actual value exchange in the collaboration space of Open-edi between a buyer and a seller would involve two instances of this object pattern. That is, there would a resource-event-person pattern instance for an initial resource transfer from one partner to the other; this would then be followed by a connected (with duality associations) resource-event-person pattern instance for a requiting resource transfer. A full example of this is shown in Figure 10 with a delivery of product followed by a payment of cash. In very general terms, a full economic

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

exchange of value in collaboration space is defined as a Business Transaction in the Open-edi ontology. It is important to remember that Bilateral Transactions between a buyer and a seller constitute the basic collaborative unit in Open-edi. These bilateral transactions may be aggregated to Mediated Transactions involving more than two Persons.

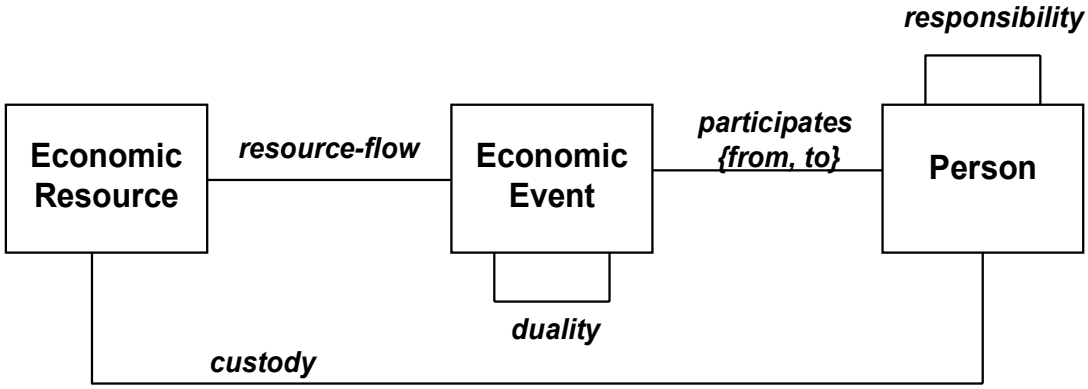


Figure 9 — Basic Exchange Primitives of the Open-edi Ontology

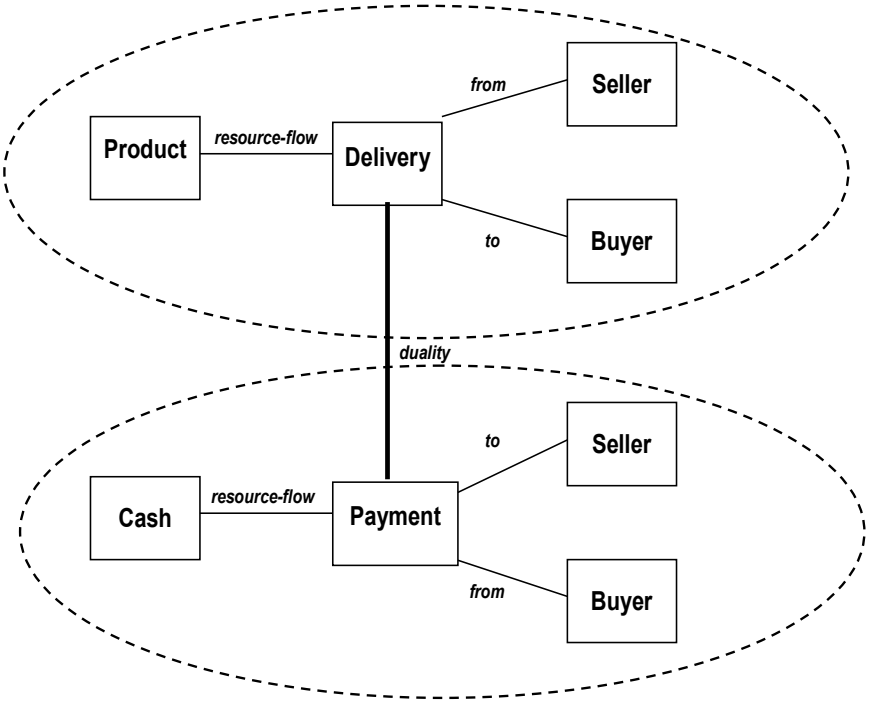


Figure 10 — Exchange of Value in Collaboration Space Involves Two Symmetrical Resource-Event-Agent Clusters

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

5.2.1 Entity Definitions:

i) A Person is a natural or legal person unit empowered to control the flow of economic resources (including his or her own labor) by engaging in economic events. Persons are also empowered to make commitments or promises to execute resource flows in the future. The Person class may also include persons who are responsible for subordinates' participation in economic events. A subset of Person is Partner; partners are Persons who play the leading roles in business transactions as sellers and buyers (or alternatively, as producers and consumers of services).

ii) An Economic Resource is a scarce good, right, or service that possesses utility (economic value) and that is presently under the identifiable control of a particular Person.

iii) An Economic Event most simply is an inflow or outflow of an economic resource. Economic events reflect changes in economic resources resulting from exchanges, conversions, or transportation.

5.2.2 Relationship Definitions:

i) A resource-flow relationship is an association between an economic resource and an economic event. From the independent perspective, resource-flow instances are matched in bi-directional fashion with each party both giving and taking in the same exchange.

ii) A participates relationship is an association between a Person and an economic event. Economic events normally have two participates relationships with independent parties who have competing economic interests (that is, they are said to have an arm's length relationship with each other). One of these is specialized on the class diagram of Figure 9 as "from" and the other as "to", indicating again the independent perspective of collaboration.

iii) A duality relationship is an association between two (or more) economic events where one is the economic or legal consideration for the other in an economic exchange. Dualities are needed for every binary component of mediated transactions.

iv) A custody relationship is an association between a Person and an economic resource where physical control or access to physical control possession is indicated.

v) Responsibility is a relationship between (among) two or more Persons. These responsibility associations indicate hierarchical orderings within an enterprise that are necessarily revealed to trading partners in a collaboration model.

Rule 5:

The minimum normative constellation of business transaction entities needed for a valid business transaction includes Economic Resources, Economic Events, and Persons plus their exchange relationships (resource-flow, duality, and participates).

Rule 6:

Custody and responsibility relationships are not required for a valid economic exchange, but they provide critical additional data to the basic exchange template.

5.3 Addition of Business Event to Basic Exchange Pattern:

In Figure 11, the primitive Business Event has been added to the basic OeBT ontology pattern in a UML class diagram. A business event is an occurrence in time in collaboration space that Persons wish to plan, control, monitor, or evaluate. To bring about the occurrence of an economic event, it is often necessary to perform multiple business events. Additionally, business events may also be aggregates of other, finer-grained business events, so the UML component structure for a business workflow is shown as recursive business events. In a state machine sense where many elements of the OeBTO become business transaction entities

--`,,```,,,,````-`-`,,`,,`,`,,`---
© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

(representing business transaction entity types as explained in Clause 6) with defined object states and defined object lifecycles, a business event can be defined more precisely as an occurrence that causes a state change in one or more business transaction entities.

Rule 7:

Business Events can either occur instantaneously or have duration. For a business event that has duration, it will be possible to specify as its components, both starting and finishing events of instantaneous nature.

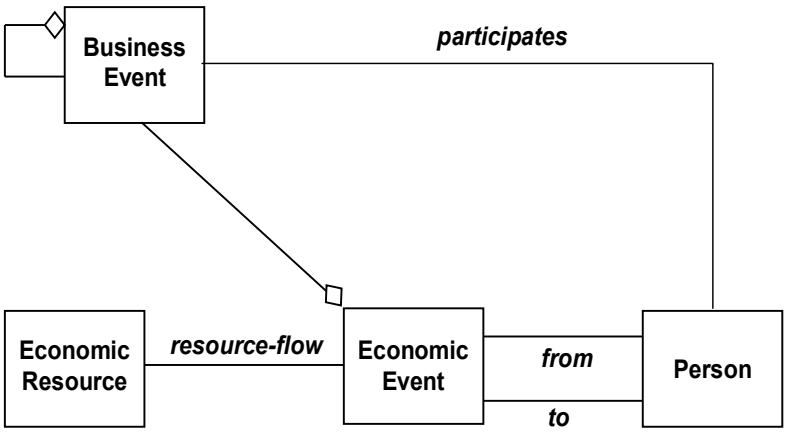


Figure 11 — Addition of Business Event to Basic Business Transaction Pattern

5.4 Extension of the OeBTO into Types

Abstract concepts are information structures used to describe the intangible components of actual phenomena. For ontologists, this is an important distinction. In the OeBT ontology, “type images” are used to represent the abstract structure of economic phenomena. For the construction of abstract concepts, the common abstraction mechanism of typification[10)] is used. This abstraction method is portrayed in Figure 12.

The bottom of Figure 12 represents things that really exist or have actually happened, like a digital product or some real material or an event that has transferred ownership of such resources. In concrete economic terms, this is where accountability for past and near future activities lies. At the top of the figure is where policies are specified in terms of the abstract economic future: things that could be or should happen. Typification works by abstractly specifying the grouped properties of real things, and policies can then be derived by associating those abstract entities.

In the UML class diagram of Figure 13, three of the economic primitives defined previously (Economic Resource, Economic Event, and Person), are typified to produce their abstract specification classes shown at the top of the figure (Economic Resource Type, Economic Event Type, and Economic Role).

10) See explanation of typification in [5].

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

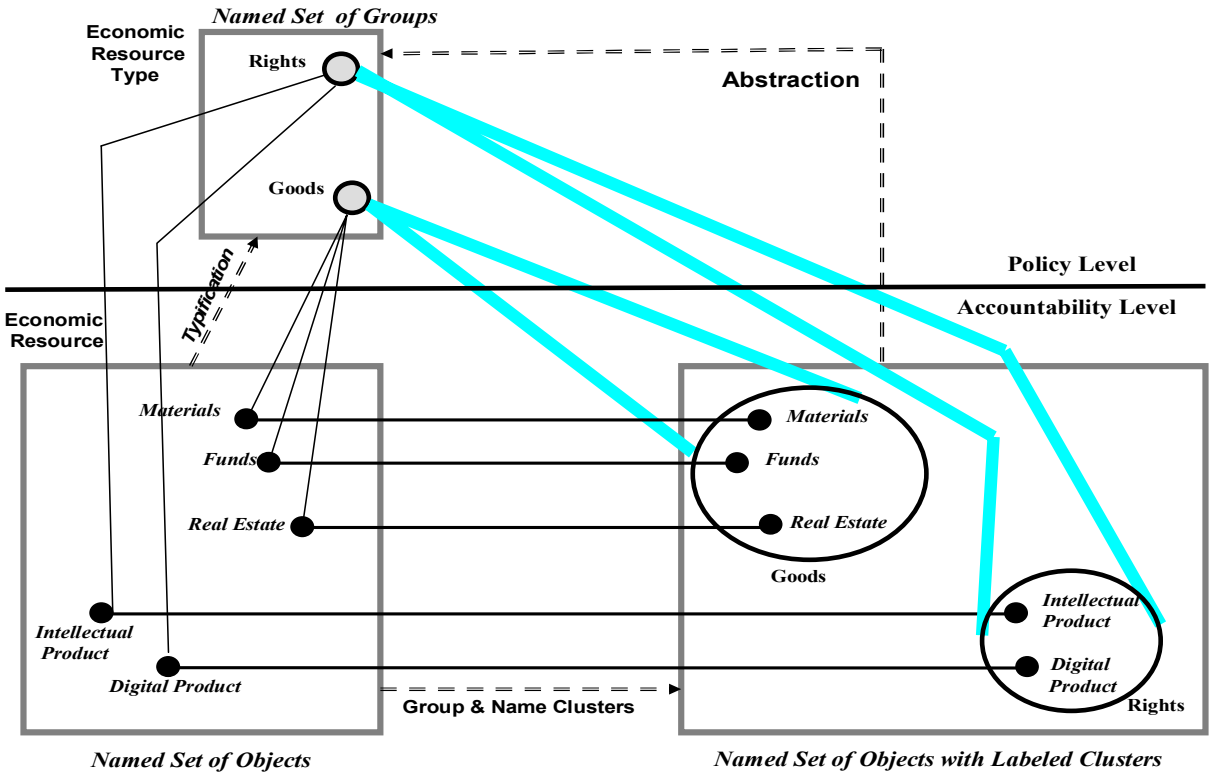


Figure 12 — Abstract Specification with Typification

When type images are connected with each other as illustrated in the top constellation of Figure 13, policy artifacts often emerge, such as the association between an Economic Event Type (for example, large amount sales) and an Economic Role (such as the managerial position needed to authorize such a class of transactions). This kind of abstract specification is especially important to the pre-actualization components (planning, identification, and negotiation) of an Open-edi business transaction. For example, parties often specify in advance the types of goods they desire to be shipped under different delivery categories by different types of shipping agencies. Typification is strongly linked to the concept of Open-edi Scenarios which are formal specifications of particular classes of business transactions designed for reusability. As discussed in Clause 6, connected type images also result many times in control artifacts such as the rules embodied in internal and external Open-edi constraints. Such constraints supply pre- and post-conditions on state machine transitions.

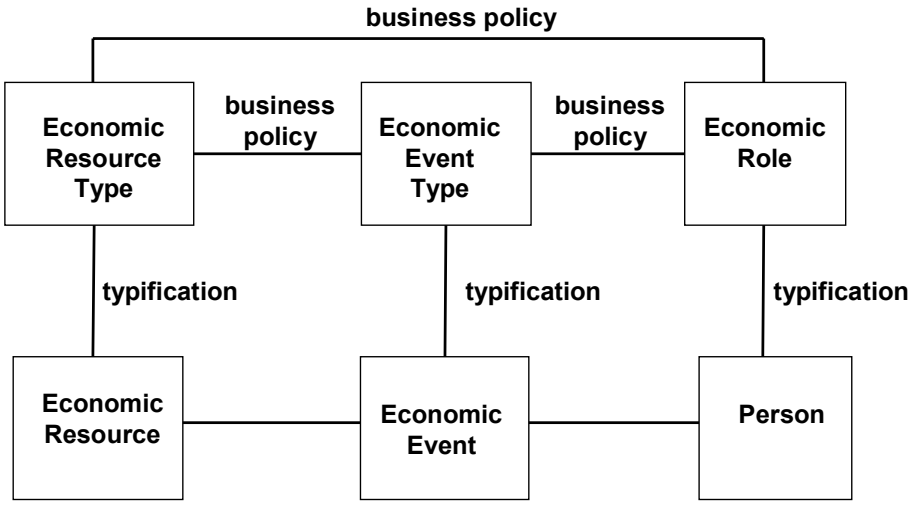


Figure 13 — Type Connections for Policy and Planning

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Rule 8:

Typification is a non-normative extension of the components of a basic economic exchange. Connecting typified entities specifies the abstract rules or business policies under which business transactions occur.

5.5 Locations and Claims

The UML class diagram of Figure 14 illustrates two non-normative additions to the basic Open-edi ontological framework.

i) A Business Location designates the site where an economic event occurs if such information is needed. Locations also indicate the targeted delivery points for Economic Commitments. Location Types indicate grouped instances like an approved kind of delivery warehouse or an acceptable medical facility.

ii) An Economic Claim is an optional materialization of a temporal imbalance in a duality relationship where an economic event has occurred without its requited correspondence to another economic event. An initial economic event materializes the claim, while the requiting economic event settles it.

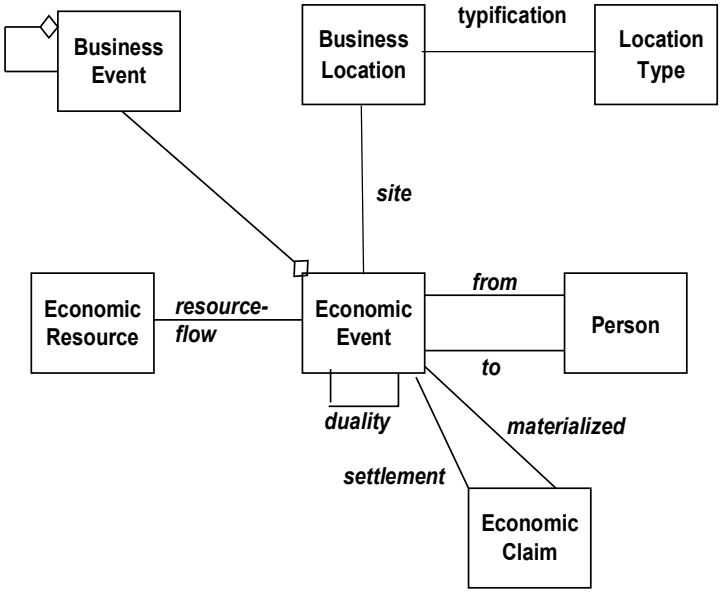


Figure 14 — Addition of Business Location and Economic Claim

5.6 Adding Commitments to Economic Exchanges

In the Open-edi ontology, a business transaction pertains to the exchange of something of value as illustrated in the delivery-payment example of Figure 10. An additional key property of an Open-edi business transaction is that it involves commitment exchange as illustrated in Figure 15. In economic terms however, commitments do not occur in isolation because partners simply do not agree to value exchanges without reciprocation. Commitments are bundled in Economic Contracts between trading partners where, for example, a commitment to deliver some product is reciprocated by a commitment to pay cash.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

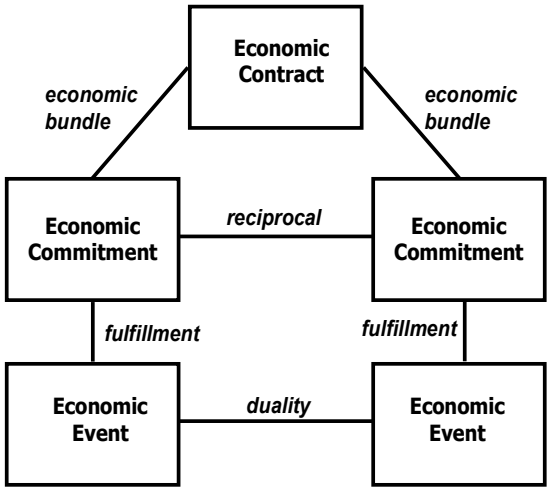


Figure 15 — Contract as a Bundle of Commitments

Rule 9:

Economic commitments are fulfilled by economic events; these commitments are the promised analog of economic events which are connected by duality relationships. Thus, commitments also occur in reciprocal pairs where the promise of one party is requited by the promise of the other.

In Figure 16, the ex ante nature of commitments is illustrated further. At a minimum, an Open-edi economic commitment should specify the type of economic resource expected in the fulfilling economic event. For example, a catalogue order chooses from a product list for delivery. Additionally, the economic commitment often will specify:

i) the type of event to fulfill it (such as an expedited delivery or a purchase under wholesale pricing), and

ii) the business roles needed in the eventual exchange (such as a buyer, a seller, a seller agent, and a third-party escrow).

Economic commitments may less commonly specify types of locations, like an approved class of warehouse.

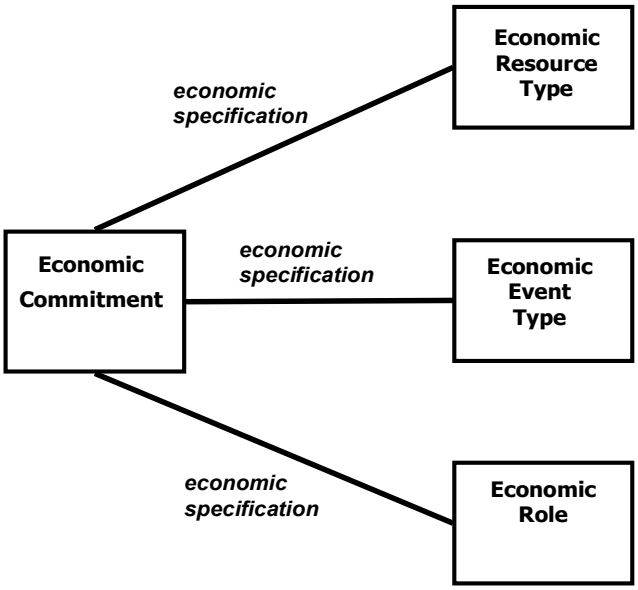


Figure 16 — Abstract Specification of Commitments

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

5.7 Business Transactions with Contracts

The UML class diagram of Figure 17 formally adds Economic Commitment structures to the basic notion of an economic exchange. As mentioned previously, commitment is one of the defining features of Open-edi, so these structures are extremely important ontological components.

i) An Economic Commitment is a promise to execute an Economic Event at some point in the future. The specification of an Economic Commitment may involve relationships with four type-level classes: Economic Resource Type, Location Type, Economic Event Type, and Economic Role. Economic Commitments may also have relationships with Economic Resource (reserves), Person (participate), and Business Location (target).

ii) A fulfillment relationship is an association between an Economic Commitment and the Economic Event that executes that commitment.

iii) A reciprocal relationship is an association between Economic Commitments that each in turn individually fulfills compensating economic events.

iv) An Economic Contract is a bundle of reciprocating commitments wherein two Parties agree to a future schedule of exchanges with compensating economic events. An Agreement is similar to an economic contract, but it is not legally enforceable.

v) An economic bundle relationship is an association between an Economic Contract and its pair of reciprocal Economic Commitments.

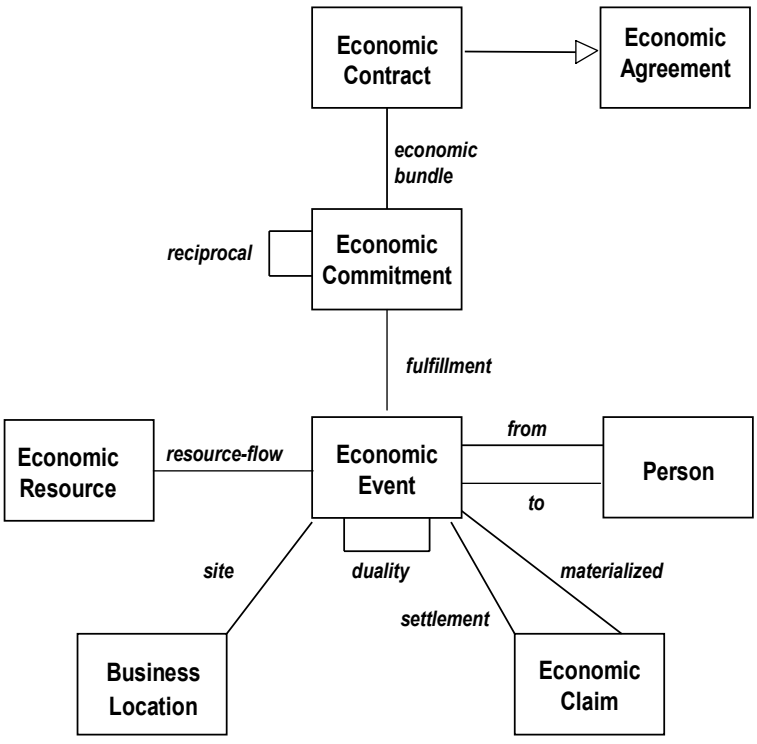


Figure 17 — Business Transaction Model with Bundled Commitments

Rule 10:

An Economic Contract is a reification of the reciprocal relationship among groups of Economic Commitments. When the paired commitments have simple structures and there are no legal needs for a formal agreement, the Economic Contract entity becomes optional.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Figure 18 illustrates the full addition of the "commitments to type specification" by combining Figures 16 and 17. Additionally, it extends the concept of a *Bilateral Transaction* to that of a *Mediated Transaction* by including the previously-defined *Third Party* subtype of *Person* as an essential ingredient of mediated collaborations. Figure 18 also indicates the essential roles of *Regulators* who are Persons who constrain business transactions.

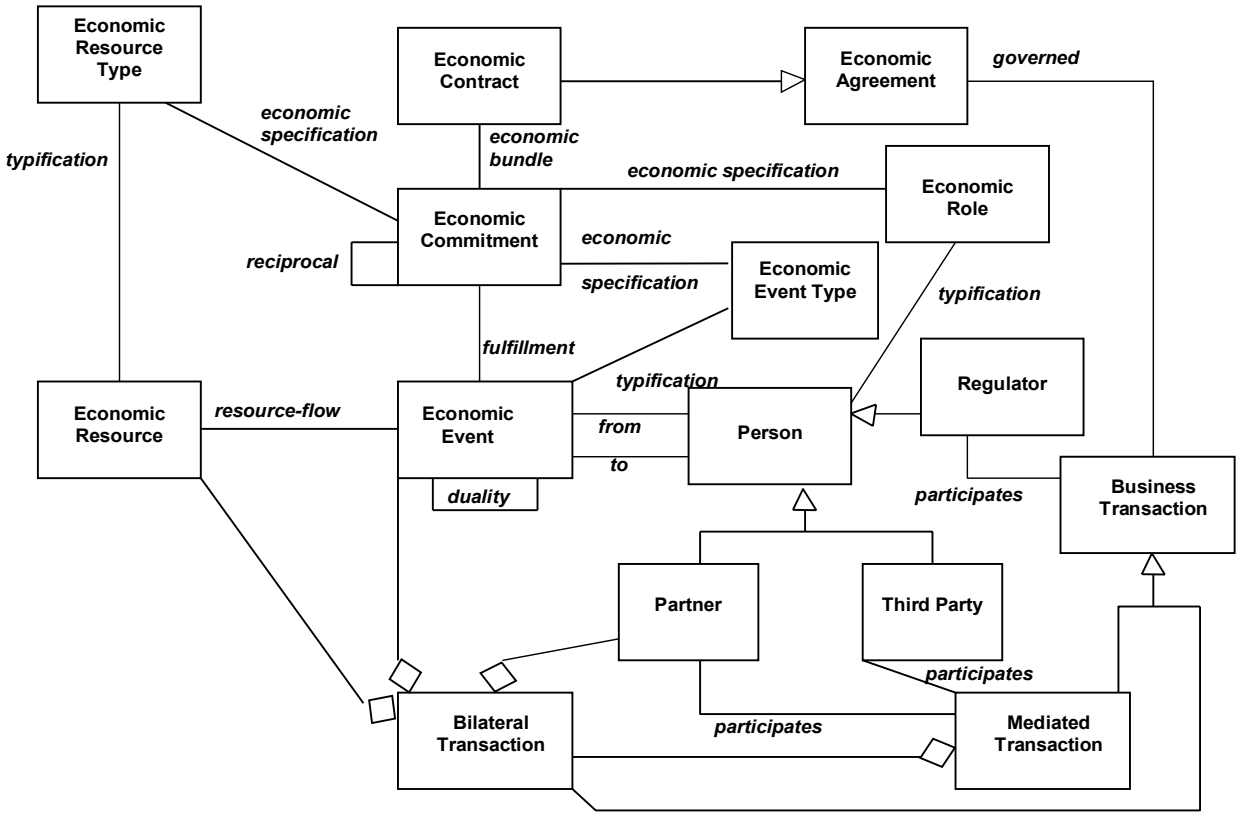


Figure 18 — Collaboration with Commitment Structures

Rule 11:

A Bilateral Business Transaction includes just the two basic kinds of Partner: the Buyer and the Seller (or an Agent for one or both). Mediated Business Collaborations involve the participation of a Third Party like a Guarantor or a Notary.

Rule 12:

All Open-edi business transactions, which include the modeling of external constraints in addition to internal constraints only, are subject to the participation of a Regulator – a Person with the authority to prescribe external constraints which serve as principles or rules governing the behavior of other types of participants in a business transaction.

5.8 Typifying Agreements and Business Transactions

Figure 19 and Figure 20 illustrate typification of Economic Agreements and Business Transactions.

i) All Business Transactions are set in both Defined Markets and Undefined Markets, both of which are overseen by various Jurisdictional Domains.

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

ii) Business Transactions may be classified into different kinds of Open-edi Scenarios such as the 2x2x2 (overall giving eight combinations) factoring shown in the cloud at the bottom of Figure 19 [11)].

iii) An Agreement can be decomposed into classes like Leases/Rentals, Service Agreements, Consignments, and Purchases. Agreements have Pricing Methods like reverse auctions, open and closed bids, and individual quotes. These methods can in turn be typified into classes (Pricing) like bid, auction, or matching. These are all illustrated in Figure 20.

The modeling specifications illustrated in Figure 4 through Figure 20 give specific conceptual definition to many of the Open-edi Business Transaction terms used in ISO/IEC 15944-1. In the following clause, the behavioral use of these components is explained with explicit reference to the Open-edi notion of business transaction phases. According to ISO/IEC 15944-1, a business transaction proceeds through the stages of planning, identification, negotiation, actualization, and post-actualization, and an ontologically-based state machine model of this progress is explained there.

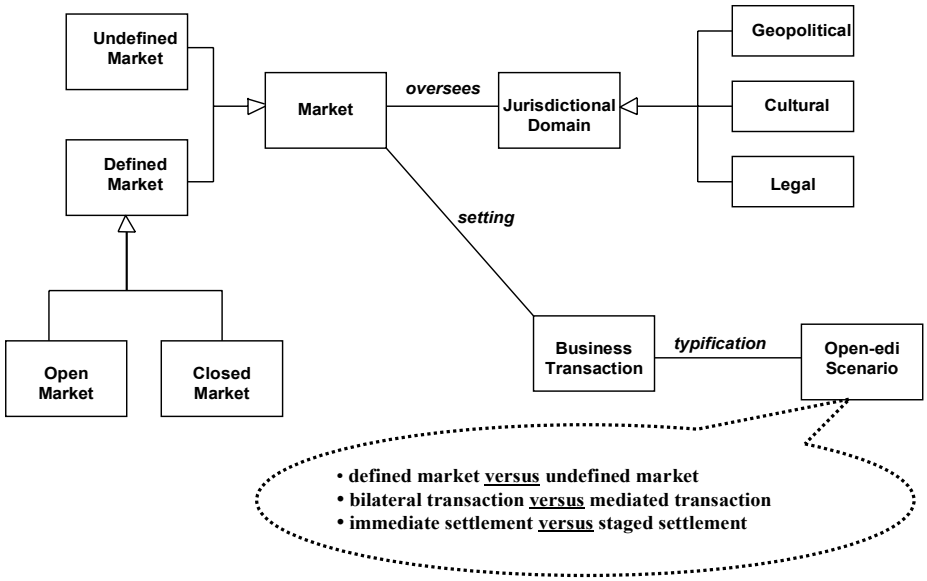


Figure 19 — Addition of Markets and Scenarios for Business Transactions

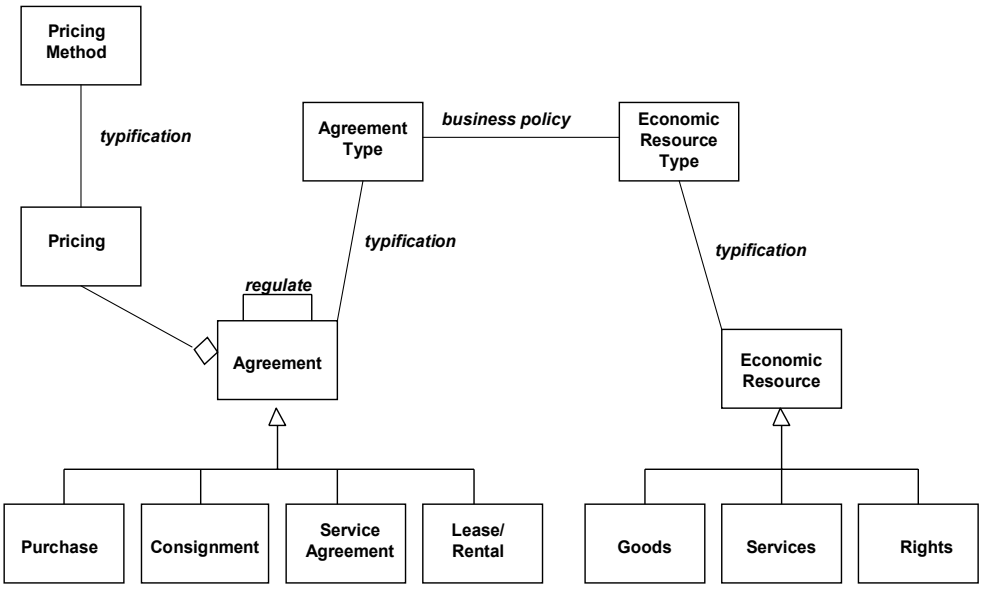


Figure 20 — Agreement Types with Pricing Methods

11) A more complete explanation of this classifications scheme for Open-edi Scenarios is given in ISO/IEC 15944-2.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

6 The Procedural Component of an OeBTO – Business Transaction State Machines

An ontology has a declarative component – which specifies the categories into which collaboration data exchanged among Persons in a business transaction may be slotted; a procedural component – which specifies how that data is to be used in deriving conclusions; and a constraint component – which specifies the business rules for both data and procedures. In an operational use of the Open-edi Business Transaction Ontology, the various declarative components specified in Clause 5 – for example all of the classes illustrated in Figure 18 – become defined as Business Transaction Entity Types (BTET). BTETs represent the abstract specification of Business Transaction Entities (BTE), detailing their recommended attributes, their recommended methods, and their recommended life-cycle states. Additionally, a business transaction entity type will usually specify the types of business events that cause a BTE of this type to proceed through its different states as the business transaction itself progresses through its own phases of planning, identification, negotiation, actualization, and post-actualization. A BTE thus is a particular real instance of a business transaction entity type.

Rule 13:

A Business Transaction Entity (BTE) is the computable representation of any real world entity that participates, occurs, or is materialized during a particular business transaction. For procedural materialization of conclusions during the business transaction, the combined use of the BTE attributes, methods, and states may be used to determine its status as a component in an economic exchange.

6.1 Relating Ontological Components to the Open-edi Business Transaction Phases

From ISO/IEC 15944-1, the paragraphs below enumerate the five identified phases of an Open-edi Business Transaction[12]. This phase specification is one of the major building blocks of ISO/IEC 15944-1.

i) Planning: In the Planning Phase, both the buyer and seller are engaged in activities to decide what action to take for acquiring or selling a good, service, and/or right.

ii) Identification: The Identification Phase pertains to all those actions or events whereby data is interchanged among potential buyers and sellers in order to establish a one-to-one linkage.

iii) Negotiation: The Negotiation Phase pertains to all those actions and events involving the exchange of information following the Identification Phase where a potential buyer and seller have (1) identified the nature of good(s) and/or service(s) to be provided; and, (2) identified each other at a level of certainty. The process of negotiation is directed at achieving an explicit, mutually understood, and agreed upon goal of a business collaboration and associated terms and conditions. This may include such things as the detailed specification of the good, service, and/or right, quantity, pricing, after sales servicing, delivery requirements, financing, use of agents and/or third parties, etc.

iv) Actualization: The Actualization Phase pertains to all activities or events necessary for the execution of the results of the negotiation for an actual business transaction. Normally the seller produces or assembles the goods, starts providing the services, prepares and completes the delivery of good, service, and/or right, etc., to the buyer as agreed according to the terms and conditions agreed upon at the termination of the Negotiation Phase. Likewise, the buyer begins the transfer of acceptable equivalent value, usually in money, to the seller providing the good, service, and/or right.

v) Post-Actualization: The Post-Actualization Phase includes all of the activities or events and associated exchanges of information that occur between the buyer and the seller after the agreed upon good, service, and/or right is deemed to have been delivered. These can be activities pertaining to warranty coverage, service after sales, post-sales financing such as monthly payments or other financial arrangements, consumer complaint handling and redress or some general post-actualization relationships between buyer and seller.

12) SOURCE: ISO/IEC 15944-1.

--`,,```,,,,````-`-`,,`,,`,`,,`---

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Rule 14:

Conceptually, a business transaction can be considered to be constructed from a set of fundamental activities. They are planning, identification, negotiation, actualization and post-actualization.

Figure 21 adds the definition of these Business Transaction Phases to the OeBTO declarative primitives for a bilateral collaboration.

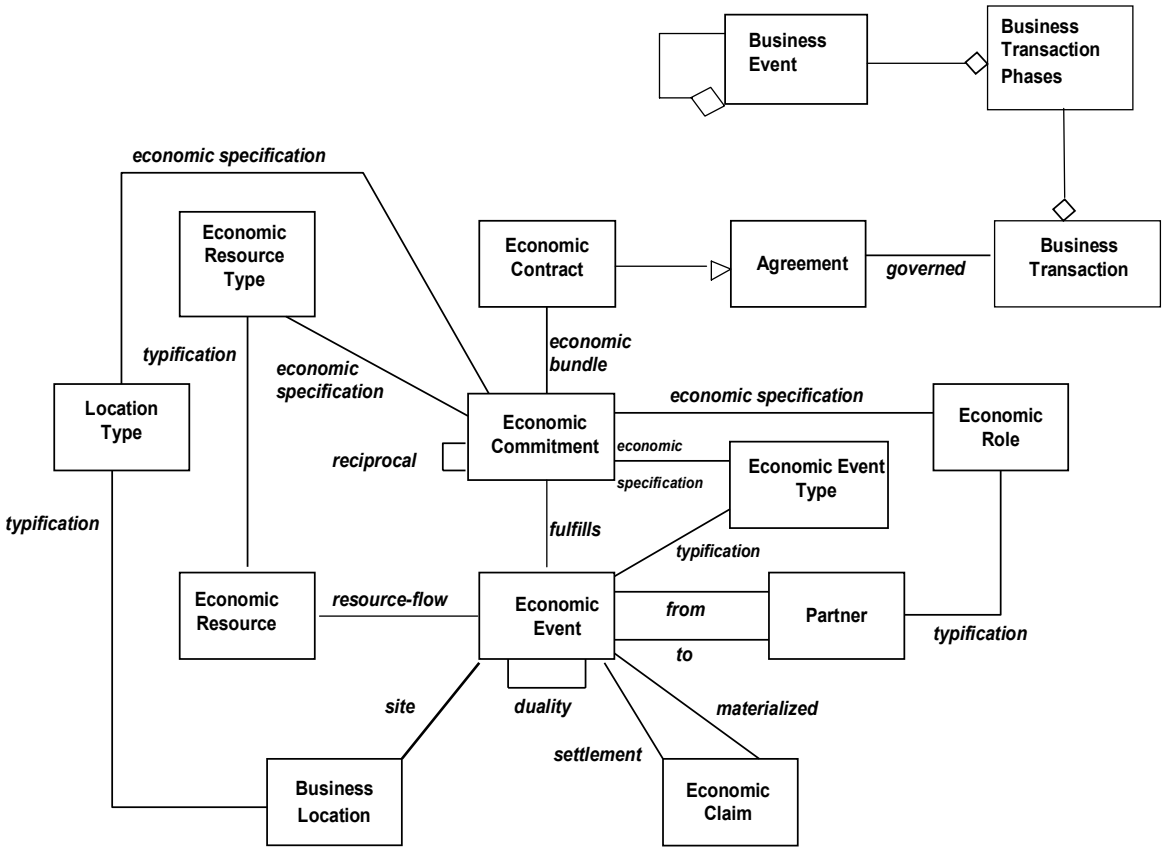


Figure 21 — Open-edi Ontology with Business Transaction Phases and Business Events

Figure 21 also specifies that these Open-edi business process phases have Business Events as components, illustrating the behavioral progress through each phase as marked by collaborative activities. A Business Event is defined as an occurrence in time that partners to a business transaction wish to monitor or control. Business events are the fuel that drives a business transaction state machine, as they progress that dynamic representation through its five phases by changing the states of the ontological components illustrated in Figure 21. Additionally, Business Events have component structures as illustrated by the recursive relationships in Figure 21, and this facilitates the modeling of activities in business collaboration space at whatever level of granularity is needed. Business Event components of instant duration can drive the state of a higher-level Business Event with extended duration from start to completion, and that higher level component may then effect a state change in one of the other Business Transaction Entities for a particular transaction.

Figure 22 illustrates the approximate correspondence of the Open-edi Business Transaction phases with the categories of ontological components defined in Clause 5.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

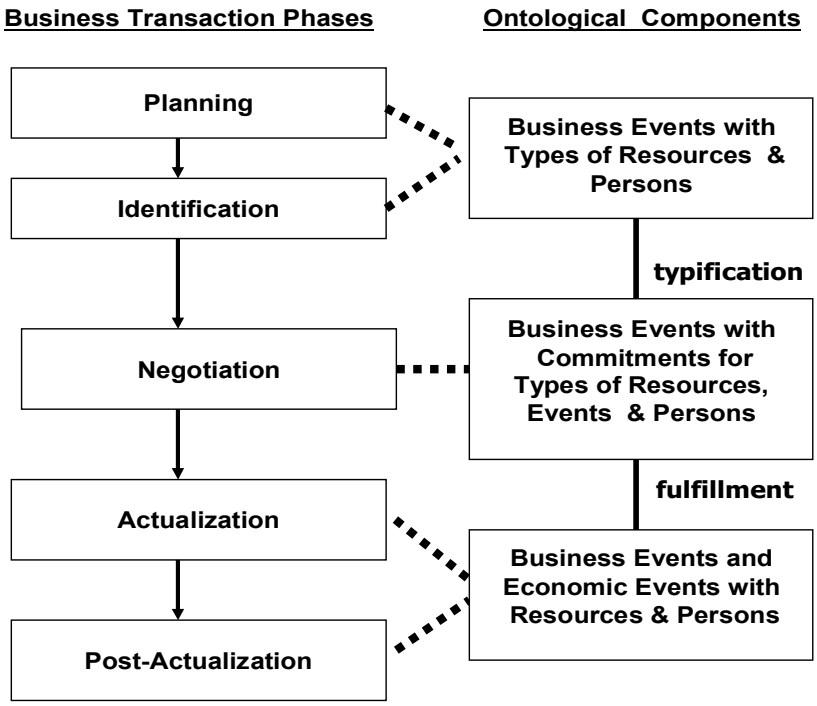


Figure 22 — ISO Open-edi Phases with Components

- Planning and Identification involve business events wherein potential buyers and sellers identify each other by matching on proposed types of resources to be exchanged and their actual trading partners.
- Negotiation involves business events wherein linked business partners cooperate on the abstract specification of their proposed exchange (its type of resources, events, and roles as stipulated in a contract).
- Actualization and Post-Actualization involve business events that aggregate to the performance of resource transfers (the actual economic events) between the buyer and seller.

Business Events are the specific activities that mark the explicit states that trading partners expose to each other as they complete an exchange. For example, supplying a quote on a listed product during negotiation may progress an Economic Commitment from status (or state) "unspecified" to "proposed" while simultaneously marking a Resource Type and an Event Type as "specified". If this Business Event of supplying a quote was followed by a quote acceptance and then a payment terms acceptance, an Economic Contract might move into status "in-force" and then the entire Negotiation Phase might move into state "completed". This completed negotiation would keep the entire Business Transaction in state "in progress", whereas an unsuccessful negotiation might have moved the overall Business Transaction into state "aborted" or state "suspended".

Rule 15:

Business Events are the activities or messages that collaborative business partners use to communicate their progress through a Business Transaction.

Figure 23 portrays the individual phases of a Business Transaction and the targeted object states that would signal to each business partner that a particular phase was now complete.

i) Planning is complete when both trading partners have formulated an abstract vision of an exchange. This involves moving the entities representing the potential partner and the potential type of resource into "candidate" states.

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

ii) Identification is complete when the corresponding partners have been identified along with their identified resource types. This establishes a 1-to-1 linkage between the partners concerning a common trading interest.

iii) Negotiation is complete when the abstract specification of economic commitments is done and when all the commitments and a contract move to an "in-force" condition. Generally, this would mean that the entities for the types of resources to be exchanged are in state "specified". It could also mean that economic specifications are complete for the type of event, the economic roles, and the types of location.

iv) Actualization is complete when the requiting Economic Event entities are both in state "complete", thus marking the completion of the full exchange.

v) Post-Actualization is complete when the possible warranty (or similar post-exchange exception condition) component of an Economic Resource is invoked, and the conditions of the exchange reach their final values.

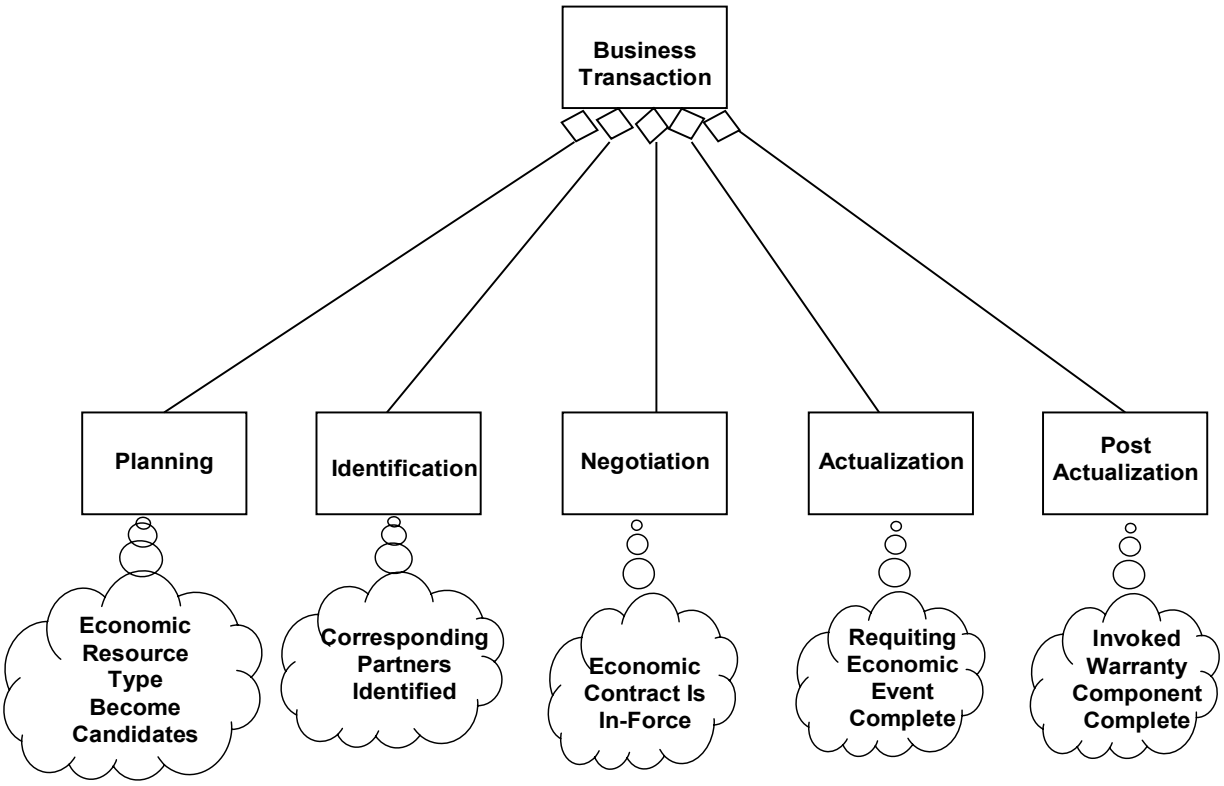


Figure 23 — Phases of a Business Transaction and Object States for Completion

Figure 24 illustrates how the declarative ontological components of Open-edi (referred to here as Business Transaction Entity Types) can be augmented to account for state machine mechanics. Each ontological component is envisioned as a possible Business Transaction Entity with a defined Business Transaction Entity Lifecycle consisting of multiple Business Transaction Entity States. The transition to these states is effected by the occurrence of a Business Event.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

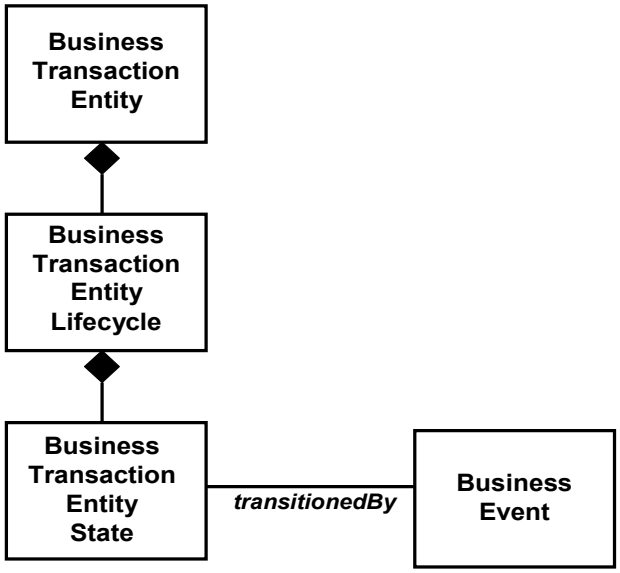


Figure 24 — Business Transaction Entities, Lifecycles, States, and Events

Figure 25 illustrates some example states that could be identified for some of the Open-edi Ontology components defined thus far. In a full ontological specification, all of the business transaction entity types defined in this document would be given fully-enumerated lifecycles of object states (as specified in Figure 24). However, these would change from one business context to another, so the exposition here is limited to these four samples.

Rule 16:

In the OeBTO, all declarative components become candidates for Business Transaction Entities, and each of these in turn will have a defined life cycle of states that will mark its progressive use in the representation of a real economic exchange.

Sample Business Transaction Entity	Example States (Lifecycles) for Business Transaction Entity
Business Transaction	• **Waiting-Start** • **In-Service** • **Completed** • **Aborted** • **Suspended**
Economic Claim	• **Materialized** • **Settled**
Economic Resource Type	• **Candidate** • **Planned** • **Identified** • **Proposed** • **Specified** • **Actualized**
Business Transaction Phase	• **Pending** • **In-Service** • **Complete**

Figure 25 — Sample States for Business Transaction Entities

--`,,```,,,,````-`-`,,`,,`,`,,`---
© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Figure 26 lists an example set of Business Events involved in a typical instance of a Business Transaction. These 14 Business Events represent a full collaboration between an example buyer and seller, as it proceeds through the Open-edi phases. Again, each Business Event might cause multiple state changes. For example:

a. The fourth activity – Buyer sends Availability and Price Request to Seller – would cause:

1. the Economic Resource Type to move into its *Specified* state, plus

2. the Identification Phase to move into its *In-Force* state.

b. The ninth activity – Buyer sends an Order Acceptance to Seller for parts – would cause:

1. the Economic Resource Types, the Economic Event Types, and the Economic Roles to move into their *Specified* states, plus

2. the Economic Contract and the Economic Commitment entities to move into their *In-Force* states.

c. The eleventh activity – Buyer sends *Receiving Report* to Seller when inspected goods are accepted – would cause the Economic Event to move into its *Completed* state, and the Economic Resource to move into its *Transferred* state.

BT Phase	Example Business Event
Planning	Seller publishes *Catalog*
	Buyer sends *Catalog Request* to Seller
	Seller sends *Catalog* to Prospective Buyer
Identification	Buyer sends *Availability and PriceRequest* to Seller
	Seller returns *Availability and PriceResult* to Buyer
Negotiation	Seller sends *Order Request* to Buyer
	Buyer sends *Offer* to Seller
	Seller sends *Counter Offer* to Buyer
	Buyer sends an *Order Acceptance* to Seller for parts (alternatively a *Non Acceptance* would suspend or abandon the Business Transaction)
Actualization	Seller sends an *Advance Shipping Notice* when goods are prepared for shipping
	Buyer sends *Receiving Report* to Seller when inspected goods are accepted
	Seller sends an *Invoice* to Buyer after parts are shipped
	Buyer sends *Remittance Advice* to Seller with information about payment of the *Invoice*
Post-Actualization	Buyer sends *Warranty Invocation* to Seller

Figure 26 — An Example Business Transaction with Business Events Grouped in Phases

A UML state machine diagram is the best formal specification of dynamic object behavior with state changes. Such a specification is illustrated in Figure 27 for the *Business Entity Type* "Economic Resource Type" as it moves through the example collaboration.

i) The Economic Resource Type (for example a type of inventory) would become a *Candidate* when the Publish-Catalog event occurs, moving from its initial undefined state (black dot).

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

ii) The Send-Availability-And-Price-Request event would then move the inventory into state *Planned.* This same event would move the Identification Phase of the Business Transaction into state *In-Service* (not shown in Figure 27).

iii) The Return-Availability-And-Price-Result would cause the inventory to become *Identified.* This same event would move the Identification Phase of the Business Transaction into state *Complete* (not shown).

iv) The Send-Offer event would shift the example inventory into its *Proposed* state.

v) The Accept-Offer would cause the Economic Resource Type to become *Specified*.

vi) And finally, a Send-Shipping-Notice action would cause the resource type to move to an *Actualization* state (end of object life cycle).[13)]

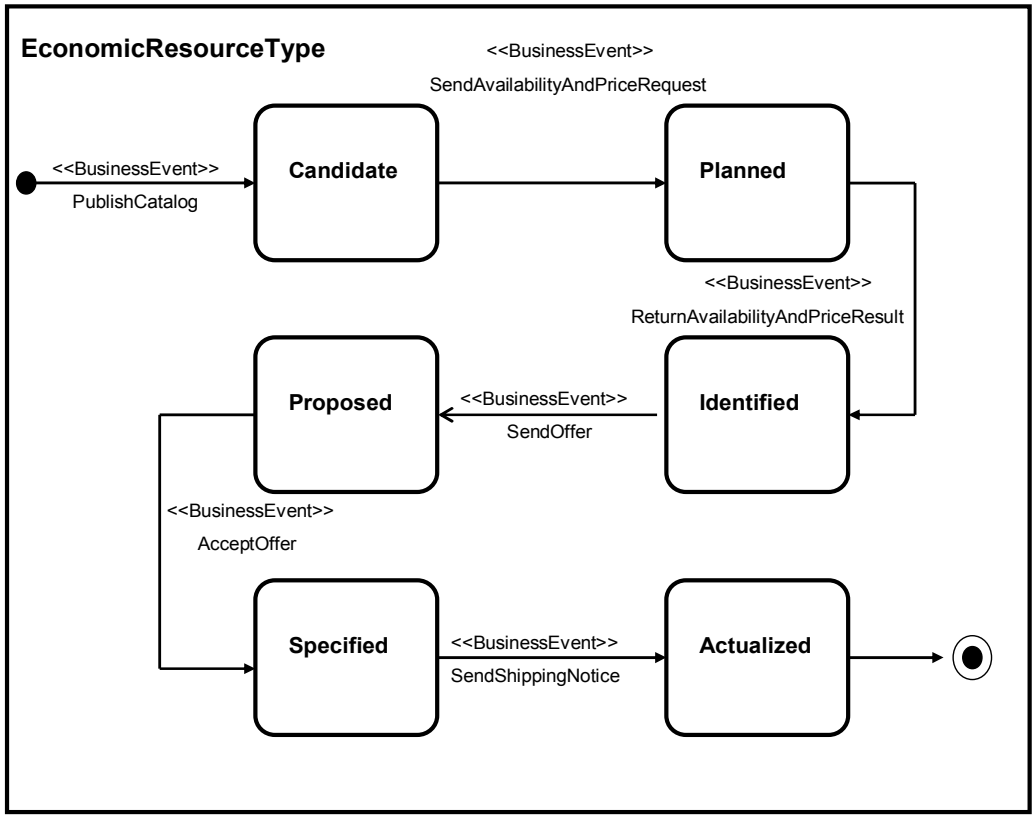


Figure 27 — State Machine Diagram for Economic Resource Type

Figure 27 illustrates the progress of a collaboration between two trading partners from the perspective of one Business Transaction Entity as it progresses through its state changes. Figures 28-31 provide a different, but much more comprehensive view of progress through the first three phases (planning, identification, and negotiation)[14)] of the same business transaction[15)]. Each of these figures illustrates a UML activity graph with various business events (such as "Publish-Catalog" at the top right of Figure 28) being performed by either the

13) In reality, this state machine example for Economic Inventory Type is slightly more complicated as the individual state changes would need to be tracked through a UML association class between the Economic Inventory Type and the Business Transaction.

14) The exposition here is limited to these first three phases for parsimony sake. Including the phases of actualization and post-actualization would make the activity documentation twice as long with little gained in explanation power.

15) Figures 28-31 are intended to be read consecutively. For example, the start of Figure 29 (illustrated as a filled-in circle) connects with the finish of Figure 28 (illustrated as a target circle).

-`,,```,,,,````-`-`,,`,,`,`,,`---
© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

buying partner (left column) or the selling partner (right column). The collaboration space between the buyer and seller (first illustrated in Figure 3) is where the shared business entity states reside that allow each partner to determine simultaneously what the exact status of the overall business collaboration is. For example in Figure 28, the Publish-Catalog event at the upper right causes the entity Economic Resource Type to move into state *Candidate* (as earlier illustrated in Figure 27) and the entity Planning Phase to move into state *Waiting Start*. For purposes of parsimony, Figures 28-31 do not illustrate all of the state changes that would occur in a collaboration, only an illustrative subset. For example, it would commonly be the case that the *Completed* state of one transaction phase (such as Identification) would cause the following phase (such as Negotiation) to move into a *Waiting Start* state. However, this state transition is not shown.

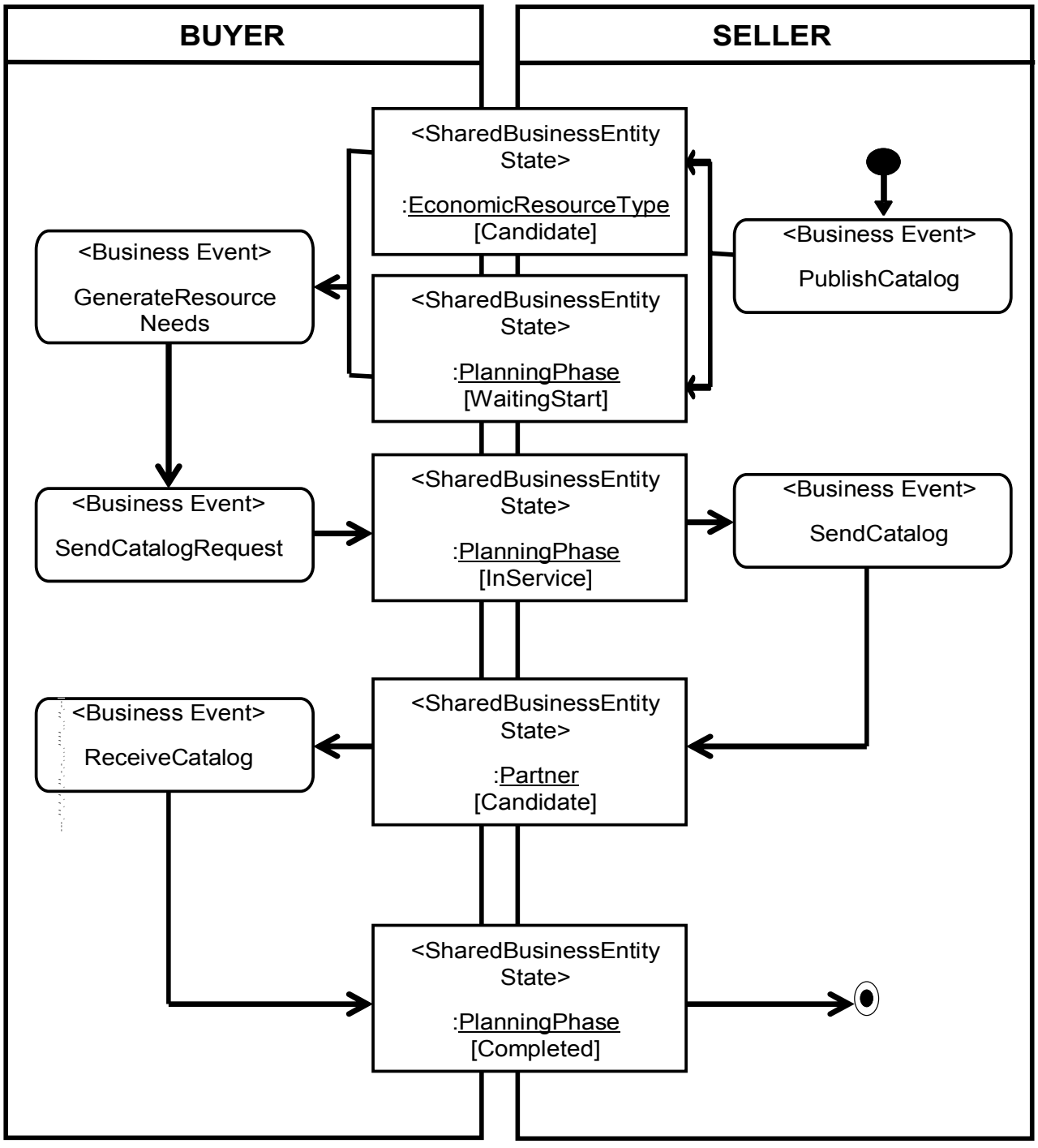


Figure 28 — Activity Graph (1) for Collaboration

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

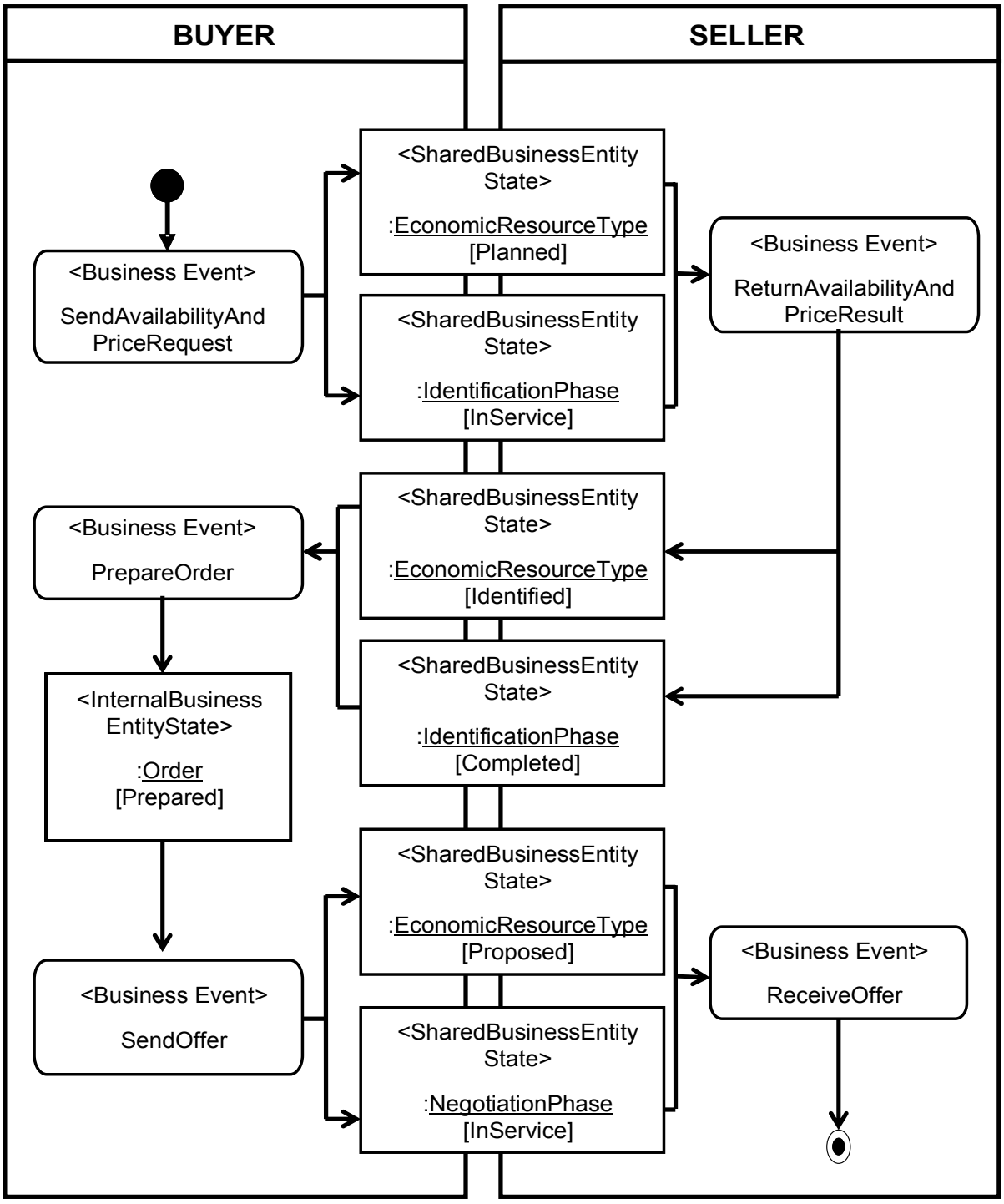


Figure 29 — Activity Graph (2) for Collaboration

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

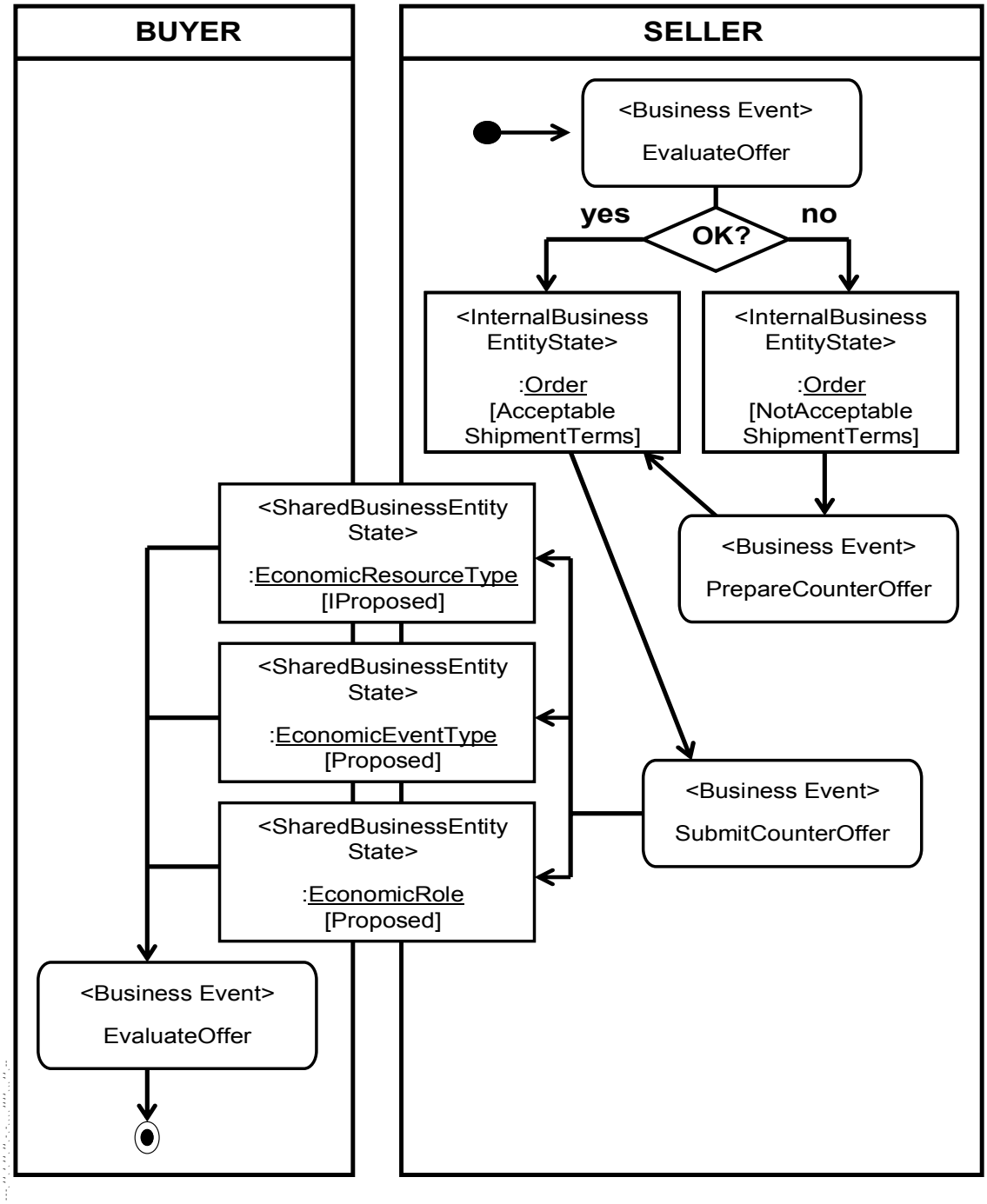


Figure 30 — Activity Graph (3) for Collaboration

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
© ISO/IEC 2007 – All rights reserved
Not for Resale

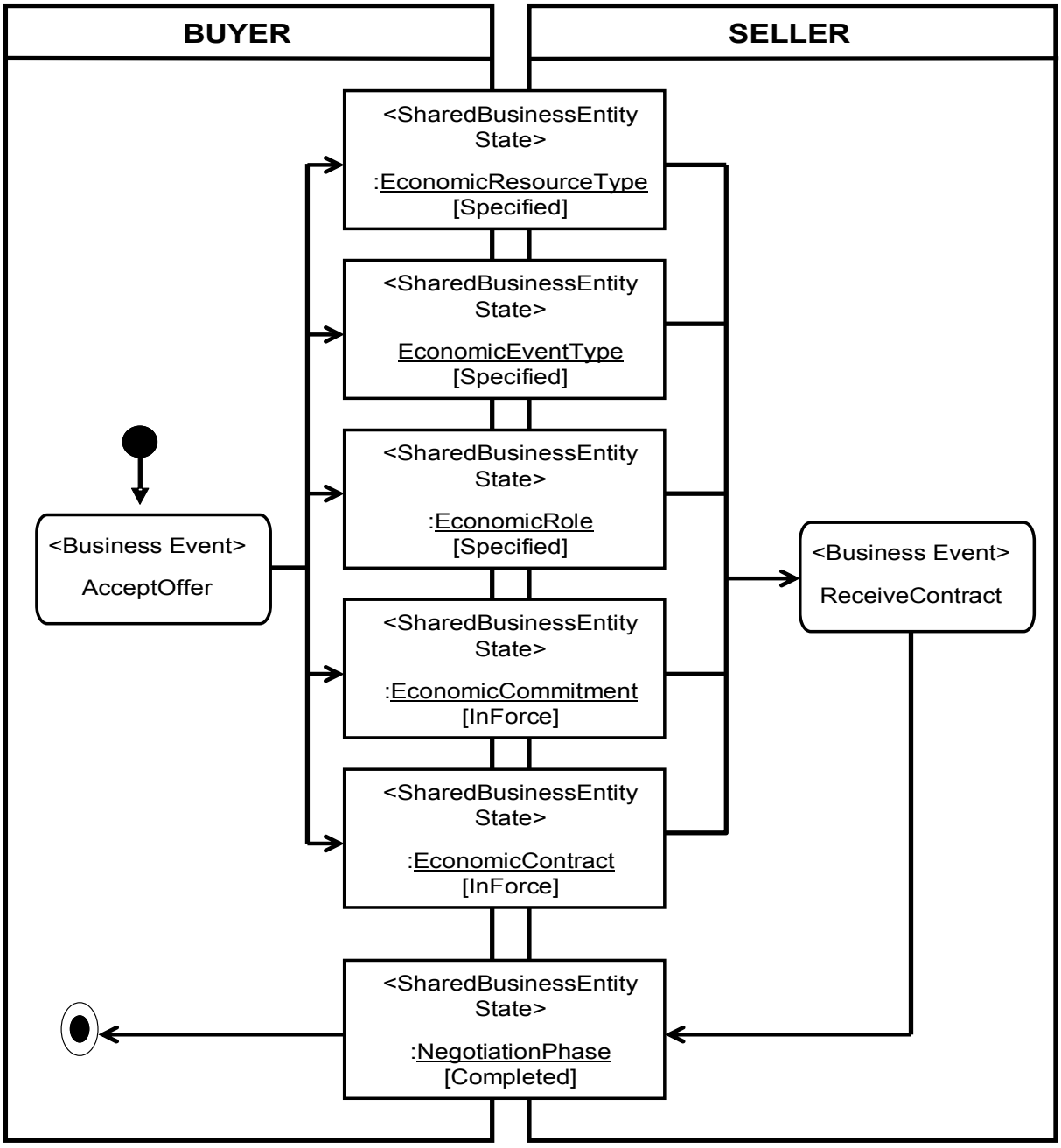


Figure 31 — Activity Graph (4) for Collaboration

To summarize the state machine presentation, it is necessary to understand how the definitions of Clause 5 and Clause 6 work together.

i) Clause 5 defined the declarative components of the Open-edi ontology. This is a specification of the primitive classes as they model the components of a business transaction. These primitive classes become candidates for Business Transaction Entity Types, and their realization during an actual business collaboration would become Business Transaction Entities.

ii) Clause 6 defined the procedural components of the Open-edi ontology. This illustrated the dynamic mechanics of tracking business collaboration through each of the five Open-edi phases using state machine mechanics. This progress was illustrated with the UML, first from the perspective of a single business transaction entity (state machine diagram) and second from the perspective of the entire workflow (activity graphs).

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

With partners communicating with each other through shared states of Business Transaction Entities, the actual status of an Open-edi collaboration is exactly determined for each at any point in time.

Rule 17:

In the OeBTO, the declarative components – the Business Transaction Entities – and the procedural components – the shared collaboration space state machines – work in tandem to fully track the activities and progress in an economic exchange. A realization of the OeBTO requires integrated specification of both of these features in the conduct of an Open-edi business transaction.

7 The Constraint Component of an OeBTO – Incorporating Business Rules into Business Transactions

7.1 Business Rules and Open-edi Constraints

Business rules specifying computational procedures, approved sequences of actions, valid inferences, and effective control monitoring govern the day-to-day operations of business enterprises. A useful definition of a "business rule" from Eriksson and Penker is:

> … a statement that can control or affect the execution of a business process as well as the structure of the resources in a business. The statement specifies a condition that must be upheld, or a condition that controls which activity should follow next. It can express a business goal, specify the way a process should execute, detail the conditions of a relationship, or constrain the behavior of a resource.[16)]

In the database world somewhat synonymously, "constraints" are defined as rules governing the integrity of data that prevent a database from moving from one representation state to another without proper validation, and in the most simple ontological case, their function is exactly congruous with the business rules definition given above. Database integrity constraints are also commonly referred to as assertions.[17)]

In ISO/IEC 15944-1, a **constraint** is defined as "a rule, explicitly stated, that prescribes, limits, governs, or specifies any aspect of a *business transaction*." That same standard differentiates those constraints that are self imposed by the trading parties (internal) from those constraints created by law, regulation, orders, treaties, conventions, or similar instruments (external):

i) **internal constraint**: a constraint which forms part of the *commitment(s)* mutually agreed to among the parties to a *business transaction*

ii) **external constraint**: a 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*

Open-edi further divides the category of external constraints into (1) those that are common and horizontal in nature as introduced by the additional presence in a business transaction of a "regulator" as a third subtype of Person representing "public administration", and (2) those that are more sectorial in nature (involving standard rules, both across many sectors and across just one sector). Open-edi differentiates these classes of constraints in order to provide summaries of complex bundles of rules for scenario registration. For example, the simplest constraint bundle for a scenario could aggregate only internal constraints; the next most complex could add horizontal external constraints, etc.

In the OeBTO, constraints encapsulating business rules constitute the third major representation component. The first component was the declarative specification of domain classes and associations in Clause 5, while the second component was the procedural aspects associated with business transaction state machines and activity graphs as explained in Clause 6.

---

16) Hans-Erik Eriksson and Magnus Penker [1], p.81.

17) D.C. Tsichritzis and F.H. Lochovsky [17], Chapter 3.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

7.2 OeBTO Constraint Examples

Constraints may be expressed informally in natural language, such as the following accounting rule for separation of duties as applied to the class diagram of Figure 9:

> *"the Person who fills the participation role in an Economic Event that involves a certain Economic Resource should not be the same Person who has a custody relationship with that Economic Resource"*

The need for this constraint to a business transaction could be derived for example from a sectorial application (an OeBTO external constraint) of the 2002 USA Sarbanes-Oxley internal control legislation.

Constraints may also be expressed more formally with the Object Constraint Language (OCL) of the UML. For example, a state sales tax rule for Michigan (another sectorial external constraint) on merchandise orders (a subtype of Economic Contract) could be specified as 6% of the gross amount of the order:

context Order inv michiganSalesTaxCalculation
salesTax = grossAmount × .06

Such a constraint could be placed in curly brackets on a UML class diagram next to the class definition for order (for example, a more specific form of Figure 18), and it then becomes an invariant (inv) or a condition that must be true for all objects of that class.

According to both Odell [12] and Eriksson and Penker [1], constraints may be of two general behavioral kinds:

i) Those that define how knowledge in one form may be inferred or derived from another form. Examples of this constraint category might be the Michigan sales tax calculation shown above. Another example might be a constraint that designates a scheduled shipment as "hazardous" if it exceeds a designated weight threshold of goods (economic resources) typed as "dangerous if unpackaged" shown in an inheritance taxonomy that would give domain level expansion to the three levels initially shown in Figure 7.

ii) Those that "constrain either the possible structure or the behavior of objects or processes, that is, the way objects are related to each other or the way objects or process state changes may occur."[18] An especially prominent illustration for the OeBTO of this class of constraints are rules that define pre-conditions and post-conditions for the types of state changes described in Clause 6. For example in Figure 29, the state machine diagram makes it clear that for Economic Resource Type to achieve its "proposed" state, it has a pre-condition of being in state "identified" and a post-condition of state "specified" and that these transitions are effected by the business events shown. These same types of rules can be specified as constraints in OCL and portrayed on UML class diagrams.

Both derivation business rules and constraint business rules are important to effective business operation in collaboration space, so their characterization in the Open-edi Business Transaction Ontology is an important third step in insuring interoperability and semantic integrity. To the extent that the declarative and procedural components of an ontology are specified correctly, the parties to a business transaction are given computable methods for ensuring compliance with both internal and external rules of business behavior.

7.3 Summary

There is certainly now a critical opportunity for developing coherence in worldwide standards for business level definitions of economic phenomena. Open-edi, especially in its prior work of ISO/IEC 15944-1, has standardized much of the technical and economic environment for economic exchanges, and the field of ontology provides an extended opportunity for unifying and coordinating that work. This part of ISO/IEC 15944 aims to provide that unity with an ontological analysis of the declarative, procedural, and constraint components of Open-edi. Certainly, the majority of the work in this document concentrates on the declarative

18) Erik Eriksson and Magnus Penker [1], p. 154.

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

components of the OeBTO – those data classes that model the fundamental categories of economic endeavors in collaboration space and the relationships that exist among those categories. This declarative emphasis is reasoned and deliberate. As noted by John Sowa[19], conceptual progress in a specialized domain is usually marked by an increasing percentage of the knowledge in that field being embedded in its declarative components. As ad hoc procedures and constraints become more structured and predictable, they lead naturally to better theoretical and conceptual structures.

In concert, the declarative, procedural, and constraint components of the Open-edi ontology provide a definitive specification that is formal, explicit, and conceptual. An ontological foundation is one of the key components of that coherence.

19) John Sowa (1984). *Conceptual structures: Information Processing in Mind and Machine*. Addisson-Wesley, Reading, MA. p. 24.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Annex A
(normative)

Consolidated List of Terms and Definitions with Cultural Adaptability: ISO English and ISO French Language Equivalency

A.1 Introduction

Users of this part of ISO/IEC 15944 may not have ready access to all standards referenced in either the ISO English language version or the ISO French language equivalent where available.

This part of ISO/IEC 15944 maximizes the use of existing standards where and whenever possible including relevant and applicable existing terms and definitions. This annex contains the consolidated list of the ISO English and ISO French language paired terms and definitions used in this part of ISO/IEC 15944 including those terms and definitions introduced in this part of ISO/IEC 15944. The source is Clause 3, Terms and Definitions.

This annex is based on the approach taken for this multipart standard established in Annex A of ISO/IEC 15944-1:2002.

A.2 ISO English and ISO French

This part of ISO/IEC 15944 recognizes that the use of English and French as natural languages is not uniform or harmonized globally. (Other examples include use of Arabic, German, Portuguese, Russian, Spanish, etc., as natural languages in various jurisdictions).

Consequently, the terms “ISO English” and “ISO French” are utilized here to indicate the ISO's specialized use of English and French as natural languages in the specific context of international standardization, i.e., as a “special language”.

A.3 Cultural adaptability and quality control

ISO/IEC JTC1 has added “cultural adaptability” as the third strategic direction which all standards development work should support. The two other existing strategic directions are “portability” and “interoperability”. Not all ISO/IEC JTC1 standards are being provided in more than one language, i.e., in addition to “ISO/IEC English”, in part due to resource constraints.

Terms and definitions are an essential part of a standard. This Annex serves to support the “cultural adaptability” aspects of standards as required by ISO/IEC JTC1. Its purpose is to ensure that if, for whatever reason, an ISO/IEC JTC1 standard is developed in one ISO/IEC “official” language only, at the minimum the terms and definitions are made available in more than one language.[20)] A key benefit of translation of terms and definitions is that such work at providing bilingual/multilingual equivalency:

- should be considered a “quality control check” in that establishing an equivalency in another language ferrets out “hidden” ambiguities in the source language. Often it is only in the translation that ambiguities in the meaning, i.e., semantics, of the term/definition are discovered. Ensuring bilingual/multilingual equivalency of terms/definition should thus be considered akin to a minimum “ISO 9000-like” quality control check; and,

20) Other ISO/IEC member bodies are encouraged to provide bilingual/multilingual equivalencies of terms/definitions for the language(s) in use in their countries.

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

- is considered a key element in the widespread adoption and use of standards world-wide (especially by users of this standard who include those in various industry sectors, within a legal perspective, policy makers and consumer representatives, other standards developers, IT hardware and service providers, etc.).

A.4 List of Terms in French Alphabetical Order

Generally, within a standard, the Clause 3 terms and definitions are presented in alphabetical order and assigned Clause 3.nn ID numbers accordingly. The Consolidated Matrix of terms and definitions presented below does the same.

In order to facilitate the identification of the terms in the French language the following list presents them in French alphabetical order along with their English language equivalents in a table of three column where,

- Column 1 = the number assigned to the term/definition pair in Clause 3
- Column 2 = the Term - French
- Column 3 = the Term - English

Clause 3 Number (1)	Term – French (2)	Term – English (3)
3.19	accord économique	economic agreement
3.11	acheteur	buyer
3.54	administration publique	public administration
3.4	affaires	business
3.2	attribut	attribute
3.57	autorité de réglementation	regulator
3.62	Composant sémantique (SC)	Semantic Component (SC)
3.14	contrainte	constraint
3.33	contrainte externe	external constraint
3.38	contrainte interne	internal constraint
3.23	contrat économique	economic contract
3.24	contrôle économique	economic control
3.16	donnée	data
3.18	dualité	duality
3.27	échange économique	economic exchange
3.43	EDI-ouvert	Open-edi
3.6	emplacement d'affaires	business location
3.13	engagement	commitment
3.22	engagement économique	economic commitment
3.32	entité	entity
3.9	entité de transaction d'affaires	business transaction entity
3.12	espace de collaboration	collaboration space
3.5	évènement d'affaires	business event
3.25	évènement économique	economic event

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Clause 3 Number (1)	Term – French (2)	Term – English (3)
3.34	exécution	fulfillment
3.37	faisceau d'informations (IB)	information bundle (IB)
3.20	faisceau économique	economic bundle
3.58	flux des ressources	resource-flow
3.15	garde	custody
3.36	individu	individual
3.56	information enregistrée	recorded information
3.1	mandataire	agent
3.40	matérialisé	materialized
3.17	modèle de marché défini	defined market model
3.67	modèle de marché indéfini	undefined market model
3.42	objet	object
3.44	Ontologie de transaction d'affaires de l'EDI ouvert	Open-edi Business Transaction Ontology (OeBTO)
3.47	organisation	organization
3.51	partenaire	partner
3.45	Partenaire d'EDI-ouvert (OeP, Open-edi Party)	Open-edi Party (OeP)
3.50	participe	participates
3.48	partie d'organisation	organization part
3.52	Personne	Person
3.49	Personne d'organisation	organization Person
3.53	processus	process
3.55	réciproque	reciprocal
3.21	réclamation économique	economic claim
3.35	régi	governed
3.63	règlement	settlement
3.59	responsabilité	responsibility
3.28	ressource économique	economic resource
3.60	rôle	role
3.30	rôle économique	economic role
3.46	scénario d'EDI-ouvert (OeS)	Open-edi scenario (OeS)
3.64	site	site
3.31	spécification économique	economic specification
3.65	tierce partie	third party
3.41	transaction arbitrée	mediated transaction
3.3	transaction bilatérale	bilateral transaction
3.8	transaction d'affaires	business transaction
3.39	type d'emplacement	location type

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Clause 3 Number (1)	Term – French (2)	Term – English (3)
3.10	type d'entité de transaction d'affaires	business transaction entity type
3.26	type d'évènement économique	economic event type
3.29	type de ressource économique	economic resource type
3.66	typification	typification
3.61	vendeur	seller
3.7	Vue opérationnelle des affaires (BOV)	Business Operational View (BOV)

A.5 Organization of Annex A, "Consolidated matrix of terms and definitions"

NOTE One should consider Annex A:

- to be a matrix-based approach to the English and French language equivalents as found in any ISO or IEC standard wich is issued as an English/French side-by-side document (eg. the multipart ISO/IEC 2382, *Information technology — Vocabulary/Technologies de l'information — Vocabulaire*);
- an approach which is expandable for multilingual equivalency and human interface equivalency purposes; and,
- a necessary component in being able to reference any standard cited.

The terms/definitions are organized in matrix form in alphabetical order (English language). The columns in the matrix are as follows:

Col. No.	Use
1	ID as per this part of ISO/IEC 15944 as stated in Clause 3, i.e. as the "nnn" in "3.nnn"
2	Source. International Standard referenced or this part of ISO/IEC 15944.
3	ISO English Language - Term
4	Gender of the ISO English Language Term+
5	ISO English Language - Definition
6	ISO French Language - Term *
7	Gender of the French Language Term+
8	ISO French Language - Definition *

The primary reason for organizing the columns in this order is to facilitate the addition of equivalent terms/definitions in other languages as added sets of paired columns, (e.g., Spanish, Japanese, German, Russian, etc.).

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

+ The codes representing gender of terms in natural languages are those based on ISO/IEC 15944-5:2006, 6.2.6 titled "*Gender and Official Languages*". The codes used in Columns 4 and 7 are those based on the coded domain "15944-5:2006-01", titled "Codes representing Gender in Natural Languages". As follows:

- for ISO English, in Column 4, the gender code is "09" (= Not Applicable) since the English language does not have gender in its grammar; and

- for ISO French, in Column 7, the possible gender codes are "01" = masculine/masculine, "02" = feminine/féminine; or, "03" = neuter/neutre.

* Use of an asterisk (*) in Column 5 indicates that the International Standard referenced (other than this part of ISO/IEC 15944) in Column (5) does not have an ISO French language version. For these terms and definitions, this part of ISO/IEC 15944 is providing the ISO French language equivalent

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

A.6 Consolidated Matrix of ISO/IEC 15944-4 Terms and Definitions in English and French

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
1	ISO/IEC 15944-1:2002 (3.1)	agent	09	**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)".	mandataire	01	**Personne** agissant au nom d'une autre **Personne** à titre précis dans le contexte d'une **transaction d'affaires** NOTE Sont exclus les mandataires tels que les «automates» (ou les robots, bobots, etc.). Dans l'ISO/CEI 14662, les «automates» sont pris en compte et prévus, mais à titre de vue de services fonctionnels (FSV), où ils sont définis comme «domaine de traitement de l'information (IPD)».
2	ISO/IEC 11179-3:2003 (3.1.3)	attribute	09	characteristic of an **object** or **entity**	attribut	02	caractéristique d'un **objet** ou d'une **entité**
3	ISO/IEC 15944-4:2006 (3.03)	bilateral transaction	09	subtype of a **business transaction** where the **Persons** include only the **buyer** and the **seller**, or alternatively other **Persons** acting as **agents** for the **buyer** or **seller**	transaction bilatérale	01	sous-type de **transaction d'affaires** dans lequel les **Personnes** n'incluent que l'**acheteur** et le **vendeur**, ou alternativement d'autres **Personnes** à titre d'**agents** de l'**acheteur** et/ou du **vendeur**
4	ISO/IEC 14662:2004 (3.1.2)	business	09	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	affaires	02	série de **processus**, ayant chacun une finalité clairement définie, impliquant plus d'une **Personne**, réalisés par échange d'information enregistrée et tendant à l'accomplissement d'un objectif accepté par accord mutuel pour une certaine période de temps

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization © ISO/IEC 2007 – All rights reserved
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
5	ISO/IEC 15944-4:2006 (3.5)	business event	09	an occurrence in time that **partners** to a **business transaction** wish to monitor or control NOTE 1 Business events are the workflow tasks that business partners need to accomplish to complete a business transaction among themselves. As business events occur, they cause a business transaction to move through its various phases of planning, identification, negotiation, actualization, and post-actualization. NOTE 2 Occurrences in time can either be — internal as mutually agreed to among the parties to a business transaction; and/or — reference some common publicly available and recognized date/time referencing schema (e.g. one based on using ISO 8601 and/or ISO 19135).	événement d'affaires	01	circonstance temporelle que des **partenaires** dans une **transaction d'affaires** souhaitent surveiller ou contrôler NOTE 1 Les événements d'affaires sont les tâches de flux des travaux que les partenaires d'affaires doivent accomplir pour conclure une transaction d'affaires entre eux. Lorsque des événements d'affaires se produisent, ils obligent une transaction d'affaires à passer par les différentes étapes de planification, d'identification, de négociation, d'actualisation et de post-actualisation. NOTE 2 Les circonstances temporelles peuvent être — internes, par accord mutuel entre les parties d'une transaction d'affaires; et/ou, — une référence à un schéma de référencement horodateur communément reconnu et publiquement disponible (par exemple une basée sur l'utilisation de l'ISO 8601 et/ou de l'ISO 19135).
6	ISO/IEC 15944-4:2006 (3.6)	business location	09	geographic site where an **economic event** is deemed to occur with its attendant transfer of an **economic resource** from one **Person** to another.	emplacement d'affaires	01	lieu géographique où un **événement économique** est réputé se produire avec le transfert en attente d'une **ressource économique** d'une **Personne** à une autre
7	ISO/IEC 14662:2004 (3.1.3)	Business Operational View (BOV)	09	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**	Vue opérationnelle des affaires (BOV)	01	vue perspective sur les **transactions d'affaires**, restreinte à ceux des aspects relatifs à la prise par les **Personnes** de décisions et d'**engagements** concernant leurs **affaires** qui sont nécessaires pour décrire une **transaction d'affaires**
8	ISO/IEC 14662:2004 (3.1.4)	business transaction	09	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	transaction d'affaires	01	ensemble prédéterminé d'activités et/ou de **processus** menées par des **Personnes** et/ou de procédures qu'elles suivent, déclenché par une **Personne** qui vise à atteindre dans les **affaires** un but expressément partagé, terminé lorsqu'est observée une des conclusions convenues par toutes les **Personnes** prenantes, bien que cette observation puisse être partiellement implicite

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
9	ISO/IEC 15944-4:2006 (3.09)	business transaction entity	09	computable representation of any real-world **entity** that participates, occurs or is **materialized** during a **business transaction**	entité de transaction d'affaires	01	représentation calculable de toute **entité** du monde réel qui participe à une **transaction d'affaires**, se produit ou est **matérialisée** durant celle-ci
10	ISO/IEC 15944-4:2006 (3.10)	business transaction entity type	09	abstract specification of a **business transaction entity**, detailing its recommended characteristics, its recommended methods and its recommended life-cycle states NOTE A business transaction entity type will usually specify the types of business events that cause a business transaction entity of this type to proceed through its different states as the business transaction itself progresses through its phases of planning, identification, negotiation, actualization and post-actualization.	type d'entité de transaction d'affaires	01	spécification abstraite d'une **entité de transaction d'affaires** détaillant ses caractéristiques recommandées, ses méthodes recommandées et ses états de cycle de vie recommandés NOTE Un type d'entité de transaction d'affaires spécifie généralement les types de transaction d'affaires qui amènent une entité de transaction d'affaires de ce type à passer par ses différents états au fur et à mesure que la transaction d'affaires elle-même progresse dans ses phases de planification, d'identification, de négociation, d'actualisation et de post-actualisation.
11	ISO/IEC 15944-1:2002 (3.8)	buyer	09	**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	acheteur	02	**Personne** désirant acquérir un bien, service et/ou droit en fournissant une valeur équivalente acceptable, généralement de l'argent, à la **Personne** qui offre ce bien, service et/ou droit
12	ISO/IEC 15944-4:2006 (3.12)	collabora-tion space	09	**business** activity space where an **economic exchange** of valued resources is viewed independently and not from the perspective of any business **partner** NOTE In collaboration space, an individual partner's view of economic phenomena is de-emphasized. Thus, the common use business and accounting terms like purchase, sale, cash receipt, cash disbursement, raw materials and finished goods is not allowed because they view resource flows from a participant's perspective.	espace de collabora-tion	01	espace d'activité d'**affaires** dans lequel un **échange économique** de ressources valorisées est considéré indépendamment et non du point de vue de tout **partenaire** d'affaires NOTE Dans l'espace de collaboration, la perspective qu'un partenaire individuel a d'un phénomène économique est désaccentuée. Ainsi, les termes d'affaires et de comptabilité communément utilisés tels qu'achat, vente, reçu de caisse, décaissement, matières premières, produits finis, etc. ne sont pas autorisés à être utilisés car ils considèrent les flux de ressources du point de vue d'un participant.

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale
© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS

© ISO/IEC 2007 – All rights reserved

Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
13	ISO/IEC 15944-1:2002 (3.9)	commit-ment	09	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	engage-ment	01	création ou acceptation d'un droit, d'une obligation, d'une dette ou d'une **responsabilité** par une **Personne** qui est apte à appliquer le domaine juridictionnel conformément à laquelle l'engagement est pris
14	ISO/IEC 15944-1:2002 (3.11)	constraint	09	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".	contrainte	01	règle, énoncée explicitement, qui prescrit, limite, régit ou spécifie tout aspect d'une **transaction d'affaires**. NOTE 1 Les contraintes sont spécifiées comme des règles faisant partie de composantes de scénarios d'EDI-ouvert, c.-à-d. d'attributs de scénarios, de rôles, et/ou de faisceaux d'information. NOTE 2 Les contraintes doivent avoir des identificateurs uniques et non ambigus afin d'être enregistrées pour application dans l'EDI-ouvert. NOTE 3 Une contrainte peut faire l'objet d'un accord entre des parties (clause du contrat), et est par conséquent considérée comme «contrainte interne». Une contrainte peut aussi être imposée à des parties (par exemple des lois, des règlements, etc.), et est par conséquent considérée comme une «contrainte externe».
15	ISO/IEC 15944-4:2006 (3.15)	custody	09	association between a **Person** and an **economic resource** where the **Person** has physical control only over the resource or controls access NOTE Having custody of a good, service and/or right does not imply and is differentiated from having economic control of the same (e.g. a Person may have economic control of a good even though it is not under its custody.	garde	01	association entre une Personne et une ressource économique dans laquelle la Personne exerce un contrôle physique uniquement sur la ressource ou en contrôle l'accès NOTE Avoir la garde d'un produit, d'un service et/ou d'un droit n'implique pas, et est différencié, d'exercer un contrôle économique sur celui-ci (par exemple, une Personne peut exercer un contrôle économique sur un bien même si celui-ci n'est pas sous sa garde).

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
16	ISO/IEC 15944-1:2002 (3.14)	data	09	⟨business transaction⟩ representations of **recorded information** that are being prepared or have been prepared in a form suitable for use in a computer system.	donnée	01	⟨transaction d'affaires⟩ représentations d'**informations enregistrées** qui sont préparées ou l'ont été de façon à pouvoir être traitée par un ordinateur
17	ISO/IEC 15944-4:2006 (3.17)	defined market model	09	trade model where the **buyer** and **seller** accept the entry terms of a specified market in advance and where that market has an accepted and recognized source for **business** rules and conventions NOTE In a defined market, the phases of a business transaction – planning, identification, negotiation, actualization and post-actualization – are governed by the rules and conventions of the particular defined market.	modèle de marché défini	01	modèle de marché dans lequel l'**acheteur** et le **vendeur** acceptent d'avance les termes d'un marché spécifié et dans lequel ce marché est couvert par des règles et des conventions d'**affaires** acceptées et reconnues NOTE Dans un marché défini, les phases d'une transaction d'affaires (la planification, l'identification, la négociation, l'actualisation et la post-actualisation) sont régies par les règles et les conventions de ce marché défini particulier.
18	ISO/IEC 15944-4:2006 (3.18)	duality	09	association between **economic events** where one is the legal or economic consideration for the other in an exchange NOTE Duality is the conceptual analog of double entry in traditional bookkeeping. For example, a shipment from a partner requires a matching flow in, like a payment, to balance accounts between the parties.	dualité	01	association entre des **événements économiques** dans laquelle l'une est la considération légale ou économique de l'autre au cours d'un échange NOTE La dualité est l'équivalent conceptuel d'une double entrée en tenue de comptabilité traditionnelle. Par exemple une expédition par un partenaire exige un flux correspondant tel qu'un versement pour solder les comptes entre les parties.
19	ISO/IEC 15944-4:2006 (3.19)	economic agreement	09	arrangement of reciprocated **economic commitments** between two **partners** where the abstract specification of terms of trade is incomplete and not subject to legal enforcement	accord économique	01	accord d'**engagement économique** réciproque entre deux **partenaires** dans lequel la spécification abstraite des termes de l'échange est incomplète et non sujette à une exécution légale
20	ISO/IEC 15944-4:2006 (3.20)	economic bundle	09	association between **economic commitments** and the **economic contract** that bundles those promises and binds them to the two **partners** who negotiated them	faisceau économique	01	association entre des **engagements économiques** et le **contrat économique** qui groupe ces promesses et les lie aux deux **partenaires** qui les ont négociées

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS

© ISO/IEC 2007 – All rights reserved

Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
21	ISO/IEC 15944-4:2006 (3.21)	economic claim	09	expectation of one **Person** to receive a future inflow of **economic resources** from another **Person** because of an **economic exchange** which is currently incomplete	réclamation économique	01	attente qu'a une **Personne** de recevoir un futur flux de **ressources économiques** d'une autre **Personne** pour cause d'**échange économique** encore incomplet
22	ISO/IEC 15944-4:2006 (3.22)	economic commitment	09	type of **commitment** by one **Person** to transfer **economic resources** to another **Person** at some specified point in the future	engagement économique	01	type d'**engagement** par une **Personne** à transférer des **ressources économiques** à une autre **Personne** à un moment donné dans le futur
23	ISO/IEC 15944-4:2006 (3.23)	economic contract	09	bundling of reciprocated **economic commitments** between two **partners** where the abstract specification of the proposed **economic exhange** is deemed to be complete	contrat économique	01	groupement d'**engagements économiques** réciproques entre deux **partenaires** dans lequel la spécification abstraite de l'**échange économique** proposé est jugée complète
24	ISO/IEC 15944-4:2006 (3.24)	economic control	09	association between a **Person** and an **economic resource** where the **Person** either owns the resource or is otherwise able to derive economic benefit (utility) from it	contrôle économique	01	association entre une **Personne** et une **ressource économique** dans laquelle la **Personne** est propriétaire de la ressource ou est en mesure d'en retirer un avantage (ou une utilité) économique
25	ISO/IEC 15944-4:2006 (3.25)	economic event	09	occurrence in time wherein ownership of an **economic resource** is transferred from one **Person** to another **Person** NOTE Occurrences in time can either — be internal as mutually agreed to among the parties to a business transaction; and/or — reference some common publicly available and recognized date/time referencing schema (e.g. one based on using ISO 8601 and/or ISO 19135).	événement économique	01	circonstance temporelle dans laquelle la propriété d'une **ressource économique** est transférée d'une **Personne** à une autre **Personne** NOTE Les circonstances temporelles peuvent être — internes, par accord mutuel entre les parties d'une transaction d'affaires, et/ou — une référence à un schéma de référencement horodateur communément reconnu et publiquement disponible (par exemple une basée sur l'utilisation de l'ISO 8601 et/ou de l'ISO 19135).

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
26	ISO/IEC 15944-4:2006 (3.26)	economic event type	09	abstract specification of an **economic event** where its grouped properties can be designated without attachment to an actual, specific occurrence in time NOTE Example of attributes at the type level for events might be expected-duration or standard-pricing-percentage.	type d'événe-ment éco-nomique	01	spécification abstraite d'un **événement économique** dans laquelle ses propriétés groupées peuvent être désignées sans rattachement à un réel événement temporel spécifique NOTE La durée prévue ou le pourcentage de tarification normalisée sont un exemple d'attributs au niveau du type d'événements.
27	ISO/IEC 15944-4:2006 (3.27)	economic exchange	09	type of a **business transaction** where the goal is an exchange of **economic resources** between two **Persons** where both parties derive higher utility after the completed **business transaction** NOTE An economic exchange usually involves two economic events with different types of economic resources flowing in opposite directions. For example, an exchange of cash for a good involves a shipment with a requited payment following.	échange éco-nomique	01	type de **transaction d'affaires** dans lequel l'objectif est un échange de **ressources économiques** entre deux **Personnes** qui en obtiennent une plus grande utilité une fois la **transaction d'affaires** achevée NOTE Un échange économique implique généralement deux événements économiques au cours desquels les ressources s'écoulent dans des directions opposées. Par exemple un échange d'espèces contre un bien implique une expédition accompagnée d'une opération avec contrepartie.
28	ISO/IEC 15944-4:2006 (3.28)	economic resource	09	good, right or service of value, under the control of a **Person**	ressource éco-nomique	01	produit, droit ou service de valeur, sous le contrôle d'une **Personne**
29	ISO/IEC 15944-4:2006 (3.29)	economic resource type	09	abstract specification of an **economic resource** where its grouped properties can be designated without attachment to an actual, specific **economic resource** NOTE Example attributes at the type level for an economic resource like an automobile might include its designated fuel capacity or its maximum expected range.	type de ressource éco-nomique	01	spécification abstraite d'une **ressource économique** dans laquelle ses propriétés groupées peuvent être désignées sans rattachement à une réelle **ressource économique** spécifique NOTE La capacité du réservoir de carburant d'une automobile ou son autonomie sont un exemple d'attributs au niveau du type d'une ressource économique.

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization © ISO/IEC 2007 All rights reserved
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
30	ISO/IEC 15944-4:2006 (3.30)	economic role	09	abstract specification of a **Person** for economic purposes where its grouped properties can be designated without attachment to an actual **Person** NOTE An example economic role might be qualified buyer or approved shipper.	rôle économique	01	spécification abstraite d'une **Personne** à des fins économiques dans laquelle ses propriétés groupées peuvent être désignées sans rattachement à une **Personne** réelle NOTE Un acheteur qualifié ou un expéditeur approuvé sont un exemple de rôle économique, c-à-d. d'un point de vue économique uniquement.
31	ISO/IEC 15944-4:2006 (3.31)	economic specification	09	association between an **economic commitment** and the abstract properties of an **economic event**, an **economic resource**, a **partner** or a **business location**	spécification économique	01	association entre un **engagement économique** et les propriétés abstraites d'un **événement économique**, d'une **ressource économique**, d'un **partenaire** ou d'un **emplacement d'affaires**
32	ISO/IEC 2382-17:1999 (17.02.05)	entity	09	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.	entité	01	objet ou association d'objets, concret ou abstrait, existant, ayant existé ou pouvant exister EXEMPLE Personne, événement, idée, processus, etc. NOTE Une entité existe que l'on dispose de données à son sujet ou non.
33	ISO/IEC 15944-1:2002 (3.23)	external constraint	09	**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.	contrainte externe	01	**contrainte** qui l'emporte sur les **contraintes internes** dans une **transaction d'affaires**, c.-à-d. qui est externe à celles convenues entre les parties dans une **transaction d'affaires** NOTE 1 Normalement, les contraintes externes découlent des lois, règlements, décrets, traités, conventions ou autres instruments semblables.

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
				NOTE 2 Other sources of external constraints are those of a sectorial nature, those which pertain to a particular jurisdiction or 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 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".			NOTE 2 D'autres sources de contraintes externes sont de nature sectorielle, qui relèvent d'une juridiction particulière ou de conventions d'affaires convenues mutuellement, (par exemple INCOTERMS, les échanges, etc.). NOTE 3 Des contraintes externes peuvent s'exercer sur la nature des biens, des services, et/ou au droit accordé dans une transaction d'affaires. NOTE 4 Des contraintes externes peuvent exiger qu'une partie dans une transaction d'affaires réponde aux exigences spécifiques d'un rôle. EXEMPLE 1 Seul un médecin diplômé peut prescrire une ordonnance pour un médicament contrôlé. EXEMPLE 2 Seul un courtier en actions accrédité peut effectuer des transactions à la bourse de New-York. EXEMPLE 3 Seule une entreprise attitrée peut transporter des déchets dangereux. NOTE 5 Lorsque les faisceaux d'information, y compris leurs composantes sémantiques, d'une transaction d'affaires constituent l'ensemble d'une transaction d'affaires (par exemple à des fins juridiques ou comptables), toutes les contraintes doivent être enregistrées. EXEMPLE Il peut exister une exigence juridique ou comptable de conserver la totalité des documents enregistrés relatifs à une transaction d'affaires, c.-à-d. les faisceaux d'information échangés, comme un «enregistrement». NOTE 6 Une contrainte externe minimale applicable à une transaction d'affaires exige souvent de distinguer si une Personne, c.-à-d. une partie dans une transaction d'affaires, est un «individu», une «organisation» ou une «administration publique». Par exemple, les droits de protection de la vie privée ne s'appliquent qu'à une Personne en tant qu' «individu».

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS

© ISO/IEC 2007 – All rights reserved

Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
34	ISO/IEC 15944-4:2006 (3.34)	fulfillment	09	association between an **economic commitment** and an **economic event** where the event executes the promised resource flow from one **Person** to another NOTE For example, a delivery to a customer would fulfill that customer's sale order.	exécution	01	association entre un **engagement économique** et un **événement économique** dans laquelle l'événement exécute le flux de la ressource promise d'une **Personne** à une autre NOTE Par exemple, la livraison à un client exécute la commande de celui-ci.
35	ISO/IEC 15944-4:2006 (3.35)	governed	09	association between an **economic agreement** and the **business transaction** whose conduct and phases are subject to that **economic agreement** of the **business transaction**	régi	02	association entre un **accord économique** et la **transaction d'affaires** dont la conduite et les phases sont sujettes à cet **accord économique** d'une **transaction d'affaires**
36	ISO/IEC 15944-1:2002 (3.28)	individual	09	**Person** who is a human being, i.e. a natural person, who acts as a distinct indivisible **entity** or is considered as such	individu	01	**Personne** qui est un être humain, c-à-d. une personne physique, qui agit à titre d'**entité** indivisible distincte ou qui est considérée comme telle
37	ISO/IEC 14662:2004 (4.1.2.2)	information bundle (IB)	09	formal description of the semantics of the **recorded information** to be exchanged by **Open-edi Parties** playing **roles** in an **Open-edi scenario**	faisceau d'informa-tions (IB)	01	description formelle de la valeur sémantique des **informations enregistrées** échangées entre **partenaires** d'**EDI-ouvert** jouant un rôle dans un scénario d'**EDI-ouvert**
38	ISO/IEC 15944-1:2002 (3.33)	internal constraint	09	**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 modeling and re-use of scenario components of a business transaction for which there are no external constraints or restrictions on the nature of the conduct of a business transaction other than those mutually agreed to by the buyer and seller.	contrainte interne	01	**contrainte** qui fait partie de l'**engagement** convenu mutuellement entre les parties d'une **transaction d'affaires** NOTE Les contraintes internes sont volontaires. Elles présentent une vue simplifiée de modélisation et de réutilisation des composantes de scénario d'une transaction d'affaires sans contraintes ou restrictions externes quant à la conduite d'une transaction d'affaires autres que celles convenues mutuellement entre l'acheteur et le vendeur.
39	ISO/IEC 15944-4:2006 (3.39)	location type	09	abstract specification of a **business location** where its grouped properties can be designated without attachment to an actual place NOTE An example location type might be an accepted shipping facility or approved hospital location	type d'emplace-ment	02	spécification abstraite d'un **emplacement d'affaires** dans laquelle ses propriétés groupées peuvent être désignées sans rattachement à un emplacement réel NOTE Par exemple, une installation d'expédition acceptée ou un emplacement d'hôpital approuvé.

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
40	ISO/IEC 15944-4:2006 (3.40)	materialized	09	association between an **economic event** and an **economic claim** where the occurrence of the **economic event** causes the **economic claim** to come into existence	matérialisé	02	association entre un **événement économique** et une **réclamation économique** dans laquelle la production d'un **événement économique** amène la **réclamation économique** à exister
41	ISO/IEC 15944-4:2006 (3.41)	mediated transaction	09	subtype of a **business transaction** where a **third party** mediates between the **partners** as mutually agreed to by the **partners**	transaction arbitrée	01	sous-type de **transaction d'affaires** dans laquelle une **tierce partie** arbitre entre les **partenaires** selon un accord mutuel entre les **partenaires**
42	ISO/IEC 1087-1:2000 (3.1.1)	object	09	anything perceivable or conceivable NOTE Objects may be material (e.g. an engine, a sheet of paper, a diamond), immaterial (e.g. a conversion ratio, a project plan) or imagined (e.g. a unicorn).	objet	01	tout ce qui peut être perçu ou conçu NOTE Les objets peuvent être matériels (par exemple un moteur, une feuille de papier, un diamant), immatériels (par exemple un rapport de conversion, un plan de projet) ou imaginaires (par exemple une licorne).
43	ISO/IEC 14662:2004 (3.1.9)	Open-edi	09	**electronic data interchange** among multiple autonomous **Persons** to accomplish an explicit shared **business** goal according to **Open-edi** standards	EDI-ouvert	01	**échange de données informatisé** par application des normes d'**EDI-ouvert** entre plusieurs **Personnes** autonomes visant un objectif d'**affaires** explicitement partagé
44	ISO/IEC 15944-4:2006 (3.44)	Open-edi Business Transaction Ontology (OeBTO)	09	formal, rule-based specification and definition of the concepts pertaining to **business transactions** and scenarios and the relationships that hold among these concepts	Ontologie de transaction d'affaires de l'EDI ouvert (OeBTO)	02	spécification et définition formelles, basé sur des règles, des concepts relatifs aux **transactions et scénarios d'affaires**, et rapports qui existent entre ces concepts
45	ISO/IEC 14662:2004 (3.1.11)	Open-edi Party (OeP)	09	**Person** that participates in **Open-edi**. NOTE Often in ISO/IEC 15944 referred to generically as "party" or "parties" for any entity modeled as a Person as playing a role in Open-edi scenarios.	Partenaire d'EDI-ouvert (OeP, Open-edi Party)	01	**Personne** participant à l'**EDI-ouvert** NOTE Dans l'ISO/CEI 15944, souvent mentionnée de façon générique comme «partie» ou «parties» pour toute entité modélisée comme une Personne jouant un rôle dans les scénarios d'EDI-ouvert.
46	ISO/IEC 14662:2004 (3.1.12)	Open-edi scenario (OeS)	09	formal specification of a class of **business transactions** having the same **business** goal	scénario d'EDI-ouvert (OeS)	01	spécification formelle d'une classe de **transactions d'affaires** partageant le même objectif d'**affaires**

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization ©ISO/IEC 2007 – All rights reserved
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
47	ISO/IEC 15944-1:2002 (3.1)	organiz-ation	09	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: a) an organization incorporated under law. b) 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; c) groupings of the above types of organizations where there is a need to identify these in information interchange.	organi-sation	01	cadre unique d'autorité dans lequel une ou plusieurs personnes agissent ou sont désignées pour agir afin d'atteindre un certain but NOTE Les types d'organisations couverts par la présente partie de l'ISO/CEI 15944 comprennent les exemples suivants: a) organisation constituée suivant des formes juridiques prévues par la loi; b) organisation ou activités fournissant des biens et/ou des services, tels que 1) sociétés en participation, 2) organismes sociaux ou autres à but non lucratif dans lesquels le droit de propriété ou le contrôle est dévolu à un groupe de personnes, 3) entreprises individuelles, 4) administrations et organismes de l'état; c) regroupements des organisations des types ci-dessus, lorsqu'il est nécessaire de les identifier pour l'échange d'informations.
48	ISO/IEC 6523-1:1998 (3.2)	organiz-ation part	09	department, service or other **entity** within an **organization**, which needs to be identified for information interchange	partie d'organi-sation	01	département, service ou autre **entité** au sein d'une **organisation**, qu'il est nécessaire d'identifier pour l'échange d'informations
49	ISO/IEC 15944-1:2002 (3.46)	organiz-ation Person	09	**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.	Personne d'organi-sation	01	partie d'une **organisation** qui a les propriétés d'une **Personne** et est ainsi capable de prendre des **engagements** au nom de cette **organisation** NOTE 1 Une organisation peut avoir une ou plusieurs Personnes d'organisation. NOTE 2 Une Personne d'organisation est considérée représenter une organisation et agir en son nom, et ce à titre de capacité spécifiée. NOTE 3 Une Personne d'organisation peut être une «personne physique» telle qu'un employé ou un agent de l'organisation. NOTE 4 Une Personne d'organisation peut être une personne morale, c.à-d. une autre organisation.

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
50	ISO/IEC 15944-4:2006 (3.50)	participates	09	association between an **economic event** and each of the two **Persons** participating in the **economic event** NOTE Usually there is a “from” association and a “to” association, depending upon the direction of the flow of the economic resource.	participe	02	association entre un **événement économique** et chacune des deux **Personnes** participant à un **événement économique** NOTE En général, il y a une association «de» et une association «à», selon la direction du flux de la ressource économique.
51	ISO/IEC 15944-4:2006 (3.51)	partner	09	subtype of **Person** that includes **buyer** and **seller**	partenaire	02	sous-type de **Personne** qui inclut l’**acheteur** et le **vendeur**
52	ISO/IEC 15944-1:2002 (3.47)	Person	09	**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 jurisdictions. NOTE 2 Person is capitalized to indicate that it is being utilized 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 subtypes of Person, namely “individual”, “organization”, and “public administration”.	Personne	01	**entité**, c-à-d. une personne physique ou morale, reconnue par la loi comme ayant des droits et des devoirs, capable de faire des **engagements**, d'assumer et de remplir les obligations résultantes, et capable d'être tenue responsable de ses actions NOTE 1 Parmi les synonymes de «personne morale», on trouve «personne juridique», «personne fictive», «corporation», etc., selon la terminologie utilisée par les juridictions compétentes. NOTE 2 «Personne» prend la majuscule pour indiquer que ce terme est utilisé tel que défini officiellement dans les normes et pour le différencier de son usage ordinaire. NOTE 3 Les exigences minimales et communes applicables aux transactions d'affaires obligent souvent à faire une différence entre les trois sous-catégories communes de «Personne», notamment «individu», «organisation», «administration publique».
53	ISO/IEC 15944-1:2002 (3.53)	process	09	series of actions or events taking place in a defined manner leading to the accomplishment of an expected result	processus	01	série d'actions ou d'événements qui se produisent d'une manière définie et qui aboutissent à un résultat attendu.
54	ISO/IEC 15944-1:2002 (3.54)	public administ-ration	09	**entity**, i.e. a **Person**, which is an **organization** and has the added **attribute** of being authorized to act on behalf of a **regulator**	administra-tion publique	01	**entité**, c.-à-d. une **Personne**, qui est une **organisation** et a l'**attribut** supplémentaire d'être autorisé à agir au nom d'une **autorité de réglementation**

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization © ISO/IEC 2007 – All rights reserved
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Identification		ISO English			ISO French		
Term ID	Source	Term	G	Definition	Term	G	Definition
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
55	ISO/IEC 15944-4:2006 (3.55)	reciprocal	09	association between **economic commitments** where the promise by one **partner** to execute an **economic resource** transfer in the future is reciprocated by the other **partner** promising a requited transfer in the opposite direction	réciproque	02	association entre des **engagements économiques** dans laquelle la promesse d'un **partenaire** d'exécuter un transfert de **ressource économique** dans le futur est réciproquée par l'autre **partenaire** qui promet un transfert avec contrepartie dans la direction opposée
56	ISO/IEC 15944-1:2002 (3.56)	recorded information	09	information that is recorded on or in a medium irrespective of form, recording medium or technology utilized, 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: — any form of recorded information, means of recording, and any medium on which information can be recorded; and — all types of recorded information including all data types, instructions or software, databases, etc.	information enregistrée	01	information enregistrée sur ou dans un support quelle que soit sa forme, le support de stockage ou la technologie utilisés, et de façon à permettre son stockage et son extraction NOTE 1 Cette définition est générique et indépendante de toute ontologie (par exemple le point de vue des «faits» par rapport aux «données», à «l'information», aux «renseignements», à la «connaissance», etc. NOTE 2 Dans l'utilisation du terme «information», tous les attributs de ce terme sont hérités dans cette définition. NOTE 3 Cette définition couvre les élément suivants: — toute forme d'information enregistrée, tout moyen d'enregistrement, et tout support sur lequel l'information peut être enregistrée; et — tous types d'information enregistrée, y compris tous les types de données, instructions ou logiciels, bases de données, etc.
57	ISO/IEC 15944-1:2002 (3.59)	regulator	09	**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	autorité de réglemen-tation	02	**Personne** autorisée à prescrire des **contraintes externes** qui servent de principes, de politiques ou de règles régissant ou prescrivant le comportement des **Personnes** concernées par une **transaction d'affaire**, ainsi que la fourniture des biens, services et/ou droits échangés
58	ISO/IEC 15944-4:2006 (3.58)	resource-flow	09	association between an **economic event** and an **economic resource** NOTE A common example would be a resource-flow between some inventory and the shipment that caused control of that inventory to flow from one Person to another.	flux des ressources	01	association entre un **événement économique** et une **ressource économique** NOTE le flux des ressources entre un inventaire et l'expédition qui a permis à cet inventaire de fluer d'une Personne à une autre en est exemple commun.

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
59	ISO/IEC 15944-4:2006 (3.59)	responsib-ility	09	association between **Persons** where one is responsible for the other or between a **Person** and an **organization Person** where that **Person** is assigned NOTE Subtypes of Persons include individuals, organizations and public administrations. An "individual" is non-divisible but organizations and public administrations are and as such will assign specific responsibilities to organization Persons (see further Clause 6.2.7 and Figure 17 in ISO/IEC 15944-1:2002).	responsa-bilité	01	association entre des **Personnes** dans laquelle l'une est responsable devant l'autre, ou entre une **Personne** et une **Personne d'organisation** à laquelle cette **Personne** est attitrée NOTE Les sous-types de Personnes incluent les individus, les organisations et les administrations publiques. Un «individu» est indivisible, mais les organisations et les administrations publiques sont divisibles et en tant que telles, peuvent attribuer des responsabilités spécifiques à des Personnes d'organisation (Voir plus loin 6.2.7 et la Figure 17 dans l'ISO/CEI 15944-1:2002).
60	ISO/IEC 14662:2004 (4.1.2.1)	role	09	specification which models an external intended behaviour (as allowed within a scenario) of an **Open-edi Party**	rôle	01	spécification qui modélise le comportement externe attendu d'un **partenaire** d'**EDI-ouvert** dans le cadre permis par un scénario
61	ISO/IEC 15944-1:2002 (3.62)	seller	09	**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	vendeur	01	**Personne** qui vise à fournir, volontairement ou suite à une demande, un bien, un service et/ou un droit à une autre **Personne**, et qui reçoit en retour une valeur équivalente acceptable, habituellement en argent
62	ISO/IEC 14662:2004 (4.1.2.2)	Semantic Component (SC)	09	unit of **recorded information** unambiguously defined in the context of the **business** goal of the **business transaction** NOTE An SC may be atomic or composed of other SCs.	Composant sémantique (SC)	01	unité d'**information enregistrée** définie de manière non ambigué dans le contexte de l'objectif d'**affaires** d'une **transaction d'affaires** NOTE Un SC peut être atomique ou composé d'autres SC.
63	ISO/IEC 15944-4:2006 (3.63)	settlement	09	association between a requiting **economic event** and an **economic claim** where the occurrence of the event causes the **economic claim** to expire	règlement	01	association entre un **événement économique** avec contrepartie et une **réclamation économique** dans laquelle la production de l'évènement occasionne l'expiration de la **réclamation économique**
64	ISO/IEC 15944-4:2006 (3.64)	site	09	association between an **economic event** and the **business location** where the transfer of **economic resources** involved in that event is deemed to have occurred	site	01	association entre un **événement économique** et l'**emplacement d'affaires** où le transfert des **ressources économiques** dont il s'agit dans cet évènement est sensé s'être produit

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale
© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization © ISO/IEC 2007 All rights reserved
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Identification		ISO English			ISO French		
Term ID	**Source**	**Term**	**G**	**Definition**	**Term**	**G**	**Definition**
(1)	(2)	(3)	(4)	**(5)**	(6)	(7)	**(8)**
65	ISO/IEC 15944-1:2002 (3.65)	third party	09	**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.	tierce partie	01	**Personne**, autre que les deux **Personnes** concernées en premier lieu par une **transaction d'affaires** et qui n'est le **mandataire** d'aucune d'elles, et qui joue un **rôle** ou remplit une fonction spécifés, selon l'accord mutuel des deux **Personnes** concernées en premier lieu, ou le résultat de **contraintes externes** NOTE Il est entendu que plus de deux Personnes peuvent parfois être les parties de première part dans une transaction d'affaires.
66	ISO/IEC 15944-4:2006 (3.66)	typification	09	association between a concrete **entity** and the abstract specification of its grouped properties	typification	01	association entre une **entité** concrète et la spécification abstraite de ses propriétés groupées
67	ISO/IEC 15944-4:2006 (3.67)	undefined market model	09	trade model where participants are not registered in advance and where that market does not have accepted and recognized sources or business rules and conventions	modèle de marché indéfini	01	modèle d'échanges dans lequel les participants ne sont pas enregistrés d'avance et dans lequel ce marché n'a pas de sources acceptées et reconnues concernant les règles et les conventions d'affaires

Annex B
(informative)

REA Model Background

B.1 REA (Resource-Event-Agent) Ontology Introduction [21)]

Ontology, according to the most generally accepted e-commerce definition of that word, is a "specification of a conceptualization" [8]. The REA (Resource-Event-Agent) ontology is a specification of the declarative semantics involved in a business process. The theory behind REA came initially from the field of accounting where REA was first introduced, but its components clearly have microeconomic origins with specific ties in many instances to the use of economic definitions in the practice of building enterprise-wide information systems. In UN/CEFACT work, all of the REA ontology definitions are applied to the collaborative space between enterprises where market exchanges occur in closely synchronized fashion among two or more trading partners.

In its most simple form without a high degree of precision, REA can be portrayed as a UML class diagram with associations and generalizations relating the object classes. The intent of this annex is to display REA simply and to explain its basic rationale. To do so, the annex will use a set of three figures (Figures B.1, B.2 and B.3), plus two summary figures. The most advanced of the UML diagrams (Figure B.3) is a good overall guide to the BRV semantics, given both here and in the Unified Modeling Methodology (UMM) of UN/CEFACT.

B.2 The Basic REA Ontology

The Basic REA model was first published in the July 1982 issue of The Accounting Review [11], the most prominent, most reliable, and most tightly controlled outlet for theoretical-based accounting work in the world. Its basic premises have withstood all theoretical challenges in the 20 years since, and its components are used extensively in a variety of educational, practical, and theoretical contexts. The REA model work was given the first (and thus far only) *Seminal Contribution to the Accounting Information Systems Literature Award* in 1996 by the American Accounting Association (AAA), and in 2003, its use as a model for teaching enterprise information systems was awarded the *Innovation in Accounting Education Award*, also from the AAA. There are a number of textbooks in worldwide use that feature REA as a pattern-oriented teaching framework.

Figure B.1 illustrates the basic class structure of REA ontology. The left-to-right configuration of economic Resources, economic Events, and economic Agents (renamed in UMM as "Partner") in a typical business collaboration pattern is the source of the model's REA name.

A successful business collaboration involves first and foremost two types of Economic Events, each of which details the Economic Resources involved in an exchange between two Trading Partners. For example, a Supplier (Trading Partner) transfers ownership of an Automobile (Economic Resource) to a Customer (Trading Partner) in return for which (duality association) the Customer will provide Money (Economic Resource) to the Supplier. There are two mirror-image instantiations of the object pattern shown in Figure B.1 where one transfer represents the legal or economic consideration given for the other.

21) The text of this annex has been adopted from the UN/CEFACT Simple Guide to the UMM, 2003.

--`,,```,,,,````-`-`,,`,,`,`,,`---
© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

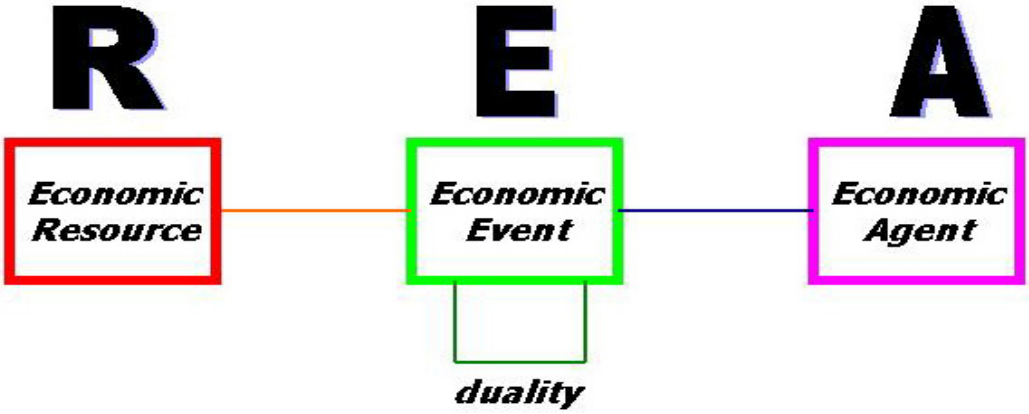


Figure B.1 — Basic REA Ontology

The declarative semantics shown here are central to all trading relationships. Economic Resources are objects that have value and are under the control of one of the two collaborative agents. Trading partners always expect requited transfers of resources when they engage in commerce. Hence, Figure B.1 is a pattern for all economic exchanges [2].

B.3 Adding Commitments to the Basic Exchange Ontology

In electronic commerce, the actual trading phase of an exchange is accommodated well by the object structure shown above in Figure B.1. However, trading partners in long-term relationships need more trusted and predictable structures where both parties contract for their exchange behavior in advance. The REA ontology accommodates this expansion with the addition of the classes shown as Economic Commitments, Economic Contract, and Agreement in Figure B.2.

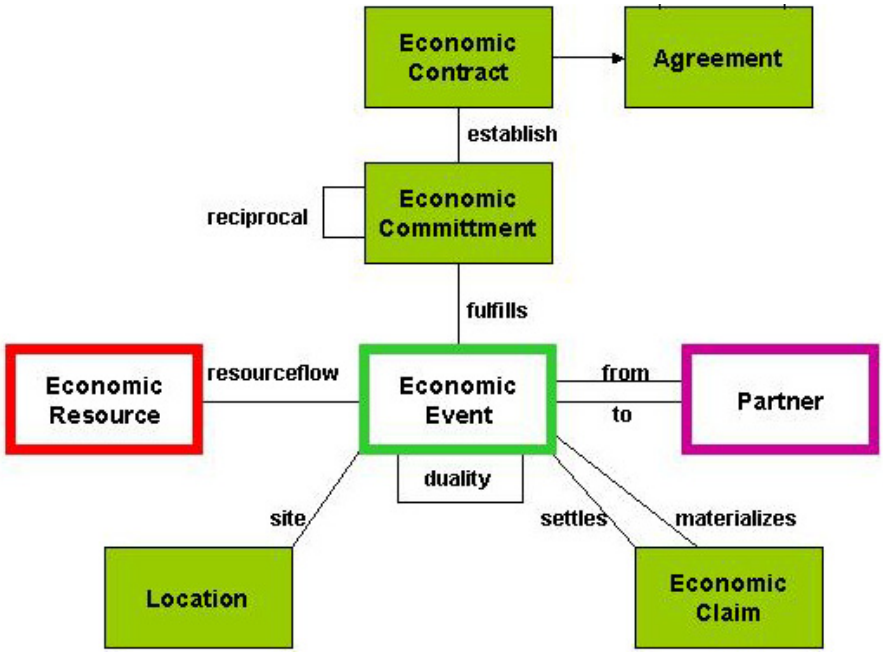


Figure B.2 — REA Ontology with Commitments

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

A Commitment is a promise by a Trading Partner to initiate an Economic Event in the future. Performing the Economic Events fulfills that Commitment. Commitments should always be reciprocated by the other Trading Partner who commits to initiate another type of Economic Event in return. An Economic Contract is a bundle of reciprocating commitments between Trading Partners who bind themselves to one or more economic exchanges in the future. A Contract is a subtype of the more general object class called Agreement, and Agreements can regulate other Agreements.

In the case of the automobile-for-money exchanges discussed in the prior section, Commitments would involve the Customer agreeing to accept delivery of an Automobile on a certain date in return for which he or she would be contractually obligated to making a series of Cash payments to the Supplier for that purchase.

In the bottom part of Figure B.2, two additional objects of the REA ontology are illustrated: Claims and Locations.

- Materialization of Claims is sometimes needed when Trading Partners insist on documentation of partially completed exchanges (for example, when a Customer takes possession of an Automobile before paying for it in full). If needed, Claims can be instantiated by documents like invoices or by accounting artifacts like accounts-receivable. Their inclusion here is more a matter of business custom than ontological completeness.
- A Location is another object that is sometimes needed to fill out the specification for a full economic transfer. Locations simply identify the place where Economic Events take place.

The economic and ontological foundations of commitments are explained more completely by Geerts and McCarthy [4].

B.4 Adding Types to the Basic REA Exchange Ontology

The object pattern portrayed in Figure B.2 above is primarily descriptive in the sense that it illustrates what actually occurred in an economic exchange or what has been committed to. In the UMM, these descriptive components have been augmented by prescriptive components that allow the specification of control policies or collaboration patterns. These prescriptive components are enabled by the inclusion of type images of the basic descriptive objects [3]. The class diagram of Figure B.3 shows these additions.

The addition of Types to Figure B.3 proceeds in two stages:

- The three base descriptive classes – Economic Resource, Economic Event, and Partner (Economic Agent) – have classes added for their types. These new classes are connected to the descriptive objects by typifies associations. An example of a Resource Type could be different models of automobiles. An example of Economic Event Type could be the classes of retail transaction and wholesale transactions, each with different pricing structures. An example of Partner Type could be different classes of employees, each type with separate training requirements. Additionally, the class Location is also typified. An example of Location Type might be different types of loading docks with different sizes and stress capability levels.

- The full design of the Economic Commitment would necessitate associations between the commitment and each of the new type-level objects. These are illustrated in the figure with specifies associations.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

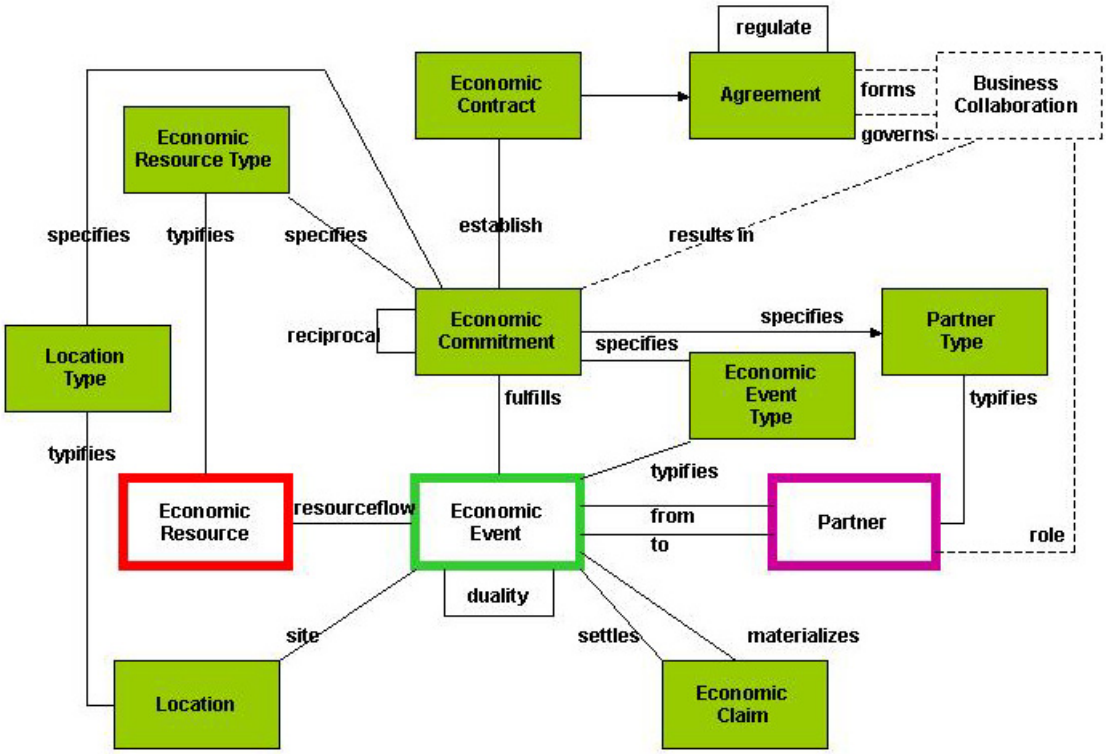


Figure B.3 — REA Ontology with Types

In addition to these two groups of additions, there are other REA associations in the UMM that are not illustrated here in an effort to minimize diagram complexity. These include:

- Contract – responsible – Partner
- Economic Commitment – destination – Location
- Partner – participates – Agreement
- Partner – participates – Economic Commitment
- Economic Commitment – reserves – Economic Resource

And finally with regard to Figure B.3, the partial integration of the elements of the REA ontology with the components of the UMM business collaboration framework is illustrated by showing the class for Business Collaboration (with dotted lines) and some of its associations with REA classes (also illustrated with dotted lines). Outside of its use with the UMM and the attendant specifications, the REA ontology has a three-level architecture that is explained by Geerts and McCarthy [6]. In the UMM, this three-level architecture is effected by the integration of REA components within the business collaboration framework and by the connection of the Business Requirements View (BRV) to the Business Domain View (BDV) above it and the Business Transactions View (BTV) below it.

B.5 The Suitability of the REA Ontology within the Open-edi Model

The REA ontology is well known and well used throughout the field of accounting and to a lesser extent throughout the field of enterprise computing in general. It is the best example of a business domain ontology in existence today, and its measures well against the most commonly cited “ontology quality” criteria as proposed by Gomez-Perez [7]. Her functional criteria and the REA explanation of their applicability are portrayed in Figure B.4. REA and Open-edi also fit very well together, as do REA and the Business Requirements View of the UN/CEFACT meta-model. Figure B.5 illustrates how these three systems

--`,,```,,,,````-`-,,`,,`,`,,`---
© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

correspond to each other on some very important points of emphasis. Continuing harmonization work with both the business process group and the core components group of UN/CEFACT is emphasizing these principles of commonality.

FUNCTIONAL CRITERIA	REA EXPLANATION
Does it express the consensus knowledge of a community of people?	The original paper and all extensions since have been published in high quality refereed journals (*The Accounting Review, IEEE Intelligent Systems*, etc.) where its components are open to constant review and criticism. In 1996, the original paper was given the first *Seminal Contribution to the Accounting Information Systems Literature Award* by the American Accounting Association. The Work was most recently awarded the *2003 Innovations in Accounting Education Award* by the AAA.
Do people use it as a reference of precisely defined terms?	The three leading textbooks on accounting systems analysis and design all use REA extensively to define system primitives and to explain modeling of accounting phenomena.
Is the language used expressive enough for people to say what they want to say?	The REA primitives may be used to model any of the economic dealings of an enterprise. The actual chain of entrepreneurial logic might itself be hard to explicate in a minority of cases (why for instance do firms support public charities or why is training important for employees ?), but once those links are made at some level of granularity, REA primitives are able to document them.
Is it stable?	The original paper was published in the top accounting journal in the world (*The Accounting Review*) in 1982. No substantive criticisms of its features have been published in the intervening 20 years.
Can it be used to solve a variety of different sorts of problems or as a starting point to construct multiple sorts of applications?	REA can be used to model and design the accounting components of software systems. It has also been used to model external business processes or business collaborations for ebXML and TMWG of UN/CEFACT. It has also been used to model inter-firm phenomena such as supply chains and to analyze the efficacy of a variety of enterprise software systems. Moreover, this documentation can be expressed at multiple levels of granularity, ranging from high level value chains and supply chains all the way down to the level of workflow tasks The original model covered both inter- and intra-enterprise transactions, but its use can be specialized for either case.

Figure B.4 — Ontology Criteria and the REA Ontology

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Overall Concept	ISO Open-edi	REA Ontology	UN/CEFACT
Emphasis on "economic value" as foundation for business process and business collaboration definitions	A *business transaction* pertains to the exchange of something of value	Involves requited *economic events* wherein one *economic resource* – which is something of value under the control of an enterprise – is exchanged for another *economic resource*	A *business collaboration* is an activity where one thing of measurable value is created, either as a service performed or as a product created
Designated "actors" or agents who participate in the economic activities within or between business enterprises	*Person* is a legal or human entity having the ability to make commitments and to fulfill resulting obligations, and to be held accountable for those obligations	*Economic Agents* include persons and agencies who participate in the economic events of the enterprise	*Partner* is an actor in a business collaboration
The ability to make and impart information about "commitments" as a critical component of e-commerce	A key property of a business transaction is that it involves *commitment exchange* among persons	A *commitment* is an agreement to execute an economic event in a well-defined future that will result in either an increase of resources or a decrease of resources	A *commitment* is an obligation to perform an economic event (that is, transfer ownership of a specified quantity of a specified resource type) at some future point in time
Pre-established patterns for different classes of e-commerce collaboration	An *Open-edi Scenario* is a formal specification of a class of business transactions having the same business goal	A *scenario* is a configuration of event types, resource types, commitment types, and agent types aggregated together	*Declarative Collaboration Patterns* are being developed based on the BRV components of the UMM meta-model

Figure B.5 — Correspondence of ISO, REA, and UN/CEFACT

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Annex C
(normative)

Business Transaction Model (BTM): two classes of constraints

Business transactions are modeled for registering, reference and re-use as scenarios and scenario components. Business semantic descriptive techniques are used to identify and specify the key components of a business transaction, i.e., as business objects.

The Business Transaction Model (BTM), as stated in 6.1.5 of ISO/IEC 15944-1:2002, has three required components namely “Person”, “Process”, and "Data. These three fundamental components of the Business Transaction Model are presented graphically in Figure C.1.[22)]

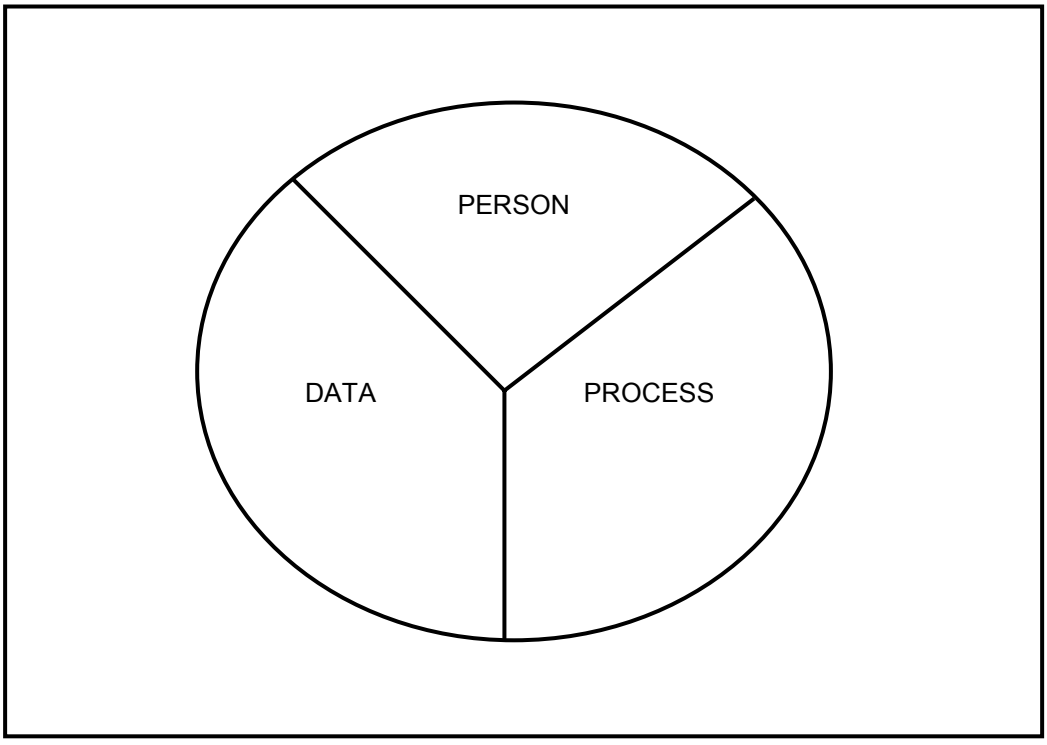


Figure C.1 — Business Transaction Model - Fundamental Elements (Graphic Illustration)

22) In ISO/IEC 15944-1:2002 for these three fundamental elements, the essential BOV aspects of the business transaction model, along with associated rules, definitions and terms as well as other attributes are stated in the following subclauses:

— 6.2 “Rules governing the Person Component” (and further Annex E);

— 6.3 “Rules governing the Process Component” (and further Annex F); and,

— 6.4 “Rules governing the Data Component” (and further Annex G).

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Using UML as a Formal Description Technique yields the following UML-based representation of the Business Transaction Model and is presented as Figure C.2. [23)]

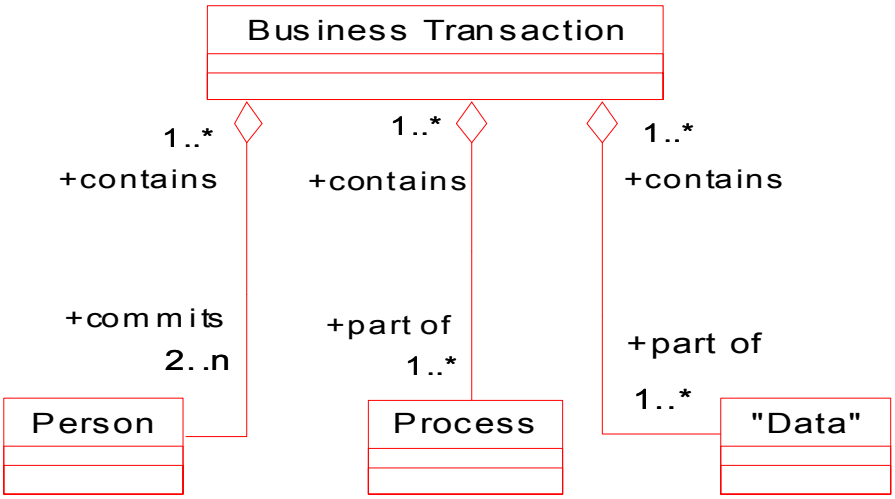


Figure C.2 — UML-based Representation of Figure C.1

The business transaction model focuses on and addresses the essential needs of commitment exchange among autonomous parties, i.e., the ability of Persons as parties to a business transaction being able to make commitments and to do so while maximizing the use of automated methods. This is in addition to existing standards which pertain to various aspects of information exchange only.[24)]

As such, what sets Open-edi (or e-business) apart from information exchange in general are six (6) characteristics.[25)] They are:

- actions based upon following clear, predefined rules;
- commitments of the parties involved;
- commitments among the parties are automated;
- parties control and maintain their states;
- parties act autonomously; and,
- multiple simultaneous transactions can be supported.

Electronic business transactions therefore require:

- a clearly understood purpose, mutually agreed upon goal(s) explicitness and unambiguity;
- pre-definable set(s) of activities and/or processes, pre-definable and structured data;
- commitments among Persons being established through electronic data interchange;

---

23) This UML-based representation incorporates the rules governing the interworking of these three fundamental components as specified in ISO/IEC 15944-1:2002.

24) It is important that users of ISO/IEC 15944 familiarize themselves with ISO/IEC 15944-1:2002, 6.3.1 titled "*Business transactions commitment exchange added to information exchange*" including the rules and definitions/terms, i.e "Person", and "commitment", as well as its normative text.

25) Each of these six (6) characteristics is described in more detail in ISO/IEC 15944-1:2002, Clause 5 "Characteristics of Open-edi".

--`,,```,,,,````-`-`,,`,,`,`,,`---

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

- computational integrity and related characteristics; and,
- the above being specifiable through Open-edi Description Technique(s) (OeDTs) (as the use of a Formal Description Technique(s) in support of modeling e-business), and executable through information technology systems for use in real world actualizations.

These and related requirements of electronic business transactions are specified in the form of "constraints".

"Constraint" is defined in 3.14.

The Business Transaction Model has two classes of constraints; namely:

(1) those which are "self-imposed" and agreed to as commitments among the parties themselves, i.e., "internal constraints"; and,

(2) those which are imposed on the parties to a business transaction based on the nature of the good, service and/or rights exchanged, the nature of the commitment made among the parties (including ability to make commitments, the location, etc.), i.e., "external constraints".

These two basic classes of constraints on business transactions are illustrated in Figure C.3.

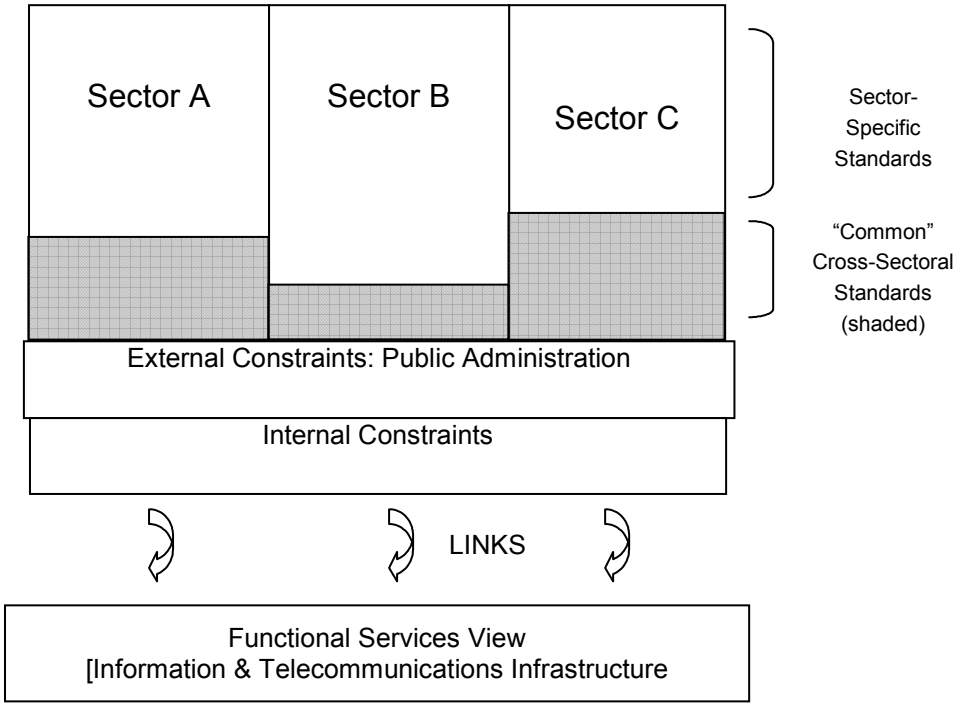


Figure C.3 — Business Transaction Model: Classes of Constraints

ISO/IEC 15944-1:2002, 6.1.6 provides normative text for these two classes of constraints.

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Bibliography

[1] ERIKSSON, E. and PENKER, M. 2000. Business Modeling with UML, John Wiley & Sons, New York

[2] GEERTS, G. and McCARTHY, W.E. 1999. "An Accounting Object Infrastructure for Knowledge-Based Enterprise Models". IEEE Intelligent Systems & Their Applications (July August 1999), pp. 89-94

[3] GEERTS, G. and McCARTHY, W.E. 2001. "An Ontological Analysis of the Primitives of the Extended-REA Enterprise Information Architecture", The International Journal of Accounting Information Systems, vol.3, pp. 1-16

[4] GEERTS, G. and McCARTHY, W.E. 2005. "The Ontological Foundation of REA Enterprise Information Systems", paper presented to the Annual Meeting of the American Accounting Association, August 2005

[5] GEERTS, G. and MCCARTHY, W.E. 2006. "Policy-Level Specifications in REA Enterprise Information Systems", Journal of Information Systems, Fall 2006

[6] GEERTS, G. and McCARTHY, W.E. 2001. "Using Object Templates from the REA Accounting Model to Engineer Business Processes and Tasks", *The Review of Business Information Systems*, vol.5, no.4, pp. 89-108

[7] GOMEZ-PEREZ, A. 1998. "Knowledge sharing and reuse", in J. Liebowitz, ed., The Handbook of Applied Expert Systems, CRC Press

[8] GRUBER, T. 1993. "A Translation Approach to Portable Ontologies", Knowledge Acquisition, pp. 199-220

[9] IJIRI, Y. 1975. Theory of Accounting Measurement, American Accounting Association

[10] McCARTHY, W.E. 1979. An Entity-Relationship View of Accounting Models. The Accounting Review (October): 667-86

[11] McCARTHY, W.E. 1982. "The REA Accounting Model: A Generalized Framework for Accounting Systems in A Shared Data Environment". The Accounting Review (July), pp. 554-578

[12] ODELL, J.J. 1998. Advanced Object-Oriented Analysis & Design Using UML, Cambridge University Press

[13] PORTER, M.E. 1985. Competitive Advantage. The Free Press

[14] SAKAI, H. 1981. "A Method for Defining Information Structures and Transactions In Conceptual Schema Design", Proceedings of the Seventh International Conference on Very Large Data Bases, pp. 225-34

[15] SMITH, J.M. and SMITH, D.C.P. 1977. "Database abstractions: Aggregation and Generalization", ACM Transactions on Database Systems (June): 105-133

[16] SOWA, J. 1999. Knowledge Representation: Logical, Philosophical, and Computational Foundations, Brooks/Cole Publishing, Pacific Grove, CA

[17] TSICHRITZIS, D.C. and LOCHOVSKY, F.H. 1982. Data Models, Prentice-Hall, Englewood Cliffs, NJ

[18] ISO 1087-1:2000 (E/F), *Terminology work — Vocabulary — Part 1: Theory and application/Travaux terminologiques — Vocabulaire — Partie 1: Théorie et application*

© ISO/IEC 2007 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

[19] ISO/IEC 2382-17:1999 (E/F), *Information technology — Vocabulary — Part 17: Databases/ Technologies de l'information — Vocabulaire — Partie 17: Bases de données*

[20] ISO/IEC 6523-1:1998 (E/F), *Information Technology — Structure for the identification of organizations and organization parts — Part 1: Identification of organization identification schemes/Technologies de l'information — Structures pour l'identification des organisations et des parties d'organisations — Partie 1: Identification des systèmes d'identification d'organisations*

[21] ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

[22] ISO/IEC 11179-3:2003, *Information technology — Metadata registries (MDR) — Part 3: Registry metamodel and basic attributes*

[23] ISO/IEC 14662:2004, *Information technology — Open-edi reference model*

[24] ISO/IEC 15944-2:2006, *Information technology — Business Operational View — Part 2: Registration of scenarios and their components as business objects*

[25] ISO 19135, *Geographic information — Procedures for item registration*

[26] ISO/IEC Directives, Part 1, *Procedures for the technical work*

[27] ISO/IEC JTC 1, *Procedures for the technical work of ISO/IEC JTC 1 on Information Technology*

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

ICS 35.240.60

Price based on 70 pages

© ISO/IEC 2007 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale