

Australian Standard™

## Information technology—Open-edited reference model



This Australian Standard was prepared by Committee IT-027, Data Management & Interchange. It was approved on behalf of the Council of Standards Australia on 21 April 2005. This Standard was published on 30 May 2005.

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*This Standard was issued in draft form for comment as DR 05111.*

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## Information technology—Open-edited reference model

First published as AS ISO/IEC 14662—2005.

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Published by Standards Australia, GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 6708 7

## PREFACE

This Standard was prepared by the Standards Australia Committee IT-027, Data Management & Interchange.

This Standard is identical with, and has been reproduced from, ISO/IEC 14662:2004, *Information technology—Open-edl reference model*.

The objective of this Standard is to define the framework for co-coordinating the integration of existing standards and the development of future standards for the inter-working of organizations via Open-edl.

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| <i>Reference to International Standard</i> |                                                                           | <i>Australian Standard</i> |                                                                           |
|--------------------------------------------|---------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------|
| ISO/IEC                                    |                                                                           | AS ISO/IEC                 |                                                                           |
| 15944                                      | Information technology—Business agreement semantic descriptive techniques | 15944                      | Information technology—Business agreement semantic descriptive techniques |
| 15944-1                                    | Part 1:Operational aspects of Open-edl for implementation                 | 15944.1                    | Part 1:Operational aspects of Open-edl for implementation                 |

Only referenced documents that have been adopted as Australian Standards have been listed.

## CONTENTS

Page

|                |                                                                                                      |           |
|----------------|------------------------------------------------------------------------------------------------------|-----------|
| <b>1</b>       | <b>Scope.....</b>                                                                                    | <b>1</b>  |
| <b>2</b>       | <b>Normative references .....</b>                                                                    | <b>1</b>  |
| <b>3</b>       | <b>Technical normative elements.....</b>                                                             | <b>1</b>  |
| <b>3.1</b>     | <b>Definitions.....</b>                                                                              | <b>1</b>  |
| <b>3.2</b>     | <b>Symbols and abbreviations .....</b>                                                               | <b>3</b>  |
| <b>4</b>       | <b>The Open-edl Reference Model .....</b>                                                            | <b>4</b>  |
| <b>4.1</b>     | <b>Business operational view .....</b>                                                               | <b>6</b>  |
| <b>4.2</b>     | <b>Functional Service View .....</b>                                                                 | <b>9</b>  |
| <b>4.3</b>     | <b>Open-edl Reference Model related standards.....</b>                                               | <b>12</b> |
| <b>4.4</b>     | <b>Use of BOV and FSV related standards .....</b>                                                    | <b>12</b> |
| <b>5</b>       | <b>Conformance Statement.....</b>                                                                    | <b>13</b> |
| <b>Annex A</b> | <b>(informative) Standardization areas and types of standardization activities for Open-edl.....</b> | <b>14</b> |
| <b>Annex B</b> | <b>(informative) Requirements for Open-edl standards.....</b>                                        | <b>18</b> |
| <b>Annex C</b> | <b>(informative) Example formal description techniques for modelling role behaviour .....</b>        | <b>22</b> |
| <b>Annex D</b> | <b>(informative) An approach for detailing concepts of the FSV .....</b>                             | <b>28</b> |
| <b>Annex E</b> | <b>(informative) English-French equivalents.....</b>                                                 | <b>33</b> |
| <b>Index</b>   | <b>.....</b>                                                                                         | <b>34</b> |

## INTRODUCTION

The economic advantages of Electronic Data Interchange (EDI) are widely recognized. However, the cost of setting up an EDI relationship has been very high due to the need for a detailed bilateral business and technical agreement between the involved business partners. The initial high cost of establishing such an agreement does not justify short term partnerships. It has also been found that implementations involving the management of a large number of partners and their associated agreements are not productive. Consequently, most EDI implementations have been successful only:

- in long term partnerships;
- between a limited number of partners.

Open-edi lowers these barriers by introducing standard business scenarios and the necessary services to support them. Once a business scenario is agreed upon, and the implementations conform to the Open-edi standards, there is no need for prior agreement among trading partners, other than the decision to engage in the Open-edi transaction in compliance with the business scenario. Since Open-edi takes a generic approach, it enables organizations to establish short term relationships quickly and cost effectively. Business scenarios and the necessary supporting services will be available to all who wish to use them, thus providing the necessary means for implementing Open-edi.

The field of application of Open-edi is the electronic processing of business transactions among autonomous multiple organizations, authorities or individuals within and across sectors ( e.g., public/private, industrial, geographic). It includes business transactions which involve multiple data types such as numbers, characters, images and sound.

The Open-edi Reference Model has been developed primarily in order to provide standards required for the inter-working of organizations, through interconnected information technology systems. This model is independent of specific:

- information technology implementations;
- business content or conventions;
- business activities;
- parties participating in business activities.

The Open-edi Reference Model identifies the required standards for Open-edi and provides a reference for those standards by defining the basic concepts used to develop them. It serves as the basis for co-ordination of work between the different agencies involved in EDI standardization. It provides the framework for this co-ordination and for the integration of existing and emerging standards and the development of future standards. The Open-edi Reference Model places existing electronic business standards in perspective. Some of Open-edi standardization areas and types of standardization activities are presented in Annex A and some of the requirements for Open-edi standards in Annex B.

The Open-edi Reference Model uses two views to describe the relevant aspects of business transactions:

- the Business Operational View (BOV);
- the Functional Service View (FSV).

The BOV, addresses the aspects of

- a) the semantics of business data in business transactions and associated data interchanges;
- b) the rules for business transactions, including:
  - operational conventions;
  - agreements;
  - mutual obligations,
 which apply to the business needs of Open-edi.

The FSV addresses the supporting services meeting the mechanistic needs of Open-edi. It focuses on the Information Technology aspects of:

- a) functional capabilities;
- b) service interfaces;
- c) protocols.

Such functional capabilities, services interfaces and protocols include:

- capability of initiating, operating and tracking the progress of Open-edi transactions;
- user application interface;
- transfer infrastructure interface;
- security mechanism handling;
- protocols for inter working of information technology systems of different organizations;
- translation mechanisms.

## 0.1 The co-ordination needs of the Open-edi Reference Model

Standards required for Open-edi cover a large spectrum of areas including but not limited to:

- business aspects;
- support for national and international law and regulation;
- information technology generic standards, such as information modelling standards;
- software engineering standards;
- data modelling standards;
- information technology standards specific to one sector;
- interconnection standards, such as message handling, file transfer, transaction processing, network management;
- security standards.

Development of standards for electronic business is already taking place in several standardization bodies and industry groups.

The co-ordination of standards development is essential in order to:

- avoid duplication of effort;
- ensure interoperability of standard conforming solutions;
- ensure technical consistency of standards;
- identify and remedy deficiencies and voids in standards;
- identify and eliminate redundancies and overlaps in standards.

Annex A describes how the Open-edl Reference Model can serve as the basis for co-ordination of work of the different agencies involved in standardization of electronic business.

## 0.2 The technical requirements of the Open-edl Reference Model

Each view of the Open-edl Reference Model corresponds to a class of necessary standards. One class of standards, associated with the BOV in the Open-edl Reference Model, addresses the business issues of Open-edl. Another class of standards, associated with the FSV in the Open-edl Reference Model addresses Information Technology (IT) issues. Each class of standards requires a specific type of expertise needed for their development. By separating the business user aspects of Open-edl from the IT aspects, the Open-edl Reference Model and its associated standards provide flexibility in accommodating changes in IT and user demands without impacting the Open-edl standards related to the business user aspects of Open-edl. Methods of implementing the standards which comply with this framework are not constrained by the model. Therefore interworking among Open-edl systems will be guaranteed while preserving flexibility in implementation.

The implementations of Open-edl will require the co-operation among different types of experts, primarily business users aided by information analysts and IT specialists including telecommunications experts.

In order to support an Open-edl activity, models must be developed which consider aspects of both the external and internal behaviour of Open-edl Parties. The boundary between the external and internal behaviour will vary among Open-edl Parties depending on how the implementation has been carried out. The models to be developed must consequently take into consideration those aspects which are necessary to ensure interoperability. Only the external behaviour of Open-edl Parties affects the interoperability of Open-edl systems. The description of the internal behaviour of Open-edl systems is provided in the model only to support the definition and exposition of the interoperability aspects, and to offer insight to the definitions of the external interfaces required.

## 0.3 Use of “Person”, “person”, and “party” in the context of business transactions and commitment exchange

When the ISO/IEC 14662 Open-edl Reference Model standard was first developed, the “Internet” and “WWW” were in their embryonic stage and their impact on private and public sector organizations was not fully understood. Consequently, in the First Edition (1997), the Business Operational View (BOV) was initially defined as:

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

The 1984 ISO/IEC 6523 standard definition of “organization” was used in the first edition of ISO/IEC 14662. This was changed in 1998 and ISO/IEC 6523 became a two-part standard. The fact that today Open-edl through the Internet and WWW also involves “individuals” has been taken into account in the revision of this standard. Further, ISO/IEC 14662 did not define “commitment”, nor the discrete properties and behaviors an

entity must have to be capable of making a “commitment” as well as bridging legal and IT perspectives in the dematerialized world of the Internet. During the development of ISO/IEC 15994-1 the term “commitment” was defined.

At the same time it was recognized that in order to be able to make a commitment, the term Open-edi Party was not specific enough to satisfy scenario specifications when the legal aspects of commitment were considered. In many instances commitments were noted as being actually made between and among machines (automata or computer programs) acting under the direction of those legally capable of making commitment, rather than the individuals in their own capacities. It was also recognized that in some jurisdictions commitment could be made by ‘artificial’ persons such as corporate bodies. To address these extended requirements an additional term: Person, was created. The construct of Person has been defined in such a way that it is capable of having the potential legal and regulatory constraints applied to it.

The reader should understand that:

- the use of the Person with a capital “P” represents Person as a defined term, i.e., as the entity within an Open-edi Party that carries the legal responsibility for making commitment(s);
- “individual”, “organization” and “public administration” represent the three common subtypes of “Person”. Definitions for these terms and their use are found in ISO/IEC 15944-1.

The words “person(s)” and/or “party(ies)” are used in their generic contexts in this standard. A “party to a business transaction” has the properties and behaviours of a “Person”. {See further ISO/IEC 15944-1, Clause 6, and in particular 6.1.3 and 6.2}.

#### 0.4 Electronic business and Open-edi: areas of activity and participation

The following tables illustrate the general context within which electronic business activities take place. Table 1 presents the areas of activity; Table 2, the types of bodies which should fulfil those areas of activity; Table 3 identifies typical actors at the time of this International Standard. It is expected that working documents will be created identifying all relevant sectorial actors.

The application of the Open-edi reference model specified in this International Standard enables the evolution of the organization of the activities detailed in Table 1. That evolution is found in Annex A, and in particular in Tables A.1 and A.2.

Table headings are explained in Annex A. Tables 1, 2 and 3 have, in addition, a new dimension, below that of Environment, which is characterized as “Formal Recognition”. This is a specific stage between Environment, which is understood to be the existence of all that there is in the development of standard frameworks, and Activity Models, which are understood to be business modelling methods and techniques identified by the frameworks.

Table 1 — Areas of activity

|                               | <b>Meta-standards</b><br>A | <b>Standards</b><br>B       | <b>Guidance</b><br>C | <b>Produce product</b><br>D | <b>Conformance and certification</b><br>E | <b>Take into use by</b><br>F |
|-------------------------------|----------------------------|-----------------------------|----------------------|-----------------------------|-------------------------------------------|------------------------------|
| <b>1. Environment</b>         | Languages                  | Laws, Practices             | Business Guidelines  |                             | Courts, Tribunals                         | Contracts                    |
| <b>2. Formal recognition</b>  | Frameworks                 | Reference Models            | BOV & FSV            |                             | Testing Bodies                            | Toolsets                     |
| <b>3. BOV activity models</b> | Modelling Languages        | Business Scenarios          | Conventions          |                             | Test Definitions                          | Applications                 |
| <b>4. BOV data models</b>     | Modelling Languages        | Message Standards           | Usage Guidelines     |                             | Test Definitions                          | Actual data                  |
| <b>5. FSV technology</b>      | Tools, Techniques          | Inter-operability Standards | Profiles             |                             | Inter-operability Standards               | Software, Hardware           |

Table 2 — Types of bodies that should be involved in performing the different tasks for each cell

|                               | <b>Meta-standards</b><br>A | <b>Standards</b><br>B | <b>Guidance</b><br>C | <b>Produce product</b><br>D       | <b>Conformance and certification</b><br>E      | <b>Take into use by</b><br>F      |
|-------------------------------|----------------------------|-----------------------|----------------------|-----------------------------------|------------------------------------------------|-----------------------------------|
| <b>1. Environment</b>         | LEGAL and                  | REGULATORY BODIES     | FRAMEWORK            | IMPLEMEN-<br>TORS<br>and<br>USERS | TESTING<br>and<br>CERTIFICA-<br>TION<br>BODIES | IMPLEMEN-<br>TORS<br>and<br>USERS |
| <b>2. Formal recognition</b>  | STANDARDIZATION            |                       |                      |                                   |                                                |                                   |
| <b>3. BOV activity models</b> |                            | PROCESS               |                      |                                   |                                                |                                   |
| <b>4. BOV data models</b>     |                            |                       | BODIES               |                                   |                                                |                                   |
| <b>5. FSV technology</b>      |                            |                       |                      |                                   |                                                |                                   |

Table 3 — Current participants

|                     | Meta-standards                             | Standards                                                                                             | Guidance                                                                 | Produce product            | Conformance and certification | Used by                                |
|---------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------|-------------------------------|----------------------------------------|
| Environment         | Cultural Adaptability                      | International<br>National<br>Bilateral                                                                | Lawyers                                                                  |                            | Courts                        | Commerce and government                |
| Formal recognition  | ISO/IEC JTC 1/SC 32                        | ISO, ISO/IEC, ITU<br>National and regional standards bodies<br>UN/ECE<br>CEN<br>IETF<br>ASTM<br>OASIS | ISO/IEC JTC1 SC 32<br>UN/ECE<br>ASTM                                     |                            | ISO/IEC                       | Standards bodies<br>Suppliers<br>Users |
| BOV activity models | ISO/IEC JTC 1/SC 7 and SC 32<br>ISO/TC 184 | ISO, IEC and ITU sectorial bodies<br>CEN<br>National standards bodies<br>WfMC                         | WfMC                                                                     | Non-standard products      |                               | Users                                  |
| BOV data models     | ISO/IEC JTC 1/SC 32<br>ISO/TC 211          | Trade bodies User groups<br>WTO<br>WCO<br>ICAO<br>IMO<br>SWIFT<br>ebXML<br>UN/ECE                     | as previous column plus sectorial groups                                 | Suppliers                  | UN/CEFACT                     | Suppliers<br>Users                     |
| FSV technology      | ISO/IEC JTC 1<br>ISO TC211<br>IETF         | ISO/IEC various TCs and JTC1/SCs<br>CEN<br>IETF<br>W3C                                                | ISO/IEC JTC 1/SC 32<br>JTC1/SC 27<br>TC 215<br>CEN/TC 251<br>IETF<br>W3C | Manufacturers<br>Suppliers | Many<br>NIST<br>Open Group    | Suppliers<br>Users                     |

X

NOTES

## AUSTRALIAN STANDARD

# Information technology — Open-edi reference model

## 1 Scope

This International Standard specifies the framework for co-ordinating the integration of existing standards and the development of future standards for the inter-working of Open-edi Parties via Open-edi and provides a reference for those standards. As such it serves to guide the standards work necessary to accomplish Open-edi by providing the context to be used by developers of standards to ensure the coherence and integration of related standardized modelling and descriptive techniques, services, service interfaces, and protocols.

This International Standard describes, through two perspectives of business transactions, significant aspects relevant to the interoperability of information technology systems used by Open-edi Parties engaging in Open-edi. The perspectives are:

- a) business aspects such as business information, business conventions, agreements and rules among Open-edi Parties;
- b) information technology aspects which are necessary in the Open-edi systems to support the execution of business transactions.

This International Standard is not an implementation specification nor is it a basis for appraising the conformance of implementations.

## 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 6523-1:1998, *Information technology — Structure for the identification of organizations and organization parts — Part 1: Identification of organization identification schemes*

ISO 6523-2:1998, *Information technology — Structure for the identification of organizations and organization parts — Part 2: Registration of organization identification schemes*

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

## 3 Technical normative elements

### 3.1 Definitions

For the purposes of this document, the following definitions apply:

#### 3.1.1

#### **Application Program Interface (API)**

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

**3.1.2****business**

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

**3.1.3****Business Operational View (BOV)**

a 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

**3.1.4****business transaction**

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

**3.1.5****Electronic Data Interchange (EDI)**

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

NOTE This definition includes all categories of electronic business transactions.

**3.1.6****Formal Description Technique (FDT)**

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

**3.1.7****Functional Service View (FSV)**

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

**3.1.8****Information Technology System (IT System)**

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

**3.1.9****Open-edi**

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

**3.1.10****Open-edi Standard**

a standard that complies with the Open-edi Reference Model

**3.1.11****Open-edi Party (OeP)**

an organization that participates in Open-edi

**3.1.12****Open-edi scenario**

a formal specification of a class of business transaction having the same business goal

**3.1.13****Open-edi transaction**

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

**3.1.14****Person**

an 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 International Standard 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".

**3.2 Symbols and abbreviations**

|                |                                                           |
|----------------|-----------------------------------------------------------|
| <b>API</b>     | Application Program Interface                             |
| <b>BIM</b>     | Business and Information Modelling                        |
| <b>BOV</b>     | Business Operational View                                 |
| <b>DMA</b>     | Decision Making Application                               |
| <b>EDI</b>     | Electronic Data Interchange                               |
| <b>EDIFACT</b> | EDI For Administration, Commerce and Transport            |
| <b>EWOS</b>    | European Workshop for Open Systems                        |
| <b>FDT</b>     | Formal Description Technique                              |
| <b>FSV</b>     | Functional Service View                                   |
| <b>IB</b>      | Information Bundle                                        |
| <b>IPD</b>     | Information Processing Domain                             |
| <b>IT</b>      | Information Technology                                    |
| <b>OeCI</b>    | Open-edi Control Information                              |
| <b>OeDT</b>    | Open-edi Descriptive Technique                            |
| <b>OeP</b>     | Open-edi Party                                            |
| <b>OeSE</b>    | Open-edi Support Entity                                   |
| <b>OeUD</b>    | Open-edi User Data                                        |
| <b>OSI</b>     | Open System Interconnection                               |
| <b>SC</b>      | Semantic Component (in the context of Open-edi scenarios) |
| <b>SC</b>      | Sub-Committee (in the context of ISO or IEC)              |
| <b>SGML</b>    | Standard Generalized Mark-up Language                     |
| <b>TC</b>      | Technical Committee                                       |
| <b>TDID</b>    | Trade Data Interchange Directory                          |
| <b>TI</b>      | Transfer Infrastructure                                   |
| <b>UN/ECE</b>  | United Nations / Economic Commission for Europe           |
| <b>WG</b>      | Working Group                                             |

## 4 The Open-edi Reference Model

The Open-edi Reference Model provides a reference framework for the identification, development, and co-ordination of Open-edi standards. This framework addresses two perspectives of business transactions. One, the BOV, captures the business users aspects, the other, the FSV, captures the information technology aspects. A class of standards is associated with each view. They are respectively called the BOV related standards and the FSV related standards. Figure 1 sets out the relationship between the model and these views.

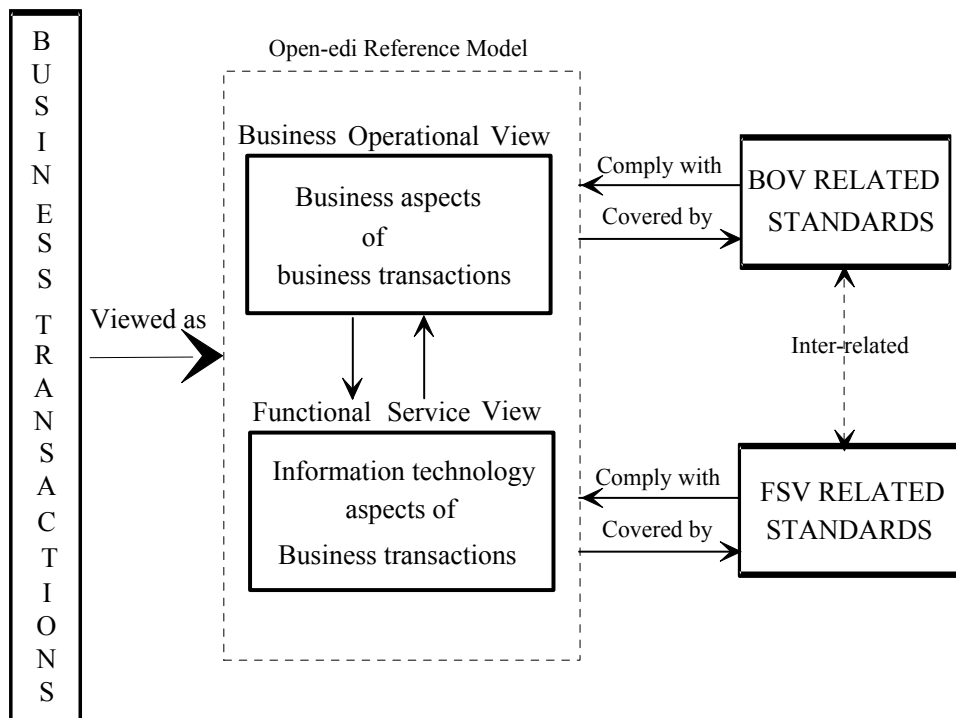


Figure 1 — Open-edi environment

These perspectives are defined as follows:

- **Business Operational View (BOV):** a 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;
- **Functional Service View (FSV):** a perspective of business transactions limited to those information technology interoperability aspects of IT Systems needed to support the execution of Open-edi transactions.

The BOV related standards are tools and rules by which users, who understand the operating aspects of a business domain, may create scenarios. Registration authorities will reference the BOV related standards when considering scenarios for registration.