INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 12072

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Information technology — International Standardized Profile FDI5 — Directory data definitions — VT Use of the Directory

Technologies de l'information — Profil normalisé international FDI5 — Définitions de données de l'Annuaire — Utilisation VT de l'Annuaire

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental or 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 JTC1. In addition to developing International Standards, ISO/IEC JTC1 has created a Special Group on Functional Standardization for the elaboration of International Standardized Profiles.

An International Standardized Profile is an internationally agreed, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75 % of the national bodies casting a vote.

International Standardized Profile ISO/IEC ISP 12072 was prepared with the collaboration of

- Asia-Oceania Workshop (AOW);
- European Workshop for Open Systems (EWOS);
- Open Systems Environment Implementors' Workshop (OIW).

Annexes A, B and C form an integral part of this International Standardized Profile.

Introduction

The concept and structure of International Standardized Profiles for Information Systems are laid down in the Technical Report ISO/IEC TR 10000. The purpose of an International Standardized Profile is to recommend when and how certain information technology standards shall be used. This International Standardized Profile ISO/IEC ISP 12072 specifies application profile FDI5 as defined in the Technical Report ISO/IEC TR 10000-2.

This International Standardized Profile is one of a set of International Standardized Profiles relating to the Directory (see TR 10000-2). It specifies the schema of information for the VT application capability to be stored in the Directory according to ISO/IEC 9594.

ISO/IEC ISP 10616 profiles information to be stored within the Directory which is common to a variety of applications. This International Standardized Profile augments that information with VT application specific information.

Statements and conformance requirements for the information profiled by ISO/IEC ISP 10616 are also valid for the VT application specific information profiled by this International Standardized Profile.

Information technology - International Standardized Profile FDI5 - Directory data definitions - VT Use of the Directory

1 Scope

1.1 General

ISO/IEC ISP 10616 profiles information to be stored within the Directory which is common to a variety of applications. This International Standardized Profile augments this information with VT application specific information.

Statements and conformance requirements stated in ISO/IEC ISP 10616 for the information profiled by ISO/IEC ISP 10616 are also valid for the VT application specific information profiled by this International Standardized Profile.

This International Standardized Profile therefore profiles Directory information for use by VT applications and users of VT applications, using existing object class and attribute type definitions from the Directory specifications themselves, and additional definitions.

This International Standardized Profile does not define any procedures covering how this Directory information shall be used either by VT applications or by users of VT applications.

1.2 Position within the taxonomy

This International Standardized Profile is identified in ISO/IEC TR 10000-2 as 'Information technology - International Standardized Profile FDI5 - Directory data definitions - VT Use of the Directory'.

1.3 Scenario

A VT application, by means of an associated Directory User Agent (DUA), obtains Directory information by accessing directly or indirectly one or more Directory System Agents (DSAs) of the Directory (see figure 1).

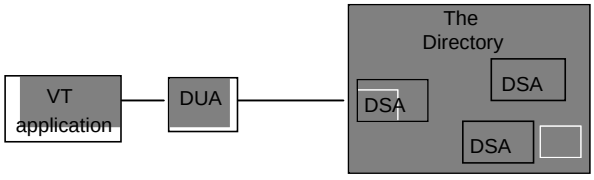

Figure 1 - Access of a VT application to the Directory

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this International Standardized Profile. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this International Standardized Profile are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and ITU-T maintains published editions of its current Recommendations.

ISO/IEC 9040: 1997, *Information technology - Open Systems Interconnection - Virtual Terminal Basic Class Service.*

ISO/IEC 9041-1: 1997, *Information technology - Open Systems Interconnection - Virtual Terminal Basic Class Protocol - Part 1: Specification.*

ISO/IEC 9834-1: 1993, *Information technology - Open Systems Interconnection - Procedures for the operation of OSI Registration Authorities: General Procedures.*

ISO/IEC 9834-4: 1991, *Information technology - Open Systems Interconnection - Procedures for the operation of OSI Registration Authorities - Part 4: Register of VTE Profiles.*

ISO/IEC 9834-5: 1991, *Information technology - Open Systems Interconnection - Procedures for the operation of OSI Registration Authorities - Part 5: Register of VT Control Object Definitions.*

ISO/IEC TR 10000-1:1995, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 1: General principles and documentation framework.*

ISO/IEC TR 10000-2:1995, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 2: Principles and taxonomy for OSI profiles.*

ISO/IEC ISP 10616: 1995, *Information technology - International Standardized Profile FDI11 - Directory data definitions - Common Directory Use (Normal).*

ISO/IEC ISP 11187-1: 1996, *Information technology - International Standardized Profiles AVT1n, AVT2n - Virtual Terminal Basic Class - Application Profiles - Part 1: Common VT Protocol Requirements.*

CCITT Recommendation X.581: 1992, *Directory Access Protocol - Protocol Implementation Conformance Statement (PICS) Proforma.*

3 Definitions

For the purposes of this International Standardized Profile, definitions apply as defined in the referenced standards. In addition, the following terms are defined.

3.1 General

This International Standardized Profile makes use of the following terms defined in ISO/IEC ISP 10616:

a) auxiliary object class

b) structural object class

c) structure element

3.2 Support level

To specify the support level of protocol features for this International Standardized Profile, the following terminology is defined.

3.2.1 mandatory; m : Mandatory requirement for support. A feature (object class, attribute type, attribute syntax) is supported by a DSA implementation if the DSA is able to process the feature in accordance with the base standard or as specified in ISO/IEC ISP 10616 (see also clauses 7, 8 and 9).

3.2.2 optionally supported; o : The support of the feature (object class, attribute type, attribute syntax) is left to the implementor of the DSA.

4 Abbreviations

DIT	Directory Information Tree
DSA	Directory System Agent
DUA	Directory User Agent
ISP	International Standardized Profile
OID	Object Identifier
PICS	Protocol Implementation Conformance Statement
PRL	Profile Requirements List
VT	Virtual Terminal

5 Conformance

5.1 DSA conformance

Conformance to this International Standardized Profile implies conformance to ISO/IEC ISP 10616, i.e., as a precondition to conform to this International Standardized Profile, a DSA shall fulfill the conformance requirements as stated in ISO/IEC ISP 10616.

In addition, a DSA shall, after suitable set up, be capable of storing, modifying and retrieving entries which fulfil all of the following conditions:

- The entry lies within the scope of the minimum set of structure and naming elements specified in clause 6;
- The entry's object classes are part of the set of mandatory object classes (specified in A.6.4.1) and the subset of optional object classes (see ISO/IEC ISP 10616, A.6.4.1) for which support is claimed for the DSA (see also clause 7 for requirements on the support of the VT Capability object class);
- The entry´s attributes are part of the set of mandatory attribute types (as specified in A.6.4.2) and the subset of optional attribute types (see ISO/IEC ISP 10616, A.6.4.2) for which support is claimed for the DSA.

Storage and modification of entry information imply checking and matching of attribute values for which equality matching is defined for that attribute type; thus a conformant DSA shall be able to perform the checking and matching algorithms for any such attribute syntaxes as specified in clause 9.

The requirements formulated in ISO/IEC ISP 10616 with respect to supported object classes, supported attribute types and supported attribute syntaxes according to ISO/IEC ISP 10616 are also valid for the additional supported object classes, supported attribute types and supported attribute syntaxes according to this International Standardized Profile.

5.2 DUA conformance

DUAs typically need schema information as outlined in this International Standardized Profile to support VT use of the Directory. However, this International Standardized Profile makes no statements about DUA conformance.

6 DIT structure

The purpose of this clause is to relate information specified in this International Standardized Profile to the minimum set of structure and naming elements defined in ISO/IEC ISP 10616 and thus to provide locations for entries of selected object classes.

The DIT structure which shall as a minimum be supported by implementations claiming conformance to this International Standardized Profile is that defined in ISO/IEC ISP 10616 and in clauses 7 and 8.

This International Standardized Profile does not define new structural object classes, but uses an auxiliary object class for the definition of VT related capabilities. Clause 7.2 defines how the additional VT object class is related to the structure elements.

This DIT structure is supported in the sense that a conformant DSA shall be capable of storing, modifying and retrieving entries which are part of a tree with this structure (for a more formal definition see ISO/IEC ISP 10616).

7 Object classes

The following object classes shall be supported in addition to those specified and mandated in ISO/IEC ISP 10616:

- ispApplicationEntity (see ISO/IEC ISP 10616)
- vtCapability

To define the application entity objects that are the objects stored in the Directory describing VT entities, it is necessary to have Object Identifiers to identify the various objects and attributes.

In the following definitions the Object Identifier used as the parent vertex for the definition of object identifiers for VT object classes is:

```
vtObjectClass::=  OBJECT IDENTIFIER
    {iso(1)  standard(0)  fdi5(12072)  objectClass(6) }
    "VT object class"
```

7.1 VT capability object class

The VT Capability auxiliary object class is used to define a set of attribute types which describe the VT application specific information about a VT entity.

```
vtCapability        OBJECT-CLASS      -- AUXILIARY
    MUST CONTAIN      {
            vtModes,
            vtRoles,
            vtFunctionalUnits,
            vteProfiles     }
    MAY CONTAIN       {
            vtApplicationProfiles,
            vtControlObjects,
            vtAssignmentTypes  }
::= { vtObjectClass  1 }
```

7.2 Usage

As the ISP Application Entity object class defined in ISO/IEC ISP 10616 and the VT Capability object class defined in 7.1 are auxiliary object classes, entries shall not be created only based on these object classes, but have to be combined with a structural object class.

The ISP Application Entity object class and the VT Capability object class are intended to provide additional attributes to the Application Entity object class or any of its subclasses.

An implementation that claims conformance to the VT Capability object class shall be able to store, modify and retrieve entries associated with the VT Capability object class combined with both the Application Entity object class and the ISP Application Entity object class.

8 Attribute types

The following attribute types shall be supported in addition to those specified and mandated in ISO/IEC ISP 10616:

- protocolInformation (see ISO/IEC ISP 10616)
- ulProfileInformation (see ISO/IEC ISP 10616)
- applicationEntityOID (see ISO/IEC ISP 10616)
- transferSyntaxesSupported (see ISO/IEC ISP 10616)
- vtModes
- vtRoles
- vtFunctionalUnits
- vteProfiles
- vtApplicationProfiles
- vtControlObjects
- vtAssignmentTypes

Each of the additionally defined attributes requires an Object Identifier to identify it, and the parent vertex definition for these OIDs is:

```
vtAttributeType   ::=      OBJECT IDENTIFIER
    {iso(1)  standard(0)  fdi5(12072)  attributeType(4) }
    "VT attribute type"
```

8.1 VT modes

The VT Modes attribute type specifies the VT modes which are supported by a VT entity.

```
VTModes  ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX
            BIT STRING  { aMode      (0),
                          sMode      (1),
                          eitherA    (2),
                          eitherS    (3) }
    MATCHES FOR EQUALITY
    SINGLE VALUED
::= { vtAttributeType  1 }
```

Two attribute values match for equality if - after normalization (see ISO/IEC ISP 10616, 9.4.4) - the strings are of the same length and corresponding bits are identical.

8.2 VT roles

The VT Roles attribute type specifies the VT roles which are supported by a VT entity for association establishment.

```
VTRoles  ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX
            BIT STRING  { initiator    (0),
                          responder    (1) }
```

MATCHES FOR EQUALITY

SINGLE VALUED

::= { vtAttributeType 2 }

Two attribute values match for equality if - after normalization (see ISO/IEC ISP 10616, 9.4.4) - the strings are of the same length and corresponding bits are identical.

8.3 VT functional units

The VT Functional Units attribute type specifies the VT functional units which are supported by a VT entity. If either of the functional units profileSwitch or destructiveBreak are specified, this shall indicate that the VT entity is capable of supporting the specified functional unit in a responder role.

```
vtFunctionalUnits ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX
        BIT STRING {
            profileSwitch       (0),
            multipleIntNeg      (1),
            negotiatedRelease   (2),
            urgentData          (3),
            destructiveBreak    (4),
            enhancedAccess      (5),
            structuredCOs       (6),
            blocks              (7),
            fields              (8),
            referenceInfos      (9),
            ripple              (10),
            exceptions          (11),
            contextRetention    (12) }
    MATCHES FOR EQUALITY
    SINGLE VALUED
::= { vtAttributeType 3 }
```

Two attribute values match for equality if - after normalization (see ISO/IEC ISP 10616, 9.4.4) - the strings are of the same length and corresponding bits are identical.

8.4 VTE profiles

The VTE Profiles attribute type specifies the VTE profiles which are supported by a VT entity. The object identifiers used to specify VTE profiles shall follow the form defined in ISO/IEC 9834-4.

```
vteProfiles ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX
        OBJECT IDENTIFIER
    MATCHES FOR EQUALITY
    MULTIVALUED
::= { vtAttributeType 4 }
```

Two attribute values match for equality if they have identical values.

8.5 VT application profiles

The VT Application Profiles attribute type specifies the VT application profiles which are supported by a VT entity. The object identifiers used to specify VT application profiles shall follow the form defined in clause 6 of ISO/IEC ISP 11187-1.

```
vtApplicationProfiles ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX
        OBJECT IDENTIFIER
    MATCHES FOR EQUALITY
    MULTIVALUED
::= { vtAttributeType 5 }
```

Two attribute values match for equality if they have identical values.

8.6 VT control objects

The VT Control Objects attribute type specifies the VT control objects which are supported by a VT entity.

```
vtControlObjects ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX
        OBJECT IDENTIFIER
    MATCHES FOR EQUALITY
    MULTIVALUED
::= { vtAttributeType 6 }
```

Two attribute values match for equality if they have identical values. The object identifiers used to specify VT Control Objects shall follow the form defined in ISO/IEC 9834-5.

8.7 VT assignment types

The VT Assignment Types attribute type specifies the VT assignment types which are supported by a VT entity. The object identifiers used to specify VT assignment types shall follow the form defined in ISO/IEC 9834-1.

```
vtAssignmentTypes ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX
        OBJECT IDENTIFIER
    MATCHES FOR EQUALITY
    MULTIVALUED
::= { vtAttributeType 7 }
```

Two attribute values match for equality if they have identical values.

9 Attribute syntaxes

Implementations conformant with this International Standardized Profile shall support the attribute syntaxes as mandated by ISO/IEC ISP 10616 (see ISO/IEC ISP 10616, A.6.5.2) and as listed in A.6.5.3.

Annex A

(normative)

Profile Requirements List of FDI5 VT Use of the Directory

In the event of a discrepancy becoming apparent in the body of this International Standardized Profile and the tables in this annex, this annex is to take precedence.

This annex specifies the constraints and characteristics of this International Standardized Profile on what shall or may appear in an implementor´s PICS for an implementation conformant to this International Standardized Profile.

This annex is based on the Directory Access Protocol PICS Proforma of Recommendation CCITT X.581 and on ISO/IEC ISP 10616, annex A. It uses only a selection of the tables of CCITT X.581 which are necessary for the specification of the ISP status. The numbering of the base PICS Proforma is retained in order to facilitate for an implementor to fill in the respective PICS Proforma.

The terminology of conformance requirements used is as defined in 3.2.

A.1 to A.5

No requirements stated in this International Standardized Profile.

A.6 Capabilities and options

A.6.1 to A.6.3

No requirements stated in this International Standardized Profile.

A.6.4 Directory schema

A.6.4.1 Object classes

A.6.4.1.1 Standard object classes

No additional requirements are stated in this International Standardized Profile beyond those stated in ISO/IEC ISP 10616, A.6.4.1.1.

A.6.4.1.2 Other object classes (see clause 7)

The table below indicates the conformance requirements of this International Standardized Profile on other object classes in addition to those stated in ISO/IEC ISP 10616, A.6.4.1.2.

Ref. no.	Object Class	Base Standard	Profile	Note
1	ispApplicationEntity	-	m	see ISO/IEC ISP 10616
2	vtCapability	-	m	see clause 7

Note. The Object Class referenced from ISO/IEC ISP 10616 is defined as optional in that profile but defined as mandatory for this International Standardized Profile.

A.6.4.2 Attribute types

A.6.4.2.1 Standard attribute types

No additional requirements are stated in this International Standardized Profile beyond those stated in ISO/IEC ISP 10616, A.6.4.2.1.

A.6.4.2.2 Other attribute types (see clause 8)

The table below indicates the conformance requirements of this International Standardized Profile on other attribute types in addition to those stated in ISO/IEC ISP 10616, A.6.4.2.2.

Ref. no.	Attribute type	Base Standard	Profile	Note
1	protocolInformation	-	m	see ISO/IEC ISP 10616
2	ulProfileInformation	-	m	see ISO/IEC ISP 10616
3	applicationEntityOID	-	m	see ISO/IEC ISP 10616
4	transferSyntaxesSupported	-	m	see ISO/IEC ISP 10616
5	vtModes	-	m	see 8.1
6	vtRoles	-	m	see 8.2
7	vtFunctionalUnits	-	m	see 8.3
8	vteProfiles	-	m	see 8.4
9	vtApplicationProfiles	-	m	see 8.5
10	vtControlObjects	-	m	see 8.6
11	vtAssignmentTypes	-	m	see 8.7

Note. The Attribute Types referenced from ISO/IEC ISP 10616 are defined as optional in that profile but defined as mandatory for this International Standardized Profile.

A.6.5 Other information

A.6.5.1 Minimum set of structure and naming elements (see clause 6)

No additional requirements are stated in this International Standardized Profile beyond those stated in ISO/IEC ISP 10616, A.6.5.1.

A.6.5.2 Additional object classes for structure elements of the DIT

No additional requirements are stated in this International Standardized Profile.

A.6.5.3 Attribute syntaxes (see clause 9)

Support requirements - in addition to the requirements of ISO/IEC ISP 10616 - are defined for those attribute syntaxes which are implied by in-line definition within attribute type definitions as listed below.

Ref. no.	Attribute type implying attribute syntaxes	Base Standard	Profile	Note
1	protocolInformation	-	m	see ISO/IEC ISP 10616, 8.2.1
2	vtModes	-	m	see 8.1
3	vtRoles	-	m	see 8.2
4	vtFunctionalUnits	-	m	see 8.3
5	vteProfiles	-	m	see 8.4
6	vtApplicationProfiles	-	m	see 8.5
7	vtControlObjects	-	m	see 8.6
8	vtAssignmentTypes	-	m	see 8.7

Note. The Attribute Syntax referenced from ISO/IEC ISP 10616 is defined as optional in that profile but defined as mandatory for this International Standardized Profile.

A.6.5.4 Regional requirements for support of T61String

No additional requirements are stated in this International Standardized Profile beyond those stated in ISO/IEC ISP 10616, A.6.5.4.

Annex B

(normative)

FDI5 Directory Definitions in ASN.1

This annex includes all of the ASN.1 type and value definitions contained in this International Standardized Profile in the form of the ASN.1 module FDI5DirectoryDefinitions.

```
FDI5DirectoryDefinitions { iso(1) standard(0) fdi5(12072) modules(1) fdi5Definitions(1) }
DEFINITIONS ::=

BEGIN

-- Exports everything --

IMPORTS
    ispApplicationEntity, protocolInformation, ulProfileInformation, applicationEntityOID, transferSyntaxesSupported
    FROM FDI11DirectoryDefinitions { iso(1) standard(0) fdi11(10616) modules(1) fdi11Definitions(1) }


-- object classes --

    vtCapability OBJECT-CLASS -- AUXILIARY
        MUST CONTAIN {
                vtModes,
                vtRoles,
                vtFunctionalUnits,
                vteProfiles }
        MAY CONTAIN {
                vtApplicationProfiles,
                vtControlObjects,
                vtAssignmentTypes }
    ::= { iso(1) standard(0) fdi5(12072) objectClass(6) 1 }
```

```
-- attribute types --

    vtModes    ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX
                BIT STRING  {
                                aMode          (0),
                                sMode          (1),
                                eitherA        (2),
                                eitherS        (3)  }
        MATCHES FOR EQUALITY
        SINGLE VALUED
    ::= { iso(1)  standard(0)  fdi5(12072)  attributeType(4)  1 }

    vtRoles     ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX
                BIT STRING  {
                                initiator      (0),
                                responder      (1)  }
        MATCHES FOR EQUALITY
        SINGLE VALUED
    ::= { iso(1)  standard(0)  fdi5(12072)  attributeType(4)  2 }

    vtFunctionalUnits   ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX
                BIT STRING {
                        profileSwitch          (0),
                        multipleIntNeg         (1),
                        negotiatedRelease      (2),
                        urgentData             (3),
                        destructiveBreak       (4),
                        enhancedAccess         (5),
                        structuredCOs          (6),
                        blocks                 (7),
                        fields                 (8),
                        referenceInfos         (9),
                        ripple                 (10),
                        exceptions             (11),
                        contextRetention       (12) }
        MATCHES FOR EQUALITY
        SINGLE VALUED
    ::= { iso(1)  standard(0)  fdi5(12072)  attributeType(4)  3 }

    vteProfiles  ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX
```