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**Information technology — International
Standardized Profiles FVT3nn — Virtual
Terminal Basic Class — Register of
attribute assignment type definitions —**

Part 2:

FVT311 — Repertoire Assignment Type for
ISO/IEC 10646

*Technologies de l'information — Profils normalisés internationaux
FVT3nn — Classe de base de terminal virtuel — Registre de définitions de
type d'allocation d'attribut —*

Partie 2: FVT311 — Type d'allocation de répertoire pour l'ISO/CEI 10646



Reference number
ISO/IEC ISP 11186-2:1996(E)

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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 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. In addition to developing International Standards, ISO/IEC JTC 1 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 11186-2 was prepared with the collaboration of

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

ISO/IEC ISP 11186 consists of the following parts, under the general title *Information technology — International Standardized Profiles FVT3nn — Virtual Terminal Basic Class — Register of attribute assignment type definitions*:

- Part 1: FVT321 — Font Assignment Type No.1
- Part 2: FVT311 — Repertoire Assignment Type for ISO/IEC 10646
- Part 3: FVT312 — Repertoire Assignment Type for ISO/IEC 2022 Level 2
- Part 4: FVT322 — Font Assignment Type No.2

Annex A of this part of ISO/IEC 11186 is provided for information only.

Introduction

ISO/IEC ISP 11186 is defined within the context of Functional Standardization, in accordance with the principles specified in ISO/IEC TR 10000, "Framework and Taxonomy of International Standardized Profiles". The context of Functional Standardization is one part of the overall field of Information Technology (IT) standardization activities, covering base standards, profiles and registration mechanisms.

The Open Systems Interconnection (OSI) Standard ISO 9040 for the Virtual Terminal Basic Class Service provides for the identification of attribute assignment types by means of ASN.1 object identifiers. This International Standardized Profile provides a means for the registration of such attribute assignment type definitions in accordance with ISO/IEC 9834-1. The individual entries in this register constitute Interchange Format and Representation Profiles (F-Profiles) within the framework of ISO/IEC TR 10000.

This part of ISO/IEC ISP 11186 was developed by the European Workshop for Open Systems (EWOS) in close cooperation with the other two Regional OSI Workshops, namely the OSE Implementors' Workshop (OIW) of the United States and the OSI Asia-Oceania Workshop (AOW). The text is harmonized between these three Workshops and it has been ratified by the plenary assemblies of each Workshop.

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Information technology — International Standardized Profiles FVT3nn — Virtual Terminal Basic Class — Register of attribute assignment type definitions —

Part 2:

FVT311 — Repertoire Assignment Type for ISO/IEC 10646

1 Scope

1.1 General

The concept of Profiles for OSI, and the structure of the International Standardized Profiles that document them, are defined in ISO/IEC TR 10000-1. Such Profiles are divided into a number of different classes and sub-classes. Two of these classes contain sub-classes comprising functions of the Virtual Terminal Basic Class Service and Protocol specified in the base standards ISO 9040 and ISO 9041. These are the Application Profiles (A-Profiles) and the Interchange Format and Representation Profiles (F-Profiles).

The relationship between A-Profiles and F-Profiles is described in 7.3.2 of ISO/IEC TR 10000-1 and is as follows. Application Layer base standards require, implicitly or explicitly, the structure of information carried or referenced by them to be specified for each instance of communication. It is the purpose of F-Profiles to specify such information structures. Particular functional requirements may then be met by the combination of an A-Profile with one or more F-Profiles.

Establishment of a VT-association involves the selection by negotiation of a particular Virtual Terminal Environment profile (VTE-profile), and of particular values for any arguments of that VTE-profile. The VTE-profile specification, and possibly also the values of certain VTE-profile arguments, may in turn reference the definitions of VT control object types and attribute assignment types. These VTE-profiles, control object types and attribute assignment types are therefore Information Objects that require explicit reference within the VT protocol. Particular instances of these Information Objects are fully defined within the base standards, but the base standards also provide for further instances to be defined by registration. Each registered instance constitutes an F-Profile within the framework of ISO/IEC TR 10000.

The Virtual Terminal Basic Class Service and Protocol may be used to realise a wide range of distinct functions. Particular functions may be realised through the selection of appropriate VT functional units, F-Profiles and other VTE-profile argument values. The specification of the selection required to realise a particular function and to promote interoperability constitutes a Virtual Terminal A-Profile within the framework of ISO/IEC TR 10000.

The three International Registers of VT information objects and the specifications of VT Application Profiles are each published as a separate multi-part ISP as follows:

- ISO/IEC ISP 11184 is the Register of VTE-profiles;
- ISO/IEC ISP 11185 is the Register of control object type definitions;
- ISO/IEC ISP 11186 is the Register of attribute assignment type definitions;
- ISO/IEC ISP 11187 contains the specifications of VT Application Profiles.

This part of ISO/IEC ISP 11186 contains the definition of a repertoire assignment type for which a repertoire assignment value identifies a subset of the Universal Multiple-Octet Coded Character Set specified in the multi-part standard ISO/IEC 10646.

1.2 Position within the taxonomy

The taxonomy of International Standardized Profiles for OSI is laid down in ISO/IEC TR 10000-2. Within the classification scheme of this taxonomy, the OSI Profiles specified in this International Standardized Profile are in the Virtual Terminal Registered Object sub-class of the class of Interchange Format and Representation Profiles.

A Profile within this subclass has a Profile identifier of the form FVTabc, where abc is a structured numerical identifier that identifies the position of the Profile within each of the three levels of subdivision of the subclass. The values of a and b are single digits but c is an integer that is not necessarily a single digit.

In principle the ISO Virtual Terminal model allows for multiple classes of operation, although at the time of publication of this International Standardized Profile only the Basic Class has been defined. The value of the identifier component a distinguishes between distinct types of information object as follows:

- a = 1 for Basic Class VTE-profiles;
- a = 2 for Basic Class Control Objects;

- $a = 3$ for Basic Class Assignment Types.

Values of a greater than 3 are reserved for future developments.

This International Standardized Profile ISO/IEC ISP 11186 contains the specifications of the Profiles with identifiers of the form FVT3bc. For this form of identifier, the component b distinguishes between the three attributes of display object array elements for which assignment types are defined in accordance with ISO 9040. The values of b are allocated as follows:

- $b = 1$ for repertoire assignment types;
- $b = 2$ for font assignment types;
- $b = 3$ for colour assignment types.

The identifier component c is the serial number of the attribute assignment type in the sub-register for the particular attribute concerned. Values of b greater than 3 are reserved for further attributes that may be defined as subject to registration in future amendments to ISO 9040.

This part of ISO/IEC ISP 11186 contains the definition of the repertoire assignment type with the Profile identifier

FVT311 — Repertoire Assignment Type for ISO/IEC 10646

1.3 Scenario

The specification of the Virtual Terminal Service is given in ISO 9040. It is based on a model in which two VT-users communicate by means of a shared Conceptual Communication Area (CCA) that is a conceptual part of the VT service-provider. Information exchange is modelled by one VT-user updating the content of the CCA and the changed state of the CCA then being made accessible to the peer VT-user.

The CCA is structured by the Virtual Terminal Service into a number of components. Of these components, the Conceptual Data Store (CDS) contains one or two display objects (DOs), each of which includes a one, two or three dimensional array of array elements. Each array element is either empty or has a content that consists of a primary attribute and a number of secondary attributes. The primary attribute value selects one character-box graphic element from a repertoire of such elements that is determined by the character-repertoire secondary attribute. The other secondary attributes are the font, emphasis, foreground-colour and background-colour attributes which are collectively referred to as rendition attributes.

The values permitted for the secondary attributes are specified by attribute assignments that are included among the parameters of a Virtual Terminal Environment (VTE). The font attribute is subservient to the character-repertoire attribute in that a separate set of permitted values for the font attribute is specified for each permitted value of the character-repertoire attribute. The values permitted for the other secondary attributes are mutually independent.

With the exception of the emphasis attribute, an attribute assignment is composed of two parts, a type and a value. For the emphasis attribute, the syntax of permitted values is prescribed by the VT service base standard ISO 9040 and the

semantics of each value is determined by the specification of the VTE-profile currently in use. For all other secondary attributes, the assignment type determines both the syntax of the permitted values and the semantic interpretation of each such value.

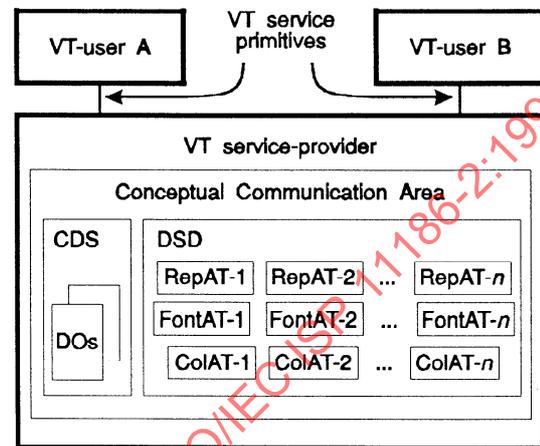


Figure 1 — Attribute assignment types in the VT Service model

Assignment type definitions are required for only three distinct attributes, namely repertoire, font and colour, since both foreground-colour and background-colour secondary attributes reference the same assignment types. The attribute assignments specified by the parameter values of a VTE, and the assignment type definitions to which they refer, are held in the Data Structure Definition (DSD) component of the CCA. This is illustrated in figure 1, in which RepAT-1, RepAT-2, ... RepAT- n represent a number of different repertoire assignment types, FontAT-1, FontAT-2, ... FontAT- n represent a number of different font assignment types and ColAT-1, ColAT-2, ... ColAT- n represent a number of different colour assignment types. The negotiation during establishment of a VT-association will determine whether or not these will include the attribute assignment type whose definition is given in this part of ISO/IEC ISP 11186.

NOTE — A VTE-profile specification may prescribe the attribute assignments that are present in any VTE established by its use, or may provide VTE-profile arguments for the negotiation of these attribute assignments, or may use a combination of these methods. Where some or all of the attribute assignments are determined by negotiation, attribute assignment types are referenced by their registered name. The permitted syntax of the corresponding attribute assignment value is determined by the definition that has this registered name. Since the VT service-provider is not required to have knowledge of these registered definitions, in principle the VT-users provide the VT service-provider with such information through local management procedures. Whether or not this is necessary in practice depends on the nature of the implementations concerned.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 11186. 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 7498-1:1994, *Information technology — Open Systems Interconnection — Basic Reference Model: The Basic Model*. (See also ITU-T Recommendation X.200).

ISO/IEC 8824-1:1995, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation* (third edition). (See also ITU-T Recommendation X.680).

ISO/IEC 8824-2:1995, *Information technology — Abstract Syntax Notation One (ASN.1): Information object specification*. (See also ITU-T Recommendation X.681).

ISO 9040:1990, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Service*.

ISO 9041-1:1990, *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 — Part 1: General procedures*. (See also ITU-T Recommendation X.660).

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

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

ISO/IEC 10646-1:1993, *Information technology — Universal Multiple-Octet Coded Character Set (UCS) — Part 1: Architecture and Basic Multilingual Plane*.

ISO/IEC 10731:1994, *Information technology — Open Systems Interconnection — Basic Reference Model — Conventions for the definition of OSI services*. (See also ITU-T Recommendation X.210).

3 Definitions

For the purposes of this part of ISO/IEC ISP 11186 the following definitions apply.

3.1 General OSI terminology

3.1.1 This part of ISO/IEC ISP 11186 makes use of the following terms defined in ISO/IEC 10731:

- a) service primitive;
- b) service-provider.

3.1.2 This part of ISO/IEC ISP 11186 makes use of the following terms defined in ISO/IEC 8824-1:

- a) character abstract syntax;
- b) character string type;

- c) character transfer syntax;
- d) component type;
- e) module;
- f) object descriptor type;
- g) object identifier;
- h) sequence type;
- i) unrestricted character string type.

3.1.3 This part of ISO/IEC ISP 11186 makes use of the following term defined in ISO/IEC 8824-2:

- a) information object.

3.1.4 This part of ISO/IEC ISP 11186 makes use of the following terms defined in ISO/IEC 9834-1:

- a) registration;
- b) registration-hierarchical-name.

3.2 Terminology of VT base standards

3.2.1 This part of ISO/IEC ISP 11186 makes use of the following terms defined in ISO 9040:

- a) array element;
- b) character-box graphic element;
- c) character-repertoire;
- d) display object;
- e) primary attribute;
- f) rendition attributes;
- g) secondary attribute;
- h) VT-association;
- i) VT-environment (VTE);
- j) VT-user;
- k) VTE-parameter;
- l) VTE-profile;
- m) VTE-profile argument.

3.3 Terminology of coded character set standards

3.3.1 This part of ISO/IEC ISP 11186 makes use of the following terms defined in ISO/IEC 10646-1:

- a) character;
- b) combining character;
- c) composite sequence;
- d) graphic character;
- e) graphic symbol;

f) repertoire.

4 Abbreviations

For the purposes of this part of ISO/IEC ISP 11186 the following abbreviations apply.

ASN.1	Abstract Syntax Notation One
CCA	Conceptual Communication Area
CDS	Conceptual Data Store
DO	Display Object
DSD	Data Structure Definition
PDU	Protocol Data Unit
VT	Virtual Terminal
VTE	Virtual Terminal Environment

All other abbreviations used are defined in ISO/IEC TR 10000-1.

5 Principles of conformance to VT Profiles

Profiles with taxonomy identifiers of the form FVT3nn provide attribute assignment type definitions for reference as required by VTE-profile specifications given in FVT1nn Profiles, by control object type definitions given in FVT2nn Profiles and by VT Application Profiles given in AVTnn Profiles.

There is no concept of conformance to an FVT3nn Profile in isolation. An FVT1nn Profile that references an FVT3nn Profile may place requirements on an implementation of the VT protocol to be able to negotiate the presence in the CCA of attribute assignments of the type concerned. An FVT2nn Profile may impose similar requirements concerning FVT3nn Profiles if it permits negotiation of values for the CO-repertoire-assignment VTE-parameter.

NOTE — The use of an attribute assignment type by a VTE-profile specification will have no effect on the operation of the VT protocol unless the attribute assignment concerned is subject to negotiation during association establishment. Attribute assignments are referenced in display object update operations by their position in an ordered list, so that the PDUs carrying these operations are transparent to the specific assignments being referenced.

Such requirements of FVT1nn and FVT2nn Profiles reference the syntax of attribute assignment values as specified by the attribute assignment type concerned. A system that includes an implementation of the VT protocol may be claimed to conform also to an AVTnn Profile. Conformance to an AVTnn Profile may require that the image of the display object array presented by a real display device is in accordance with semantics specified by the attribute assignment type definitions referenced by the contents of the array elements. Conformance to attribute assignment type semantics is not within the scope of conformance to any FVTnn Profile.

In accordance with these conformance principles, an FVT3nn Profile does not provide a Profile Requirements List as defined by ISO/IEC 9646-1.

6 Entry number

The remaining clauses of this part of ISO/IEC ISP 11186 provide the entry for the Repertoire Assignment Type for ISO/IEC 10646 in the International Register of VT Attribute Assignment Type Definitions. This register complies with the requirements of ISO/IEC 9834-1 concerning registration

authorities that operate in a technical role. This International Register is maintained as three sub-registers, one each for repertoire, font and colour assignment type definitions.

This entry is the first in the sub-register for repertoire assignment type definitions. This register assigns it the entry number:

REP-1.

7 Name of sponsoring authority

This entry is sponsored by the European Workshop for Open Systems (EWOS).

8 Date

The date of submission of this proposal was 1995-03-01.

9 Identifier

The name assigned to an information object by an International Register is required by ISO/IEC 9834-1 to be a registration-hierarchical-name. A registration-hierarchical-name may have more than one form. The permitted forms include an ASN.1 object identifier as defined in ISO/IEC 8824-1 and a distinguished name as defined in ISO/IEC 9594-2.

In accordance with annex A of ISO/IEC 9834-1, this register assigns the following object identifier form for the name of this register entry:

```
{ iso(1) standard(0) 11186 2 repertoire(2) iso10646(1) }.
```

In accordance with 18.3 of ISO 9040, this object identifier shall be used as the repertoire-assignment-type component of a value of the repertoire-assignment VTE-parameter to specify this register entry as providing the method used to designate the character-repertoire and to determine the form of the repertoire-assignment-value component.

This register does not assign any other form to the name of this entry.

NOTE — By ISO/IEC 9834-1 a distinguished name for the purposes of the OSI Directory may only be assigned together with an object identifier when the object identifier form is generated under the arc { joint-iso-ccitt(2) country(16) country-name }.

10 Descriptor value

The value of the ASN.1 object descriptor type assigned to this register entry is:

"FVT311: Repertoire Assignment Type for ISO/IEC 10646".

11 Repertoire designation

The method used for designation of a character-repertoire within this repertoire assignment type is based on that used for the unrestricted character string type as specified in clause 37 of ISO/IEC 8824-1.

A character-repertoire shall be designated by a pair consisting of a character abstract syntax and a character transfer syntax which satisfy the following conditions:

- the repertoire of the character abstract syntax shall be a subset of ISO/IEC 10646 as defined in clause 13 of ISO/IEC 10646-1;
- the character transfer syntax shall identify a coding method that is both specified in ISO/IEC 10646 and applicable to the selected character abstract syntax.

The character-box graphic elements that constitute a character-repertoire designated in this manner shall consist of the following character strings of the specified character abstract syntax:

- all character strings composed of exactly one non-combining graphic character;
- all character strings composed of exactly one composite sequence.

The primary attribute value that represents such a character-box graphic element shall be the coded representation of its character string in accordance with the specified character transfer syntax.

NOTES

- 1 Clause M.2 of informative annex M of ISO/IEC 10646-1 states: 'The set of all character strings that can be formed from the characters of an identified repertoire in accordance with ISO/IEC 10646 is defined to be a "character abstract syntax" in the terminology of ISO/IEC 8824. For each such character abstract syntax, a corresponding object identifier value is defined to permit references to be made to that syntax when the ASN.1 notation is used.'
- 2 Clause M.3 of informative annex M of ISO/IEC 10646-1 states: 'The coding method for character strings that can be formed from the characters in accordance with ISO/IEC 10646 is defined to be a "character transfer syntax" in the terminology of ISO/IEC 8824. For each such character transfer syntax, a corresponding object identifier value is defined to permit references to be made to that syntax when the ASN.1 notation is used.'
- 3 A composite sequence is defined in 4.13 of ISO/IEC 10646-1 as 'A sequence of graphic characters consisting of a non-combining character followed by one or more combining characters'. Both a graphic character and a composite sequence have a visual representation that is a single graphic symbol.
- 4 The character-repertoire will not contain composite sequences if the character abstract syntax identifies the implementation level of ISO/IEC 10646 as level 1.
- 5 If the character abstract syntax identifies the implementation level of ISO/IEC 10646 as higher than 1 then there is in principle no limit on the number of octets that may be present in a single primary attribute value, since there is no limit on the number of combining characters that may be present in a composite sequence.

12 VT abstract syntax

A value for the repertoire-assignment VTE-parameter is referenced in the VT protocol of ISO 9041-1 by a value of the ASN.1 sequence type CDS.RepertoireAssignment. This type is composed of two component types with identifiers 'type' and 'value'. When the optional 'type' component is present

and takes a value other than the object identifier value vt-b-rep-iso2022 defined in 18.2.4.1 of ISO 9040, the 'value' component is specified by an ASN.1 any type; see annex I of ISO/IEC 8824-1.

This repertoire assignment type requires that when the 'type' component takes the ASN.1 object identifier value specified herein in clause 9 then the value of this ASN.1 any type shall be a value of the type Rep1-value that is exported from the ASN.1 module ISP11186-REP1 defined below.

```
ISP11186-REP1 { 1 0 11186 2 2 1 }
DEFINITIONS ::= BEGIN
```

```
EXPORTS
```

```
Rep1-value;
```

```
Rep1-value ::= SEQUENCE {
  abstract-syntax OBJECT IDENTIFIER,
  transfer-syntax OBJECT IDENTIFIER DEFAULT
    { iso standard 10646 1 transfer-syntaxes(0)
      two-octet-BMP-form(2) } }
```

- The values of the abstract-syntax and transfer-syntax
- components shall be object identifiers that identify
- respectively the character abstract syntax and character
- transfer syntax of a character-repertoire designated in
- accordance with clause 11 of ISO/IEC ISP 11186-2.

```
END -- OF ISP11186-REP1 DEFINITIONS
```

NOTE — A formal notation within ASN.1 for the definition of an information object is given in ISO/IEC 8824-2. In terms of this notation, a repertoire assignment type may be defined to be an instance of the information object class specified by the ASN.1 production:

```
REPertoire-ASSIGNMENT-TYPE ::= TYPE-IDENTIFIER
```

The repertoire assignment type defined in this part of ISO/IEC ISP 11186 may then be assigned to an information object reference by the ASN.1 production:

```
rep1-type REPertoire-ASSIGNMENT-TYPE ::=
  { Rep1-value IDENTIFIED BY
    { iso standard 11186 2 repertoire(2) iso10646(1) } }
```

Values of the ASN.1 type

```
INSTANCE OF REPertoire-ASSIGNMENT-TYPE ({rep1-type})
```

then designate particular repertoires with this assignment type. This instance-of type notation was introduced in the third edition of the ASN.1 specification. It supersedes the ASN.1 any type which is used in the VT protocol specification ISO 9041-1; see annex H of ISO/IEC 8824-1.