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

iTeh STANDARD PREVIEW

Part 1:

FVT321 — Font Assignment Type No. 1

ISO/IEC ISP 11186-1:1996

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

Partie 1: FVT321 — Type d'allocation font n° 1



Reference number
ISO/IEC ISP 11186-1:1996(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 11186-1 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

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 in close cooperation between the three Regional OSI Workshops, namely the OSE Implementors' Workshop (OIW) of the United States, the European Workshop for Open Systems (EWOS) and the OSI Asia-Oceania Workshop (AOW). It was developed under the editorship of EWOS from an attribute assignment type definition contained in the European pre-standard ENV 41 513. 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 1: FVT321 — Font Assignment Type No.1

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 font assignment type that enables a font assignment value to be specified as a font resource property-list in accordance with ISO/IEC 9541-1. The properties that may be included in the property-list are specified as a subset of the properties defined for a character cell font. Particular provision is made for font resources in which the height and width of a character cell are integer multiples of the height and width of the character boxes that comprise the graphical images considered by the VT service. Provision is also made for the use of both left-to-right and right-to-left writing modes and for the coexistence of both modes in the display object.

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 FVT*abc*, 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 font assignment type with the Profile identifier

FVT321 — Font Assignment Type No.1.

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.

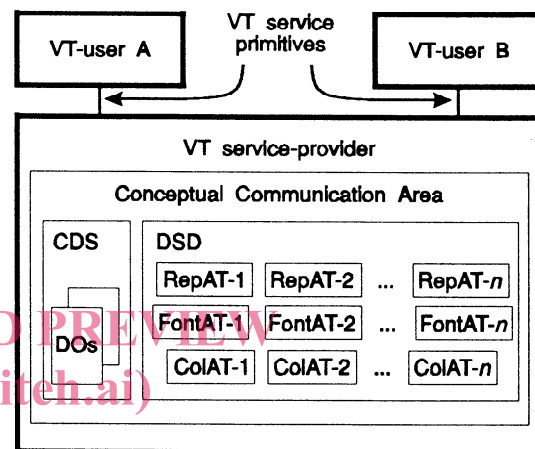


Figure 1 — Attribute assignment types in the VT Service model

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 part of ISO/IEC ISP 11186 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 CCITT maintains published editions of its current Recommendations.

ISO/IEC 6429:1992, *Information technology — Control functions for coded character sets* (third edition).

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 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 9541-1:1991, *Information technology — Font information interchange — Part 1: Architecture*.

ISO/IEC 9541-2:1991, *Information technology — Font information interchange — Part 2: Interchange format*.

ISO/IEC 9834-1:1993, *Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities — Part 1: General procedures*. (See also CCITT 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:

- a) any type;
- b) component type;
- c) information object;
- d) module;
- e) object descriptor type;
- f) object identifier;
- g) parent type (of a subtype);
- h) structured type;
- i) subtype (of a parent type).

3.1.3 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 font information interchange standards

3.3.1 This part of ISO/IEC ISP 11186 makes use of the following terms defined in ISO/IEC 9541-1:

- a) escapement;
- b) font;
- c) font reference;
- d) font resource;
- e) glyph;
- f) glyph coordinate system;
- g) glyph image;
- h) posture;
- i) presentation surface;
- j) property;
- k) property-list;
- l) proportionate width;
- m) structured-name;
- n) weight;
- o) writing mode.

3.4 Terminology of coded character set standards

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

- a) cell;
- b) character;
- c) coded character;
- d) coded character set.

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 Font Assignment Type No.1 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 font assignment type definitions. This register assigns it the entry number:

FONT-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 1994-09-14.

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 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 1 font(3) font1(1) }.
```

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

"FVT321: Font Assignment Type No.1".

11 Font designation

11.1 Underlying principles

11.1.1 Font references

The font designation scheme of this assignment type uses the font reference data structure specified in annex A of ISO/IEC 9541-2. A font reference is intended for use in the identification and selection of a font resource that matches the set of property values specified in the font reference. ISO/IEC 9541-2 states that the font reference data structure which it defines may be used directly as a font reference (by specifying the selection semantics), or may be used as a building block for more complex font selection or substitution requirements. It also states that only those properties considered to be relevant to the originator need be specified in a font reference. This assignment type takes the former course, using the font reference data structure of ISO/IEC 9541-2 by specifying the relevant properties and the allowed values of each property.

The following properties of a font resource as defined in ISO/IEC 9541-1 are used in the designation scheme of this assignment type:

- posture;
- weight;
- proportionate width;
- structure;
- design group;

- glyph complement;
- nominal writing mode.

The first five of these properties concern the font design, in that they affect the individual glyphs of a font resource. The glyph complement specifies the set of all glyphs that are included in at least one writing mode that is defined for the font resource. A writing mode specifies those properties of a font resource that affect the positioning of the glyph images relative to one another. The nominal writing mode of a font resource is the writing mode that is to be used if no other writing mode is specified in a font reference. With the exception of the glyph complement, which is determined by the value of the character-repertoire rather than the font secondary attribute of an array element, the values of these properties are specified as parameters within a font assignment value of this font assignment type.

The properties listed above are all classified in ISO/IEC 9541-1 as font description properties. Writing modes are themselves specified by a further list of properties known as modal properties. Each writing mode available for a particular font is identified within ISO/IEC 9541-1 by a structured-name. The names available for the nominal writing mode property within this assignment type are specified in 11.2.7. The values of the modal properties for each named mode are specified in 12.2.

There are further ISO/IEC 9541-1 properties that are neither listed above nor determined in accordance with 12.2 by the writing mode concerned. These properties either describe aspects of a font resource that are treated by ISO 9040 as controlled by the emphasis secondary attribute (e.g. scores) or are beyond the resolution of terminals to which this assignment type is appropriate (e.g. posture angle).

11.1.2 Character cell model

The character-box model of graphic elements used in VT models glyphs as rectangular boxes which are all of the same width and height and which may be imaged consecutively to form text strings and text lines. This corresponds to a character cell font as described in 8.7.1.3 of ISO/IEC 9541-1. This assignment type allows the simultaneous use of more than one character cell font without requiring all such fonts to use the same size of character cell.

The relative sizes of the character cells of different fonts are specified in terms of the standard character-box of the VT model. This standard character-box is the box that is used to determine the values of the device-minimum-x-array-length and device-minimum-y-array-length VTE-parameters. Within this assignment type, individual fonts may have character cells whose widths and heights are integer multiples of those of the VT character-box. These multiples are specified within the font assignment value as part of the structured-name of the nominal writing mode, as described in clause 11.2.7 below. When these are both the unit multiple, the cell will be referred to as the standard character cell. The writing mode name is also used to specify whether the font is to be written from right to left or left to right.

NOTE — The size of a VT character-box remains well defined even when all values of the font attribute negotiated for use in a particular instance of communication consist of double-width characters (e.g. Kanji). In such a situation the maximum number of adjacent characters from one x-array that can be displayed simultaneously on a real device is one-half of the value of the device-minimum-x-array-length VTE-parameter for that device.