INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 11185-2

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Information technology — International Standardized Profiles FVT2nn — Virtual Terminal Basic Class — Register of control object type definitions —

Part 2:
FVT213, FVT214 — Sequenced and Unsequenced Terminal Control Objects

Technologies de l'information — Profils normalisés internationaux FVT2nn — Classe de base de terminal virtuel — Registre de définitions de type d'objet de commande —

Partie 2: FVT213, FVT214 — Objets de commande de terminal ordonnés et non ordonnés

Reference number
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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 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 11185-2 was prepared with the collaboration of

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

This International Standardized Profile ISO/IEC ISP 11185 forms an International Register of information objects in accordance with the procedures for the operation of OSI Registration Authorities laid down in ISO/IEC 9834. It is issued in parts, with additional parts being issued as further entries are added to the register. Each part is prepared in accordance with an approval and maintenance process laid down by the Special Group on Functional Standardization of ISO/IEC JTC1, *Information technology*.

ISO/IEC ISP 11185 is issued under the general title *Information technology — International Standardized Profiles FVT2nn — Virtual Terminal Basic Class — Register of control object type definitions*. At present the following parts are published or are in the course of preparation:

- *Part 1: FVT211, FVT212 — Sequenced and Unsequenced Application Control Objects*
- *Part 2: FVT213, FVT214 — Sequenced and Unsequenced Terminal Control Objects*
- *Part 3: FVT215, FVT216 — Application RIO Record Loading Control Object, Terminal RIO Record Notification Control Object*
- *Part 4: FVT217 — Horizontal Tabulation Control Object*
- *Part 5: FVT218 — Logical Image Control Object*
- *Part 6: FVT219 — Status Message Control Object*
- *Part 7: FVT2110 — Entry-Control Control Object*
- *Part 8: FVT221 — Forms FEICO (Field Entry Instruction Control Object) No.1*
- *Part 9: FVT222 — Paged FEICO (Field Entry Instruction Control Object) No.1*
- *Part 10: FVT231 — Forms FEPCO (Field Entry Pilot Control Object) No.1*
- *Part 11: FVT232 — Paged FEPCO (Field Entry Pilot Control Object) No.1*
- *Part 12: FVT2116, FVT2117, FVT2118, FVT2119 — Generalized Telnet Synch, Signal, Negotiation and Subnegotiation Control Objects*
- *Part 13: FVT2111 — Waiting Time Control Object*
- *Part 14: FVT2112 — Printer Control Object*
- *Part 15: FVT2113 — Field Definition Management Control Object*
- *Part 16: FVT2114 — Terminal Signal Titles Control Object*
- *Part 17: FVT2115 — Help Text Control Object*

Annex A of this part of ISO/IEC ISP 11185 forms an integral part of this International Standardized Profile.

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Introduction

This International Standardized Profile ISO/IEC ISP 11185 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 identifies a requirement for an International Register of VT Control Object type definitions. Procedures for the operation of this International Register are laid down in ISO/IEC 9834-5. This International Standardized Profile provides this register. 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 11185 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 a control object specification contained in the OIW Stable Implementation Agreements, Version 3 (December 1989). 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 FVT2nn — Virtual Terminal Basic Class — Register of control object type definitions —

Part 2:
FVT213, FVT214 — Sequenced and Unsequenced Terminal Control Objects

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 assignment types. These VTE-profiles, control object types and assignment types are thus information structures that require explicit reference within the VT protocol. Particular instances of these structures 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 structures 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 assignment-type definitions;

— ISO/IEC ISP 11187 contains the specifications of VT Application Profiles.

This part of ISO/IEC ISP 11185 contains the definitions of two control object types that may be used to convey uninterpreted signals from a terminal to an application. One is used to convey these signals in sequence with other data. The other is used to convey these signals urgently when there is no requirement to maintain a sequence order with other data.

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

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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 11185 contains the specifications of the Profiles with identifiers of the form FVT2*bc*. For this form of identifier, the component *b* distinguishes between the five major classifications of Basic Class Control Objects as follows:

— *b* = 1 for Miscellaneous Control Objects;

— *b* = 2 for Field Entry Instruction Control Objects;

— *b* = 3 for Field Entry Pilot Control Objects;

— *b* = 4 for Reference Information Objects;

— *b* = 5 for Termination Conditions Control Objects.

Each of these classifications corresponds to a sub-register under the procedures of ISO/IEC 9834-5. The identifier component *c* is the serial number of the control object type in the appropriate sub-register. Values of *b* greater than 5 are reserved for new classifications of Basic Class Control Objects that may be defined in future amendments to ISO 9040.

This part of ISO/IEC ISP 11185 contains the definitions of the Miscellaneous Control Object types with the Profile identifiers

FVT213 — Sequenced Terminal Control Object;

FVT214 — Unsequenced Terminal Control Object.

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.

Control objects (COs) form one of the types of information object that may be present in the CCA. This is illustrated in figure 1, in which CO-1, CO-2, ... CO-*n* represent a number of different control objects present in the CCA. The negotiation during establishment of a VT-association will determine whether or not these will include control objects of either or both of the types whose definitions are given in this part of ISO/IEC ISP 11185.

The CCA is structured by the Virtual Terminal Service into a number of components. For a control object the Data Structure Definition (DSD) component of the CCA contains the syntax of its information content, including the range of possible values and the permitted update operations. The

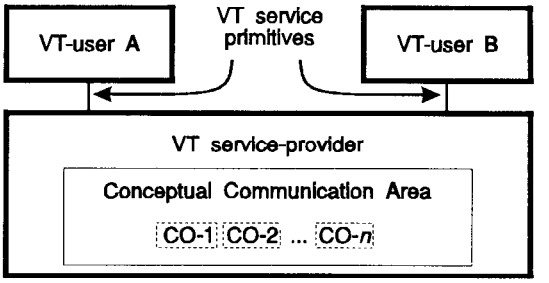


Figure 1 — Control objects in the VT Service model

current value of its information content is contained in the Control, Signal and Status store (CSS) component. Updates to the current value take place through the issue of VT service primitives by one VT-user to the service-provider. Changes of state of the CCA are made accessible through the issue of VT service primitives by the service-provider to the peer VT-user.

By clause 14 of ISO 9040, COs enable VT-users to handle control information related to virtual terminal functions and to real devices. This control is exercised by the VT-users through semantics associated with the information content and with the update operations of the CO. Definition of the semantics, or specification of the source of the semantics if the semantic details are not fully prescribed, forms part of the registered definition of the CO. These semantics are not however of concern to the VT service-provider itself. The DSD will contain an ASN.1 object identifier that identifies the registered definition, but the VT service-provider merely acts as a repository of this value. It is only the VT-user that requires knowledge of the registered definition.

NOTE 1 — The VTE-parameter values that determine the syntax of the information content may not be negotiated explicitly during association establishment. Moreover, in the case of non-parametric COs these values do not determine the details of the syntax. Such values and details form part of the registered definition of the CO. Since the VT service-provider is not required to have knowledge of this registered definition, 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 configuration of the implementations concerned.

The control object types defined in this part of ISO/IEC ISP 11185 assume an asymmetry between the two communicating end systems. One end system is assumed to have a terminal role and to contain devices for the input and display of data and for signalling. These devices form part of the VT-user component of that end system. The other end system is assumed to have an application role and to contain an application package that the terminal end system desires to access. This asymmetry may, but need not, be recognised by the VT Service; provision for such recognition exists only in an S-mode VT-association.

Control objects of the types defined in this part of ISO/IEC ISP 11185 are used to enable the terminal end system to issue signals to the application package without the need for the VT service-provider to be aware of the semantic significance placed on these signals by the application package. These signals are issued in response to the operation of an object updating device by the human user of the terminal end system.

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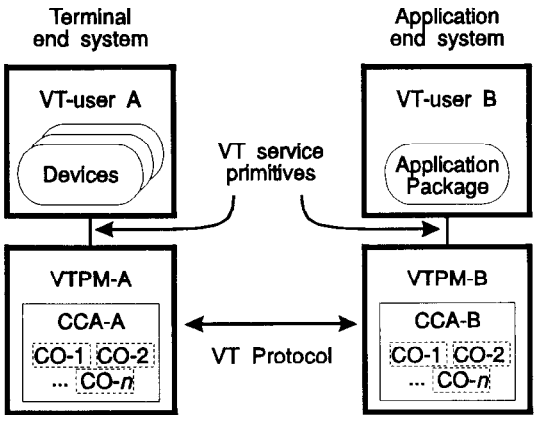


Figure 2 — Control objects in the VT Protocol model

The Virtual Terminal Protocol specification given in ISO 9041-1 models the VT service-provider in terms of protocol exchange between two Virtual Terminal Protocol Machines (VTPMs), each with its own CCA. The CCA of each VTPM is updated both by service primitives received from its own VT-user and by protocol elements received from the peer VTPM. Corresponding service primitives and protocol elements are issued by the VTPM to provide notification of changes to the content of its CCA. This is illustrated in figure 2 in the context of the asymmetric end systems described above. The control object type definitions given in this part of ISO/IEC ISP 11185 are expressed in terms of this model.

For certain types of control object the abstract syntax of ISO 9041-1 does not provide a complete specification for the representation of CO update operations. This arises where the abstract syntax of ISO 9041-1 makes use of an ASN.1 any type, or where symbolic values have to be encoded in terms of an ASN.1 integer type. Control object type definitions are required by ISO/IEC 9834-5 to provide the necessary refinement of the abstract syntax.

NOTE 2 — Since an abstract syntax is made available for use through its inclusion in a presentation context, and since the Presentation service-provider has no knowledge of control object type definitions, in principle the VT-users provide the Presentation service-provider with these refinements to the abstract syntax through local management procedures. Whether or not this is necessary in practice depends on the configuration 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 11185. 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 CCITT maintains published editions of its current Recommendations.

ISO 7498:1984, *Information processing systems — Open Systems Interconnection — Basic Reference Model.*

ISO/TR 8509:1987, *Information processing systems — Open Systems Interconnection — Service conventions.*

ISO 8822:1988, *Information processing systems — Open Systems Interconnection — Connection oriented presentation service definition.*

ISO/IEC 8824:1990, *Information technology — Open Systems Interconnection — Specification of Abstract Syntax Notation One (ASN.1).*

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 9041-2:1993, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Protocol — Part 2: Protocol Implementation Conformance Statement (PICS) Proforma.*

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

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 10000-1:1992, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 1: Framework* (second edition).

ISO/IEC TR 10000-2:1992, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 2: Taxonomy of Profiles* (second edition).

3 Definitions

For the purposes of this part of ISO/IEC ISP 11185 the following definitions apply.

3.1 General OSI terminology

3.1.1 This part of ISO/IEC ISP 11185 makes use of the following terms defined in ISO/TR 8509:

a) service primitive;

b) service-provider.

3.1.2 This part of ISO/IEC ISP 11185 makes use of the following terms defined in ISO 8822:

a) abstract syntax;

b) presentation context.

3.1.3 This part of ISO/IEC ISP 11185 makes use of the following terms defined in ISO/IEC 8824:

a) any type;

b) object descriptor type;

c) object identifier.

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3.1.4 This part of ISO/IEC ISP 11185 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 11185 makes use of the following terms defined in ISO 9040:

a) A-mode;

b) control object;

c) device object;

d) net-effecting;

e) object updating device;

f) S-mode;

g) VT-association;

h) VT-environment (VTE);

i) VT-user;

j) VTE-parameter;

k) VTE-profile;

l) VTE-profile argument.

3.2.2 This part of ISO/IEC ISP 11185 makes use of the following term defined in ISO 9041-1:

a) protocol element.

4 Abbreviations

For the purposes of this part of ISO/IEC ISP 11185 the following abbreviations apply.

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

All other abbreviations used are defined in ISO/IEC TR 10000-1 or ISO 9040.

5 Principles of conformance to VT Profiles

An implementation of the Virtual Terminal Protocol conforms to an FVT2*nn* Profile that defines a control object type if the protocol implementation is capable of sending and receiving PDUs corresponding to all update operations permitted for that CO type.

Conformance of a protocol implementation to an FVT2*nn* Profile does not place requirements on the ability of the implementation to negotiate the presence in the CCA of an instance of this CO type. Such requirements fall within the scope of conformance to an FVT1*nn* Profile that specifies a VTE-profile.

A system that includes an implementation of the VT Protocol may be claimed to conform also to an AVT*nn* Profile. Conformance to an AVT*nn* Profile may require that CO update operations received by the VT-user component of the system are interpreted in accordance with the semantics defined within the appropriate CO type definition. Conformance to CO semantics is not within the scope of conformance to any FVT*nnn* Profile.

The conformance requirements of the Virtual Terminal Protocol are specified in clause 13 of ISO 9041-1. The supplier of a protocol implementation which is claimed to conform to ISO 9041-1 is required to complete a copy of the PICS proforma provided in ISO/IEC 9041-2. Annex A of this part of ISO/IEC ISP 11185 provides an ISPICS Requirements List (IPRL) for the Profiles FVT213 and FVT214 specified herein. This IPRL specifies constraints on the answers that may be given in the completed PICS for a protocol implementation that claims conformance to these Profiles.

6 Sequenced Terminal Control Object

This clause provides the entry for the Sequenced Terminal Control Object type in the International Register of VT Control Object Type Definitions. The entry is structured in accordance with the requirements of ISO/IEC 9834-5. These requirements specify that this International Register shall consist of a number of sub-registers, each corresponding to a major classification of VT Control Object. This entry is contained in the sub-register for Miscellaneous Control Objects.

A control object of this type is used to enable a terminal end system to issue signals to an application process without the need for the VT service-provider to be aware of the semantic significance placed on these signals by the application. These signals are generated in response to the operation of an object updating device and they are conveyed in sequence with other updates.

6.1 Entry number

This entry is the third in the sub-register for Miscellaneous Control Objects. This register assigns it the entry number:

MISCO-3.

6.2 Name of sponsoring authority

This entry is sponsored by the OSE Implementors Workshop (OIW).

6.3 Date

The date of submission of this proposal was 1992-09-25.

6.4 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 relative distinguished name as defined in ISO/IEC 9594-2.

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In accordance with A.4 of ISO/IEC 9834-5, this register assigns the following object identifier form for the name of this register entry:

{ iso(1) standard(0) 9834 vt-co-def(5) misco(0) 3 }

In accordance with 20.1.1 of ISO 9040, this object identifier shall be used as the value of the CO-type-identifier VTE-parameter for a control object in order to identify this register entry as the source of the information structure and semantic content of the control object.

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

NOTE — By ISO/IEC 9834-1 a relative 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 }.

6.5 Descriptor value

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

"Harmonized CO for conveying Sequenced Terminal Signals".

6.6 CO parameters

This CO type presumes an asymmetry of use between the two end systems in which one has a terminal role and the other an application role. Such an asymmetry is assigned in accordance with note 1 to clause 12 of ISO 9040. It is not necessary for this asymmetry to be recognised by the VT service-provider in accordance with 19.3.2 of ISO 9040, which provides for the assignment, in S-mode only, of Terminal VT-user and Application VT-user roles.

This register entry specifies the following values for VTE-parameters of this control object type:

CO-structure:	1
CO-access:	in A-mode either "WACI" or "WACA", in S-mode either "WAVAR" & "WACI" or "WAVAR" & "WACA"
CO-priority:	"normal"
CO-trigger:	may take either valid value
CO-category:	"integer"
CO-size:	65535

The CO-structure VTE-parameter is present only if the Structured Control Objects VT functional unit is selected.

The value of the CO-access VTE-parameter should be set to permit access only by the VT-user with the terminal role. This value will depend on whether the VT-association was initiated by the terminal or application end system.

NOTE — A single VTE-profile argument may be used to set the value of the CO-access VTE-parameter for all control objects in the CCA that presume an asymmetric assignment of terminal and application roles to the two communicating end systems.

The value of the CO-trigger VTE-parameter should be specified by any VTE-profile that references this definition.

6.7 CO values, syntax and semantics

A CO of this type provides a means for an object updating device of a terminal end system to send uninterpreted signals to an application process. Semantic significance is attached to the reception of an update to this CO, not to the current value of its data element.

The value of a CO of this type shall be used to convey three distinct items of information:

a) a *base value* that is an integer in the range from 0 to 255 inclusive;

b) a *base type* that is an integer in the range from 0 to 3 inclusive;

c) the status "on" or "off" of each of a set of six *modifier flags* numbered from 1 to 6.

The value of the data element is constructed according to the formula

value + (type*256) + 1024*((1*flag1) + (2*flag2) + (4*flag3) + (8*flag4) + (16*flag5) + (32*flag6))

where * denotes multiplication and, for each flag, the values 0 and 1 denote "off" and "on" respectively.

NOTE — A structured CO with three elements may be preferable for conveying these three items when the CO-priority VTE-parameter takes the value "normal", but such a structured CO cannot be used when CO-priority takes the value "urgent"; see annex D to ISO 9040. To provide consistency between the present CO type and the Unsequenced Terminal CO type defined in clause 7, the restrictions applicable to urgent COs have been taken account also in the definition of the present CO.

The interpretation of each signal value by a particular application process is a matter for that application process alone, and should be specified in its documentation. The composite structure of the integer signal value as three distinct items is provided solely for convenience. An illustration of its use is given in 6.9 below, but this register entry places no constraints on such use.

The abstract syntax of ISO 9041-1 completely specifies the syntax for updates to this CO.

6.8 Additional information

In S-mode operation a CO of this type requires the use of the Enhanced Access-rules VT functional unit.

A VTE-profile that includes a CO of this type may restrict the base types and modifier flags or flag combinations that are permitted for a value of the data element of the CO. It shall not restrict the range of base values that may be used with the permitted base types and flag combinations.

This register entry does not require a terminal implementation supporting a particular VTE-profile to be able to generate CO updates corresponding to all values that are permitted by that VTE-profile. An AVT*nn* Application Profile that references such a VTE-profile may place requirements on the ability to generate such values.

The Terminal Signal Titles CO type with taxonomy identifier FVT2114 that is defined in ISO/IEC ISP 11185-16 is available as an aid to the documentation of signal values. A CO of

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that type enables an application process to notify the terminal VT-user of a title for each signal that has semantic significance for that application. The terminal end system may make these titles available to its human user in any convenient manner.

The semantics of this CO type as specified in 6.7 are such that signals are conveyed between VT-users by the action of updating the CO rather than by means of the current value of its data element. Every such update operation thus conveys a signal to the peer VT-user even if the operation does not change the value of the data element.

If quarantine delivery-control is in effect, the service-provider may "net-effect" the update items accumulated between two deliveries, see 24.3 of ISO 9040. In these circumstances a VT-user that issues such an update request should ensure that it is followed by delivery of stored updates so that "net-effecting" cannot take place.

If quarantine delivery-control is not in effect, the service-provider is not permitted to "net-effect" update items. The VT-user may still make use of the delivery facilities available in accordance with 24.1 and 24.2 of ISO 9040 to ensure that the signals are conveyed as soon as possible to the peer VT-user.

NOTE — If a CO of this type is given the trigger characteristic then the VT service-provider is required to make immediate delivery of updates. In S-mode this also has the effect that "WAVAR" is reassigned. If this is not desired, the trigger characteristic should not be set. It then becomes the responsibility of the VT-user with the terminal role to ensure delivery, such as by explicit use of the VT-DELIVER service.

6.9 Usage

A terminal implementation that supports this CO would typically use a general-purpose keyboard for the generation of CO updates. Each modifier flag could correspond to the pressing of a modifier key such as a control, shift or alternate key in combination with a second key that generates the base type and value concerned. An alternative mechanism would be to press a single escape key followed by two further keystrokes, one corresponding to a flag combination and the other to the base type and value concerned. Although six modifier flags are available, it is expected that a VTE-profile will place restrictions on their availability. It would, for example, be possible to specify that only flags 1 to 3 are available and that all combinations of them are permitted, or that all six flags are available but that they may not be used in combination with one another.

The different base types would typically correspond to distinct means of generating base values. A VTE-profile may specify that only base types 0, 1 and 2 are permitted. A terminal implementation could then choose to generate the corresponding base values as follows:

— type 0 by alphanumeric keys;

— type 1 by a set of dedicated special-purpose keys bearing descriptive legends;

— type 2 by a set of dedicated function keys bearing identifying numbers.

Alternatively the values could be generated by selection with a mouse from three pull-down menus, one for each base type.

Implementation schemes often place natural limitations on the generation of base values. If the shift key of an alphanumeric keyboard is used to set a modifier flag then typically the alphanumeric keys could be used to generate only about 48 distinct base values. A typical keyboard also has only 10 or 12 dedicated function keys. Special-purpose keys are also limited in number and would only be appropriate if their legends corresponded in a natural manner to the semantics placed by the application process on the signal concerned. An AVT*nn* Application Profile should take account of such limitations in the requirements that it places on the generation of signal values.

A VTE-profile may assign titles to the base values of one or more base types. Such an assignment would assist the development of diverse applications that have a uniform usage for the signals concerned. A more flexible assignment of titles to terminal signals may be achieved by use of a Terminal Signal Titles CO as mentioned in 6.8. Without such a CO, the human user of a terminal implementation needs to refer to the documentation of the application process for the semantics of a particular signal value and to the documentation of the terminal implementation for the means of generating the signal value concerned. An implementation of a Terminal Signal Titles CO may itself make the correspondence between the means of generation and the assigned semantics, so that the human user is shielded from the raw signal value itself.

In such usage the application process downloads a short descriptive title for each required signal value. The terminal implementation itself is aware of the means of generation of the signal values concerned. An appropriate help system in the terminal implementation may then, for example, display a table in which actual keystrokes such as Ctrl/A or F10 are set in correspondence with the titles of the signals generated by these keystrokes. Alternatively the titles could be used to generate a pull-down menu system in which the signal corresponding to a particular title is generated by selection of the title from the menu with a mouse.

7 Unsequenced Terminal Control Object

This clause provides the entry for the Unsequenced Terminal Control Object type in the International Register of VT Control Object Type Definitions. The entry is structured in accordance with the requirements of ISO/IEC 9834-5. These requirements specify that this International Register shall consist of a number of sub-registers, each corresponding to a major classification of VT Control Object. This entry is contained in the sub-register for Miscellaneous Control Objects.

A control object of this type is used to enable a terminal end system to issue signals to an application process without the need for the VT service-provider to be aware of the semantic significance placed on these signals by the application and when there is no requirement to maintain a sequence order with other updates. These signals are generated in response to the operation of an object updating device.

7.1 Entry number

This entry is the fourth in the sub-register for Miscellaneous Control Objects. This register assigns it the entry number:

MISCO-4.

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7.2 Name of sponsoring authority

This entry is sponsored by the OSE Implementors Workshop (OIW).

7.3 Date

The date of submission of this proposal was 1992-09-25.

7.4 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 relative distinguished name as defined in ISO/IEC 9594-2.

In accordance with A.4 of ISO/IEC 9834-5, this register assigns the following object identifier form for the name of this register entry:

{ iso(1) standard(0) 9834 vt-co-def(5) misco(0) 4 }

In accordance with 20.1.1 of ISO 9040, this object identifier shall be used as the value of the CO-type-identifier VTE-parameter for a control object in order to identify this register entry as the source of the information structure and semantic content of the control object.

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

NOTE — By ISO/IEC 9834-1 a relative 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 }.

7.5 Descriptor value

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

"Harmonized CO for conveying Unsequenced Terminal Signals".

7.6 CO parameters

This CO type presumes an asymmetry of use between the two end systems in which one has a terminal role and the other an application role. Such an asymmetry is assigned in accordance with note 1 to clause 12 of ISO 9040. It is not necessary for this asymmetry to be recognised by the VT service-provider in accordance with 19.3.2 of ISO 9040, which provides for the assignment, in S-mode only, of Terminal VT-user and Application VT-user roles.

This register entry specifies the following values for VTE-parameters of this control object type:

CO-structure:	1
CO-access:	in A-mode either "WACI" or "WACA", in S-mode one of "WACI", "WACA", "WAVAR" & "WACI" or "WAVAR" & "WACA"
CO-priority:	"urgent"
CO-trigger:	"not selected"
CO-category:	"integer"
CO-size:	65535.

The CO-structure VTE-parameter is present only if the Structured Control Objects VT functional unit is selected.

The value of the CO-access VTE-parameter should be set to permit access only by the VT-user with the terminal role. This value will depend on whether the VT-association was initiated by the terminal or application end system.

NOTE — A single VTE-profile argument may be used to set the value of the CO-access VTE-parameter for all control objects in the CCA that presume an asymmetric assignment of terminal and application roles to the two communicating end systems.

7.7 CO values, syntax and semantics

The allowed values, update syntax and semantics of this CO type are as specified in 6.7 for the Sequenced Terminal CO type.

7.8 Additional information

The additional information specified in 6.8 for the Sequenced Terminal CO type applies also to this CO type except for the informative information concerning delivery control. In contrast to the situation with the Sequenced Terminal CO described in 6.8, no special action need be taken to ensure that "net-effecting" does not occur or to ensure delivery to the peer VT-user as soon as possible. Since this CO type has CO-priority value "urgent", delivery control does not operate and "net-effecting" is not permitted, even when quarantine-delivery-control is in effect.

7.9 Usage

The description of usage given for the Sequenced Terminal CO type in 6.9 is equally applicable to this CO type.

In contrast to a Sequenced Terminal CO, when a CO of this type is used in S-mode operation then update of the CO by the application process need not be subject to the "WAVAR" access-right. It may thus be used to signal the terminal end system without regard to the location of this access token.

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Annex A
(normative)

ISPICS Requirements List

A.1 Protocol requirements

This annex provides an ISPICS Requirements List (IPRL) for the Profiles FVT213 and FVT214 specified in this part of ISO/IEC ISP 11185. The PICS proforma for the VT protocol is given in ISO/IEC 9041-2. This IPRL specifies constraints on the answers that may be given in the completed PICS for an implementation that claims conformance to these Profiles.

These constraints are given in tables A.1 to A.4. The notation used in the tables is as follows. Individual items in a PICS proforma are referenced by the means specified in A.9.1 of ISO 9646-2. Such a reference has the form *x-y/z*, where *x* is the number of the ISO Standard that specifies the protocol, *y* is a reference within the PICS proforma of this Standard to the smallest subclause that contains the item concerned, and *z* is the reference number of the item within that subclause. Where this IPRL needs to present the constraints on a particular item as two or more separate cases, a suffix of the form '.*n*' is added to the item reference where *n* is a serial number that labels the different cases.

The item name is taken from the PICS proforma. The "status" columns of the IPRL tables take priority over the corresponding "status" columns of the PICS proforma and they use the notation of that proforma. They refine the PICS proforma status values by evaluating conditional expressions or converting optional values to a more specific form. The following conditional value is used in these tables:

c1 If 9041-A.2.2/1 then m else -; the referenced predicate from ISO/IEC 9041-2 is that S-mode is supported.

Where an IPRL table has a "Profile values" column, the status value applies separately to each listed Profile value. Thus in the case of the single item listed in table A.2, to satisfy this IPRL the answers in the SENDING column of the PICS proforma must have "y" in the "Support" column and must include at least values 0...65535 in the "Supported values" column.

For any column in an IPRL table that corresponds to an answer column in the PICS proforma, the values listed are the acceptable answers for the item concerned. The following special notation is used in these columns:

Any The IPRL places no constraint on the answer;
n/a The column is not relevant to this item.

A.2 Profile-specific requirements

An IPRL may also specify constraints on the answers to additional questions that concern Profile-specific conformance requirements which are outside the scope of any referenced base standard. These questions will be given in the IPRL itself.

This IPRL does not specify any Profile-specific constraints.

Table A.1 — VTE requirements for FVT213 (Sequenced Terminal CO)

Item reference no. 9041-	Name of item	Status	Numbers supported	Negotiable
A.2.1/6	Enhanced Access-rules	c1	n/a	n/a
A.3.8/11	Parametric COs	m	≥1	Any

Table A.2 — PDU requirements for FVT213 (Sequenced Terminal CO)

Item reference no. 9041-	Name of item	Profile values	SENDING Status	RECEIVING Status
A.5.15.4/8	integerUpdate	0...65535	m	m

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Table A.3 — VTE requirements for FVT214 (Unsequenced Terminal CO)

Item reference no. 9041-	Name of item	Status	Numbers supported	Negotiable
A.2.1/6 A.3.8/11	Enhanced Access-rules Parametric COs	c1 m	n/a ≥1	n/a Any

Table A.4 — PDU requirements for the FVT214 (Unsequenced Terminal CO)

Item reference no. 9041-	Name of item	Profile values	SENDING Status	RECEIVING Status
A.4.2/13 A.5.15.4/8	UDQ VT-URGENT-DATA integerUpdate	n/a 0...65535	m m	m m

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