SLOVENSKI STANDARD
SIST EN ISP 11185-11:1997

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Information technology - International Standardized Profiles FVT2nn - Virtual Terminal Basic Class - Register of control object type definitions - Part 11: FVT232 - Paged FEPCO (Field Entry Pilot Control Object) No.1 (ISO/IEC ISP 11185-11:1994)

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Informationstechnik - Internationale Profilnorm FVT2nn - Virtuelles Terminal Grundstufe - Verzeichnis der Definitionen von Kontrollobjekttypen - Teil 11: FVT232 - Kontrollobjekt zur Behandlung von Feldeingaben im Seitenbetrieb Nr.1 (ISO/IEC ISP 11185-11:1994)

Technologies de l'information - Profils normalisés internationaux FVT2nn - Classe de base de terminal virtuel - Registre de définitions de type d'objet de commande - Partie 11: FVT 232 - Page FEPCO (Objet de commande pilote d'entrée de zone) no 1 (ISO/IEC ISP 11185-11:1994)

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This European Standard was approved by CEN on 1995-09-07. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Foreword

The text of the International standard from ISO/IEC JTC 1 "Information technology" of the Internationl Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) has been taken over as a European Standard by CEN.

EN ISP 11185 parts 1-11 replaces ENV 41209:1990.

This European Standard shall be given the status of a National Standard, either by publication of an identical text or by endorsement, at the latest by March 1996, and conflicting national standards shall be withdrawn at the latest by March 1996.

According to CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO IEC/ISP 11185-11:1994 has been approved by CEN as a European Standard without any modification.

INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 11185-11

First edition
1994-10-01

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

Part 11:
FVT232 — Paged FEPCO (Field Entry Pilot Control Object) No. 1

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

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Reference number
ISO/IEC ISP 11185-11:1994(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 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 11185-11 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.

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. The text is harmonized between these three Workshops and it has been ratified by the plenary assemblies of each Workshop.

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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 type definition of a Field Entry Pilot Control Object that provides substantial facilities during data entry for local processing under application control. It is intended for use in form-filling, text editing and similar applications during a VT-association in S-mode (synchronous mode) operation. The delegation of such processing to the terminal end system may reduce significantly the demands placed on the communication network and the application process, and may substantially improve the reaction time to users' actions.

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 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 definition of the Field Entry Pilot Control Object type with the Profile identifier

FVT232 — Paged FEPCO (Field Entry Pilot Control Object) No.1

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 a control object of the type whose definition is 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

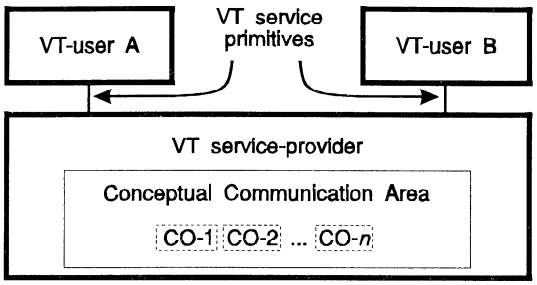

Figure 1 — Control objects in the VT Service model

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 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 type defined in this part of ISO/IEC ISP 11185 assumes 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 control object is intended for use in S-mode (synchronous mode) operation only. In S-mode operation such asymmetry is recognised by the VT Service in accordance with 19.3.2 of ISO 9040. One VT-user is designated as the Terminal VT-user, the other as the Application VT-user, and the two do not have equal access to the functions of the VT Service.

A control object of the type defined in this part of ISO/IEC ISP 11185 is a Field Entry Pilot Control Object (FEPCO) as defined in 20.3.5 of ISO 9040. The content of a FEPCO is an array of records known as Field Entry Pilot Records (FEPRs) that may be referenced by a Field Definition Record (FDR). Such reference determines reactions that should occur in response to specified events that may occur during data entry. Provision is available for reactions to be conditional on the internal state of the VT-user at the time that the event occurs.

The definition of a FEPCO type specifies the events that it recognises and the conditions and reactions which may be used in the construction of a FEPR. The event definitions may make use of properties of a field, including validation rules for data entry, that are determined by one or more Field Entry Instruction COs (FEICOs) present in the VTE and referenced by the FDR of the field. A FEICO type suitable for use with the event definitions of this FEPCO type is defined in ISO/IEC ISP 11185-9.

The reactions permitted by a FEPCO may be recursive in that they may include the generation of further events to be processed in accordance with other FEPRs. These features permit powerful local processing capabilities to be specified by an Application VT-user for operation by the Terminal VT-user without further confirmation.

The VT service-provider may store updates received from one VT-user before delivery to the peer VT-user in accordance with the delivery control mechanisms of clause 24 of ISO 9040. So although the model of the VT Service is expressed in terms of a single shared CCA, at any instant the various elements of the two communicating end systems may have differing knowledge of its current content.

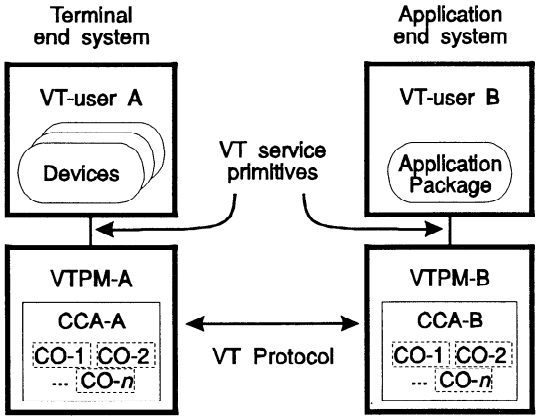

Figure 2 — Control objects in the VT Protocol model

This variation in knowledge extends within the VT service-provider itself. 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 definition given in this part of ISO/IEC ISP 11185 is expressed in terms of this model.

Each VTPM is permitted to store updates to its CCA before onward delivery, in accordance with the data transfer mechanisms of annex A of ISO 9041-1. These mechanisms permit storage both for updates that result from the reception of service primitives and for those that result from the reception of protocol elements. The combined effect of these mechanisms in both VTPMs is to implement the delivery control mechanisms of ISO 9040. But the effect of such storage is that the content of the two CCAs may differ from one another and that neither need correspond to the CCA of the VT Service model. The CCA of each VTPM should properly be regarded as an incompletely updated copy of the true CCA of the VT service-provider.

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.*