SLOVENSKI STANDARD
SIST EN ISP 12070-1:1997

01-december-1997

Information technology - International Standardized Profiles FCSnnn - Character set 8-bit code structure based on ISO/IEC 2022 - Part 1: FCS111 - 2022 Option 1 (ISO/IEC ISP 12070-1:1996)

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Informationstechnik - Internationale Profilnorm FCSnnn - 8bit-Zeichensatz-Struktur basierend auf ISO/IEC 2022 - Teil 1: FCS111 - 2022 Option 1 (ISO/IEC ISP 12070-1:1996)
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Technologies de l'information - Profils normalisés internationaux FCSnnn - Structure de code a 8 éléments de jeu de caracteres basée sur l'ISO/CEI 2022 - Partie 1: FCS111 - 2022 Option 1 (ISO/IEC ISP 12070-1:1996)

Ta slovenski standard je istoveten z: EN ISP 12070-1:1997

ICS:

35.100.05	X^ •|[b) ^Á] [¦æà} æ\^ ¦^zãç^	Multilayer applications

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EUROPEAN STANDARD

NORME EUROPÉENNE

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English version

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REPUBLIKA SLOVENIJA
MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO
Urad RS za standardizacijo in meroslovje
LJUBLJANA

SIST...... EN ISP 12070-1 ....

PREVZET PO METODI RAZGLASITVE

-12- 1997

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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

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Foreword

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

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of an identical text or by endorsement, at the latest by January 1998, and conflicting national standards shall be withdrawn at the latest by January 1998.

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Endorsement notice

The text of the International Standard ISO/IEC ISP 12070-1:1996 has been approved by CEN as a European Standard without any modification.

INTERNATIONAL
STANDARDIZED
PROFILE

ISO/IEC
ISP
12070-1

First edition
1996-12-01

Information technology — International
Standardized Profiles FCSnnn — Character
set 8-bit code structure based on
ISO/IEC 2022 —

Part 1:

FCS111 — 2022 Option 1

*Technologies de l'information — Profils normalisés internationaux
FCSnnn — Structure de code à 8 éléments de jeu de caractères basée sur
l'ISO/CEI 2022 —*

Partie 1: FCS111 — 2022 Option 1

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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 this 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 12070-1 was prepared with the collaboration of

— Asia-Oceana Workshop (AOW);

— European Workshop for Open Systems (EWOS);

— Open Systems Environment Implementors' Workshop (OIW)

ISO/IEC ISP 12070 consists of the following parts, under the general title Information technology - *International Standardized Profiles FCSnnn - Character set 8-bit code structure based on ISO/IEC 2022*:

  — *Part 1: FCS111 - 2022 Option 1*

Other parts will follow.

Annex A is forms an integral part of this part of this part of ISO/IEC ISP 12070. Annexes B and C are for information only.

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Introduction

ISO/IEC ISP 12070 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.

ISO/IEC 2022 itself identifies and categorises a number of specific code structures. The wide field of application of character set standards, the complexity of ISO/IEC 2022 and the low level of awareness of character set issues within the functional standard development groups has given rise to lack of precision and ambiguity in specifying the use of coded character sets within the functional standards. This in turn has given rise to interoperability problems for implementors and users of products which claim conformance to those functional standards. It should be noted that a similar lack of awareness has also arisen in the base standard development groups with similar consequences and a resulting effect on the groups which are attempting to profile the base standards.

This part of ISO/IEC ISP 12070 has been studied by the three Regional OSI Workshops, namely the OSI Implementors' Workshop (OIW) of the United States, the European Workshop for Open Systems (EWOS) and the OSI Asia-Oceania Workshop (AOW). The constitutions of the three workshops ensure that the development process was open to all interested parties. However, AOW and OIW indicated through the RWS-CC that they had no interest in the development of this ISP part. It was developed under the editorship of EWOS. The text has therefore only been ratified by the plenary assembly of EWOS.

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Information technology — International Standardized Profiles FCSnnn — Character set 8-bit code structure based on ISO/IEC 2022 —

Part 1:
FCS111 — 2022 Option 1

1 Scope

Within the set of character set standards there are two generic code structures, that defined by ISO/IEC 2022 for 7 and 8 bit transport mechanisms and that defined by the new ISO 10646 for a multi-octet transport mechanism. This part of ISO/IEC ISP 12070 is concerned with the ISO/IEC 2022 code structure.

This part of ISO/IEC ISP 12070 is applicable in the following cases:

    a) the use of ASN.1 type GeneralString
    b) the use of ASN.1 type GraphicString
    c) the use of ASN.1 type TeletexString
    d) the use of non-ASN.1 character strings (e.g. when a character string is embedded in the ASN.1 OCTET STRING as in ODA)

In many instances the requirements of this part of ISO/IEC ISP 12070 apply to all of these cases but where there are specific requirements applying to particular cases, these are highlighted separately.

This part of ISO/IEC ISP 12070 lays down requirements so that a consistent approach may be taken when specifying the use of coded character sets in functional standards.

Some specifications relate to "pass-through" services (e.g. MHS and Directory). Such services are outside the scope of this part of ISO/IEC ISP 12070.

Requirements for the use of character sets in Telematic services (eg Teletex and Videotex) are outside the scope of this part of ISO/IEC ISP 12070.

The requirements specified in part of ISO/IEC ISP 12070 specifically apply to Western Europe but may be applicable in other regions of the world.

2 Conformance and compliance

Four categories of conformance are specified in this part of ISO/IEC ISP 12070.

1) Conformance to the requirements for ASN.1 type GraphicString,

A claim for conformance shall support all the requirements evaluating to mandatory that are listed in tables A.2 and A.3.

2) Conformance to the requirements for ASN.1 type *GeneralString*,

A claim for conformance shall support all the requirements evaluating to mandatory that are listed in tables A.4 and A.5.

3) Conformance to the requirements for ASN.1 type *TeletexString*,

A claim for conformance shall support all the requirements evaluating to mandatory that are listed in tables A.6 and A.7.

4) Conformance to the requirements for non-ASN.1 string types.

A claim for conformance shall support all the requirements evaluating to mandatory that are listed in tables A.8 and A.9.

A compliant referencing specification shall indicate which categories of conformance are required to be supported. A compliant referencing specification may need to include a Profile Requirements List (PRL) which refers to the tables in Annex A when that specification makes selections of options available. A compliant referencing specification shall require implementors of that specification to complete the ICS proforma in Annex A of this part of ISO/IEC ISP 12070.

Some base standards may have requirements on the handling of character sets which differ from those recommended in this part of ISO/IEC ISP 12070 (e.g. ODA). Where a requirement differs in this way, the base standard specification takes precedence over this part of ISO/IEC ISP 12070.

3 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 12070. At the time of publication, the editions indicated are valid. All documents are subject to revision, and parties to agreements based on this part of ISO/IEC 12070 are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and ITU-T maintains published editions of its current recommendations.

NOTE   Edition 2 and edition 3 of both ISO/IEC 8824 and ISO/IEC 8825 will continue to be published together. Current editions of OSI protocol specifications reference these second editions which make specific reference to character set standards. This part of ISO/IEC ISP 12070 is based upon the second editions. The latest editions of the character set standards are listed in 3.2 where such reference does not cause inconsistency with the second editions of ISO/IEC 8824 and ISO/IEC 8825. Otherwise previous editions are listed.

3.1   Paired CCITT Recommendations | International Standards equivalent in technical content

— CCITT Recommendation X.208 : 1988, *Specification of abstract syntax notation one (ASN.1)*

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

— CCITT Recommendation X.209 : 1988, *Specification of basic encoding rules for abstract syntax notation one (ASN.1)*

  ISO/IEC 8825 : 1990, *Information technology - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*.

3.2   Additional references

— ISO/IEC 646 : 1991, *Information technology - ISO 7-bit coded character set for information interchange*.

— ISO/IEC 2022 : 1994, *Information technology - Character code structure and extension techniques*.

— ISO 2375 : 1985, *Data processing - Procedure for registration of escape sequences*.

— ISO/IEC 4873 : 1991, *Information technology - ISO 8-bit code for information interchange - Structure and rules for implementation*.

— ISO/IEC 6429 : 1992, *Information technology - Control functions for coded character sets*.

— ISO/IEC 6937 : 1994 *Information technology - Coded graphic character set for text communication - Latin alphabet*.

— CCITT Recommendation T.61 (1988), *Character repertoire and coded character sets for the International Teletex service*.

— ISO/IEC 8859-1[1], *Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No. 1*.

4   Definitions

4.1   ISO/IEC 2022 definitions

This part of ISO/IEC ISP 12070 uses the following definitions contained in ISO/IEC 2022.

a) byte
b) character
c) coded character set; code
d) code table
e) control character
f) control function
g) to designate
h) escape sequence
i) final byte
j) graphic character
k) to invoke
l) repertoire

4.2   Basic terms

For the purposes of this part of ISO/IEC ISP 12070, the following term applies.

4.2.1   Instance of Communication: That part of a data stream that may be considered to be a single unit within which the scope of a requirement of this part of ISO/IEC ISP 12070 applies.

A single instance of the ASN.1 type *GraphicString* when coded in a data stream is considered to be an *instance of communication*.

A single instance of the ASN.1 type *GeneralString* when coded in a data stream is considered to be an *instance of communication*.

A single instance of the ASN.1 type *TeletexString* when coded in a data stream is considered to be an *instance of communication*.

These are defaults. Functional Standards which reference any of the ASN.1 types *GraphicString*, *GeneralString* and *TeletexString* and wish to change the meaning of "instance of communication" should specify, in each case of use, its precise meaning.

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[1] To be published. (revision of ISO 8859-1:1987)

A single instance of a non-ASN.1 string type when coded in a data stream may be considered to be an *instance of communication* and this is the default. Functional Standards which reference a non-ASN.1 string type should specify, in each case of use, the precise meaning of *instance of communication*.

5 Abbreviations

ASN.1   Abstract Syntax Notation One
ICS   Implementation Conformance Statement
ODA   Open Document Architecture
OSE   Open Systems Environment
IRnn   International Register entry nn
IRV   International Reference Version
MHS   Message Handling Service

6 Errors

Many requirements identified in the remainder of this part of ISO/IEC ISP 12070 prohibit sending implementations from sending certain sequences of coded characters and allow receiving implementations to treat the receipt of such a sequence of coded characters as an error. A sending implementation which sends an illegal sequence of coded characters does not conform to this part of ISO/IEC ISP 12070 but in general it is not possible to test this aspect of conformance. The precise action that a receiving implementation takes when an illegal sequence of coded characters is received is outside the scope of this part of ISO/IEC ISP 12070. A referencing specification shall specify the action that a receiving implementation takes when such an error is detected.

7 The ISO/IEC 2022 code structure

The major division within ISO/IEC 2022 is between the 7-bit and the 8-bit code structure. The 7-bit code structure is the older of the two and dates back to the early days of computing and data communications. The greater capacity of 8-bit transport mechanisms, the ability of modern communications technology to handle them and the widespread use of ASN.1 to specify OSI communications protocols leads naturally to the first requirement to be capable of operating in the 8-bit ISO/IEC 2022 code structure.

Requirement 1:

a) A sending implementation shall be capable of operating in the ISO/IEC 2022 8-bit code structure.

b) A receiving implementation shall be capable of operating in the ISO/IEC 2022 8-bit code structure.

8 The ISO 4873 code structure

ISO/IEC 2022 defines a wide range of sub-structures for the use of 8-bit codes which could be considered to be profiles. ISO/IEC 4873 chooses a nested set of 3 sub-structures (levels)

and specifies how these should be used. ISO/IEC 4873 profiles appear to cater for the majority of functional standard requirements. However, ISO/IEC 4873 does not cater for all scenarios where character sets are in use. Therefore, the requirements specified in this part of ISO/IEC ISP 12070 are based on ISO/IEC 4873 wherever possible and where this is not the case, extra requirements are specifically highlighted.

9 The use of announcer escape sequences

ISO/IEC 4873 specifies the use of announcer escape sequences to announce the use of a specific level of operation. In an open ISO/IEC 2022 code structure, announcer escape sequences should always be used at the beginning of an instance of communication (i.e. coded character string) to announce the code structure facilities that are proposed. This is the ISO/IEC 2022 method of negotiation. However, few, if any, referencing base standards actually specify the use of announcer control functions and ISO/IEC 8825 specifically forbids their use for its character string data types (e.g. GeneralString) unless the referencing base standard specifically removes this restriction. None of the OSI, messaging or text processing (ODA) base standards ratified to date actually do this.

Where announcer sequences are not supported, it is still necessary for two communicating parties to come to a mutual understanding of the code structure facilities to be used in an instance of communication. This may be done outside the scope of a coded character exchange by:

1) bilateral private a priori arrangements;
2) unilateral decision (e.g. in a base or functional standard);
3) in a procurement specification (e.g. EPHOS);
4) by a separate protocol exchange (e.g. using OCTET STRING);
5) by some system management action.

ISO/IEC 4873 defines 3 levels of operation. In the absence of announcement or other decision, the default level for a receiving or a sending implementation is the highest level that is supported by that implementation.

9.1 Non-ASN.1 character string types

Support for announcer sequences is optional for both receiving and sending implementations.

Requirement 2:

a) A sending implementation which claims support of announcer sequences shall send an announcer escape sequence at the beginning of an instance of communication to announce the level of ISO/IEC 4873 being proposed in that direction of data flow and shall support the semantics of that announcer sequence.

b) A receiving implementation which claims support of announcer sequences shall be capable of receiving an announcer escape sequence to announce the level of ISO/IEC 4873 being proposed in that direction of data

3

flow and shall support the semantics of that announcer sequence.

Requirement 3:

a) A sending implementation which does not claim support of announcer sequences shall not send any announcer sequences.

b) A receiving implementation that does not support announcer sequences shall be capable of receiving an announcer sequence without malfunction, but shall ignore it (i.e. take no action as a result).

For completeness the announcer escape sequence is of the form ESC 02/00 F where F takes the following values:

ISO/IEC 4873 level 1 04/12
ISO/IEC 4873 level 2 04/13
ISO/IEC 4873 level 3 04/14

The action taken as the result of receiving or sending of any other announcer escape sequence is outside the scope of this part of ISO/IEC ISP 12070.

9.2 ASN.1 character string types

Requirement 4:

a) A sending implementation shall not send announcer sequences.

b) A receiving implementation may treat as an error the reception of an announcer sequence.

10 The use of designation escape sequences

A designation escape sequence is used to designate a G-set to a registered coded character set as specified in ISO/IEC 2022.

10.1 Position of designation escape sequence

ISO/IEC 4873 specifies that one or more designation escape sequences shall occur at the beginning of an instance of communication (i.e. coded character string) as part of the announcement of the version of ISO/IEC 4873 to be used in that direction of data flow.

10.1.1 Non-ASN.1 character string types

Requirement 5:

a) A sending implementation that supports announcer sequences shall identify the version of ISO/IEC 4873 to be used in that direction of data flow by sending one or more designation escape sequences immediately after the announcer escape sequence at the beginning of an instance of communication.

b) A receiving implementation that supports announcer sequences shall support the semantics of a ISO/IEC 4873 version designation subject to its support of ISO/IEC 4873 levels.

If redesignation of a G-set is required in the middle of an instance of communication, then an announcer escape sequence shall precede it.

NOTE — ISO/IEC 2022 identifies levels of operation similar to the 3 levels of ISO/IEC 4873. The first three levels of ISO/IEC 2022 align with ISO/IEC 4873. The 4th level allows redesignation and but does not have an equivalent in ISO/IEC 4873.

This part of ISO/IEC ISP 12070 deprecates redesignation as specified in ISO/IEC 4873. However, the following requirement is included for completeness.

Requirement 6:

a) If a sending implementation that supports announcer sequences wishes to redesignate a G-set during an instance of communication, it shall send an announcer sequence and a set of designation escape sequences.

b) A receiving implementation that supports announcer sequences shall support redesignation.

c) A receiving implementation which supports announcer sequences may treat as an error the receipt of an escape sequence redesignating a G-set which is not preceded by an announcer sequence.

An implementation that does not support the sending of announcer sequences may nevertheless identify a version of ISO/IEC 4873 to be used by assuming the level (communicated by other means or by default) and using designation escape sequences. However, in this case, redesignation is prohibited by this part of ISO/IEC ISP 12070.

Requirement 7:

a) A sending implementation that does not support announcer sequences may identify the version of ISO/IEC 4873 to be used in that direction of data flow by sending one or more designation escape sequences at the beginning of an instance of communication.

b) A receiving implementation that does not support announcer sequences shall support designation escape sequences subject to its support of ISO/IEC 4873 levels.

Requirement 8:

a) A sending implementation that does not support announcer sequences shall not attempt to redesignate during an instance of communication.

b) A receiving implementation that does not support announcer sequences may treat as an error the reception of a redesignation escape sequence.