SLOVENSKI STANDARD
SIST EN ISO/IEC 7942-1:1997

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Information technology - Computer graphics and image processing - Graphical Kernel System (GKS) - Part 1: Functional description (ISO/IEC 7942-1:1994)

Information technology - Computer graphics and image processing - Graphical Kernel System (GKS) - Part 1: Functional description (ISO/IEC 7942-1:1994)

Technologies de l'information - Infographie et traitement d'image - Systeme graphique GKS - Partie 1: Description fonctionnelle (ISO/IEC 7942-1:1994)

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Information technology - Computer graphics and image processing - Graphical Kernel System (GKS) - Part 1: Functional description (ISO/IEC 7942-1:1994)

Technologies de l'information - Infographie et traitement d'image - Système graphique GKS - Partie 1: Description fonctionnelle (ISO/IEC 7942-1:1994)

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CEN

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

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Foreword

This European Standard has been taken over by CEN Technical Board from the work of ISO/IEC/JTC 1 "Information Technology" of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).

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of an identical text or by endorsement, at the latest by April 1996, and conflicting national standards shall be withdrawn at the latest by April 1996.

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

Endorsement notice

The text of the International Standard ISO/IEC 7942-1:1994 has been approved by CEN as a European Standard without any modification.

INTERNATIONAL STANDARD

ISO/IEC 7942-1

Second edition
1994-11-01

Information technology — Computer graphics and image processing — Graphical Kernel System (GKS) —

Part 1: Functional description

Technologies de l'information — Infographie et traitement d'image — Système graphique GKS —

Partie 1: Description fonctionnelle

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Contents

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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. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as International Standard requires approval by at least 75% of the national bodies casting a vote.

International Standard ISO/IEC 7942-1 was prepared by Joint Technical Committee ISO/IEC JTC1, *Information technology, Sub-Committee 24, Computer graphics and image processing.*

This second edition cancels and replaces the first edition (ISO 7942:1985), which has been technically revised.

ISO/IEC 7942 consists of the following parts, under the general title *Information technology – Computer graphics and image processing – Graphical Kernel System (GKS):*

Part 1: Functional description

Part 2: NDC metafile

Part 3: Audit trail

Part 4: Picture part archive

Annexes A and B form an integral part of this part of ISO/IEC 7942. Annexes C, D, E, F, G, and H are for information only.

Introduction

The Graphical Kernel System (GKS) provides a set of functions for computer graphics programming that can be used by a range of applications. The main motivations for standardization are to improve portability of programs and to define a basic methodology. Portability is achieved by providing all the capabilities necessary in a device independent way. The following principles are used in specifying GKS:

a) Design: the three goals are consistency of approach, compatibility with related standards and orthogonal functionality where possible.

b) Functionality: the goals are completeness with the minimal set of functions. Organization of functions should be such as to achieve compact programs. Richness should be provided by utilities and toolkits on top of GKS rather than non-standard extensions to GKS.

c) Clarity: the underlying concepts should be easily understood, especially by the application programmer. To achieve this, GKS is defined using a small set of functions with precise specification of the data structures that define the state of GKS and the effect that functions have on this state.

d) Error handling: all errors caused by incorrect function invocations or internal failures are logged with the application having control over the action taken.

e) Separation of device dependent functionality: in GKS there is a clear separation between the functionality that is device dependent and device independent. GKS has the concept of a workstation which deals with all device dependent functions.

f) Implementation: GKS should be realizable in a wide range of host languages. The support GKS requires from the operating system should not be excessive. GKS should be efficient to implement on commonly available hardware and it should be easy to produce a robust product.

This International Standard (known informally as "GKS-94") has a strong relationship to the principles and functionality of ISO 7942:1985 (known informally as "GKS-85"). However, it has been updated to provide additional functionality, cleaner concepts and an International Standard for modern hardware. Minor changes made include some additional primitives, some minor extensions to input, a clearer definition of the NDC picture and simplification of deferral.

A nameset attribute has been added and this is used as a selection criterion for a range of functions. As a result, the equivalent of the ISO 7942:1985 segment (picture part) no longer needs attributes separate from the primitive attributes. The segment facilities of ISO 7942:1985 are provided in terms of the new picture part store.

The ISO 7942:1985 metafile is replaced by an audit trail and an NDC metafile based on the Computer Graphics Metafile (ISO/IEC 8632).

Information technology – Computer graphics and image processing - Graphical Kernel System (GKS) – Part 1: Functional description

1 Scope

This part of ISO/IEC 7942 specifies a set of functions for computer graphics programming, the Graphical Kernel System (GKS). It provides functions for two dimensional graphical output, the storage and dynamic modification of pictures, and operator input. GKS functions and datatypes are specified independently of programming languages.

GKS establishes a system for device independent graphics programming by separating picture composition and interaction from the realization of the pictures on a specific output device and the input devices used by the operator.

This International Standard is applicable to a wide range of applications that produce two dimensional pictures on vector or raster graphical devices in monochrome or colour. Operator interaction is allowed with these pictures.