
Draft for Development

Computer graphics: Procedures for registration of graphical items

Projet à développer
Infographie: Procédures pour l'enregistrement des items graphiques

Vornorm
Computergrafik. Verfahren zur Registrierung graphischer Elemente

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This publication is not to be regarded as a British Standard

It is being issued in the Draft for Development series of publications and is of a provisional nature because the subject matter is still under technical development requiring wider exposure. It should be applied on this provisional basis, so that information and experience of its practical application may be obtained.

A review of this Draft for Development will be carried out not later than two years after its publication. Notification of the start of the review period, with a request for the submission of comments from users of this Draft for

Development will be made in an announcement in the appropriate issue of *BSI News*. According to the replies received, the responsible BSI committee will judge whether the Draft for Development can be converted into a British Standard or what other action should be taken.

Observations which it is felt should receive attention before the official call for comments will be welcomed. These should be sent to the Secretary of BSI Technical Committee IST/31 at the BSI Head Office address as shown on the back cover.

National foreword

This Draft for Development has been prepared under the direction of the Information Systems Technology Standards Policy Committee. It is identical with ISO/IEC TR 9973 'Information processing — Procedures for registration of graphical items', published by the International Organization for Standardization (ISO).

The UK actively participated through BSI Technical Committee IST/31 in the development of the ISO/IEC Technical Report.

Cross-references

International standard*	Corresponding British Standard
ISO 7942 : 1985	BS 6390 : 1985 Specification for a set of functions for computer graphics programming, the Graphical Kernel System (GKS) (Identical)
ISO 8632-1 : 1987	BS 6945 Specification for computer graphics: metafile for the storage and transfer of picture description information (CGM) Part 1 : 1988 Functional specification (Identical)
ISO 8632-2 : 1987	Part 2 : 1988 Character encoding (Identical)
ISO 8632-3 : 1987	Part 3 : 1988 Binary encoding (Identical)
ISO 8632-4 : 1987	Part 4 : 1988 Clear text encoding (Identical)
ISO 8651-1 : 1988	BS 7040 Computer graphics: Graphical Kernel System (GKS) language bindings Part 1 : 1989 Specification for GKS language binding for FORTRAN (Identical)
ISO 8651-2 : 1988	Part 2 : 1989 Specification for GKS language binding for Pascal (Identical)
ISO 8651-3 : 1988	Part 3 : 1989 Specification for GKS language binding for Ada (Identical)

*Undated in text.

Information processing — Procedures for registration of graphical items

0 Introduction

This Technical Report has been published to provide an interim set of procedures for the registration of graphical items. These procedures were originally processed by ISO TC97/SC21/WG2 (now ISO/IEC JTC1/SC24) as a Technical Report (type 2). Although it is now recognized that the importance of this material merits its publication as an International Standard, it is being published as a Technical Report because its prompt availability is critical to the utilization of existing International Standards. This Technical Report will be processed as an International Standard at its next review by the technical committee.

Responsibility for preparing standards for interchange of information involving computer graphics is assigned to subcommittee ISO/IEC JTC1/SC24 - Computer Graphics.

All proposed and anticipated standards in this area share certain classes of graphical items that are allowed to vary across implementations of the standard: linetype is an example of such a class. Nevertheless, there is a strong incentive for implementations using the same graphical items to reference them in the same way. Each graphics standard developed by ISO/IEC JTC1/SC24, therefore, provides for registration of certain graphical items. For example, in the Graphical Kernel System, linetype values 1, 2, 3, and 4 are defined in the International Standard; linetype values 5 and greater are reserved for registration, and negative values are used for implementation dependent linetypes.

This Technical Report specifies procedures to be followed in preparing and maintaining the ISO/IEC International Register of Graphical Items, containing the names and meanings assigned to particular items. The purpose of the register is to inform all concerned of items already registered and of the specific identifiers assigned to them. The register includes interpretations of graphical items for relevant International Standards listed in clause 2 and will be updated with interpretations for further computer graphic standards developed by ISO/IEC JTC1/SC24.

Publication of the register promotes compatibility of international information exchange and avoids duplication of effort in development of application-oriented graphical items. Registration provides identification for a graphical item but should not be regarded as a standardization procedure. However, as a matter apart from registration, the graphical items may, but need not, be the subject of an international, national, or other standard. When such a standard is prepared subsequent to registration of a graphical item, it would be appropriate for the registered identifier of the graphical item to be indicated in the standard.

1 Scope and field of application

This Technical Report specifies procedures to be followed in preparing, maintaining, and publishing a register of names and meanings that, under the direction of ISO/IEC JTC1/SC24, are assigned to graphical items.

Registration procedures will not assign values of identifiers for graphical items that are defined as being workstation- or implementation-dependent by specific graphics standards. The registry of font appearance in the ISO/IEC JTC1/SC24 register of graphical items is not intended to address the broader issues of general purpose font registration as provided by ISO/IEC JTC1/SC18. The procedures apply to registration of individual items within the following classes of graphical items as reserved for registration in the International Standards listed in clause 2:

- a) Generalized drawing primitive function definitions;
- b) Graphical escape function definitions;
- c) Linetypes;
- d) Markertypes;
- e) Hatchstyles;
- f) Textfont appearance;
- g) Prompt and echo type definitions (for graphical interaction);
- h) Error messages.

2 References

ISO 7942 *Information Processing Systems - Computer Graphics - Graphical Kernel System (GKS) functional description.*

ISO 8632-1 *Information Processing Systems - Computer Graphics - Metafile for Transfer and Storage of Picture Description Information; Part 1: Functional description.*

ISO 8632-2 *Information Processing Systems - Computer Graphics - Metafile for Transfer and Storage of Picture Description Information; Part 2: Character encoding.*

ISO 8632-3 *Information Processing Systems - Computer Graphics - Metafile for Transfer and Storage of Picture Description Information; Part 3: Binary encoding.*

ISO 8632-4 *Information Processing Systems - Computer Graphics - Metafile for Transfer and Storage of Picture Description Information; Part 4: Clear text encoding.*

ISO 8651-1 *Information Processing Systems - Computer Graphics - Graphical Kernel System (GKS) Language Bindings; Part 1: FORTRAN.*

ISO 8651-2 *Information Processing Systems - Computer Graphics - Graphical Kernel System (GKS) Language Bindings; Part 2: Pascal.*

ISO 8651-3 *Information Processing Systems - Computer Graphics - Graphical Kernel System (GKS) Language Bindings; Part 3: Ada.*

3 The Registration Authority

3.1 Appointment of a Registration Authority

A qualified and internationally acceptable body concerned with computer graphics shall be recommended by ISO/IEC JTC1/SC24 to ISO/IEC JTC1 for acceptance by Council to act as the Registration Authority for the purposes of this Technical Report.

3.2 Register of graphical items

The Registration Authority shall maintain a register of names and meanings assigned to graphical items. The contents of this register shall be available to Member Bodies and Category A liaison organizations of ISO and IEC National Committees. Annex B contains a description of this register.

3.3 Initial assignments and additions

With regard to initial assignment of names and meanings to graphical items and subsequent additions to the register, the responsibilities of the Registration Authority shall be as follows:

- a) to receive from Sponsoring Authorities (see Clause 4) proposals for meanings to be assigned to graphical items;
- b) to ascertain, by referring proposals to the Secretariat of ISO/IEC JTC1/SC24 or a vote within the subcommittee, whether each proposal should be accepted, accepted subject to amendment, or rejected. Criteria for rejection of a proposal include:
 - 1) incomplete or incomprehensible definition of the graphical item;
 - 2) inadequate language binding or data encoding (reference Annex C Language Binding Guidelines);
 - 3) existence of an identical or similar item in the register;
 - 4) not a permitted graphical item;
 - 5) nonconformance to any of the International Standards listed in clause 2;
 - 6) inadequate justification for inclusion in the register.

Voting discrepancies shall be resolved by consensus, following attempts to meet objections raised by negative votes.

- c) to assign an identifier to each accepted graphical item;
- d) to assign a register identifier to each accepted graphical item. The register identifier shall consist of a section name followed by a unique registration number within the section which is:
 - 1) the value or identifier of the graphical item, if this is a number or,
 - 2) some appropriate number assigned by the Registration Authority, if the value or identifier of graphical item is not a number;
- e) to ensure entries relating to Draft International Standards are indicated as provisional in the register;
- f) to promulgate the graphical items accepted for registration to all Member Bodies, Category A liaison organizations of ISO and IEC National Committees, and the ISO/IEC JTC1/SC24;
- g) to inform the appropriate Sponsoring Authority of the results when processing of a proposal has been completed; and
- h) to provide copies of the register to members of the public on request.

3.4 Deletions

With regard to deletions from the register, the responsibilities of the Registration Authority shall be as follows:

- a) to receive proposals from the Sponsoring Authorities (see Clause 4);
- b) to inform the Sponsoring Authority that submitted the item for registration of the proposed deletion. Any comments

that a Sponsoring Authority may desire to make concerning a proposed deletion, shall be directed to the Secretariat of ISO/IEC JTC1/SC24 for consideration.

- c) to ascertain whether each proposal should be accepted or rejected by referring proposals to the Secretariat of ISO/IEC JTC1/SC24 for a Member Body vote within the subcommittee;
- d) to promulgate the deletions from the register to all Member Bodies, Category A liaisons of ISO and IEC National Committees;
- e) to inform the appropriate Sponsoring Authority of the results when processing of a proposal has been completed.

3.5 Modifications of proposals

Once a proposal for registration of a particular graphical item has been accepted and promulgated, no proposals for modification of that graphical item will be considered. However, requests for clarifications may be submitted by Sponsoring Authorities to ISO/IEC JTC1/SC24 for approval. Approved clarification shall be promulgated by the Registration Authority.

3.6 Future standards

Under direction of ISO/IEC JTC1/SC24, the Registration Authority shall update the register to include relationships to further standards or parts of standards in the area of computer graphics developed by the subcommittee.

4 Sponsoring Authorities

4.1 Definition of Sponsoring Authority

Proposals concerning graphical items may be made by the following organizations which, for purposes of this document, are Sponsoring Authorities:

- a) any ISO or IEC Technical Committee or Subcommittee;
- b) any P-member or O-member of ISO/IEC JTC1 or ISO/IEC JTC1/SC24;
- c) any international organization having Category A liaison status with ISO/IEC JTC1 or ISO/IEC JTC1/SC24.

4.2 Responsibilities of Sponsoring Authorities

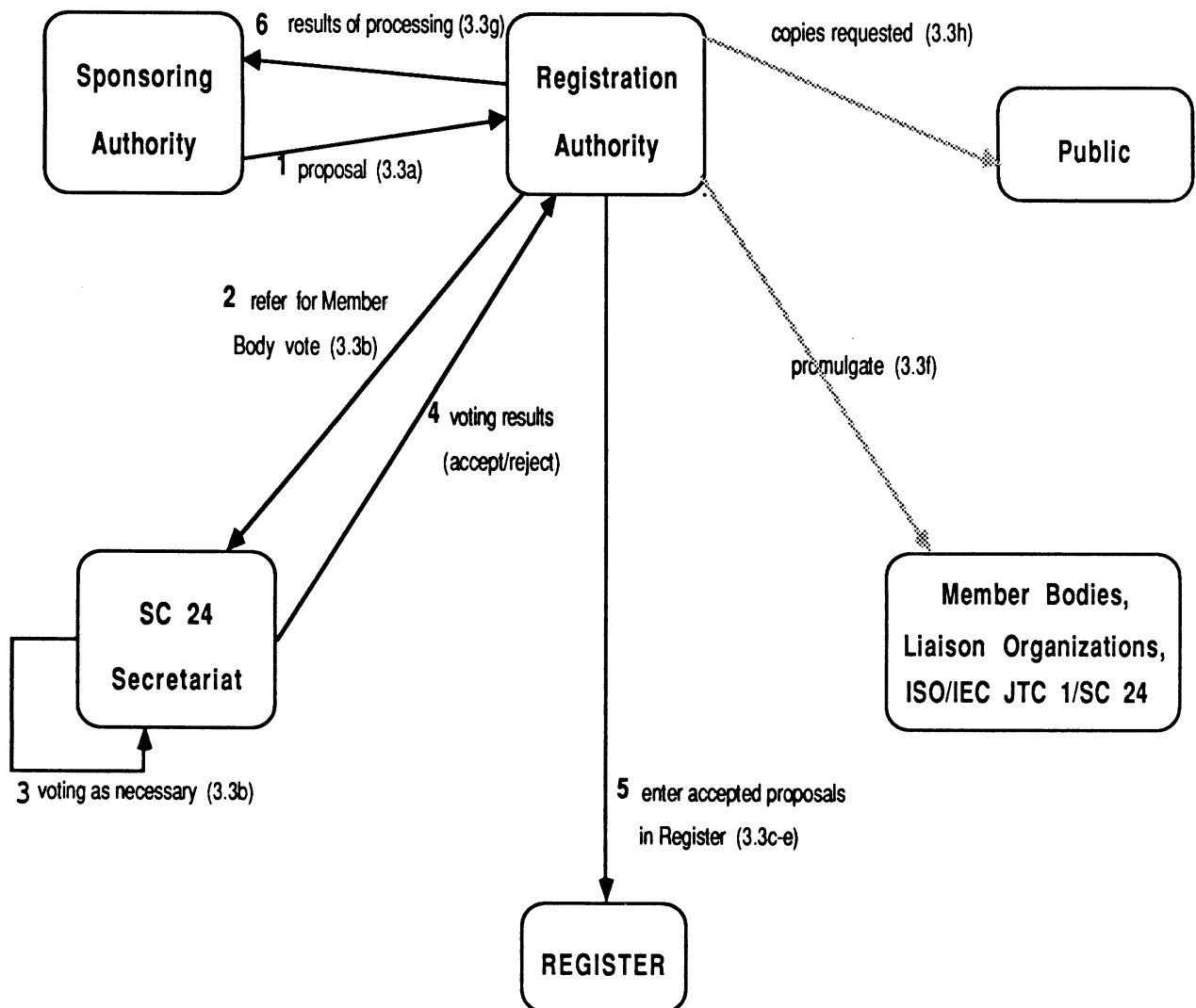
The responsibilities of Sponsoring Authorities shall be as follows:

- a) to receive proposals concerning graphical items from within their respective countries or organizations;
- b) to explain proposals and to coordinate multiple proposals as they may desire;
- c) to ensure all proposals are complete including language bindings and data encodings specified in the references (reference Annex C Language Binding Guidelines);
- d) to ascertain, by referring proposals to their members for a vote, whether each proposal should be accepted, accepted subject to amendment, or rejected. Criteria for rejection of a proposal include:
 - 1) incomplete or incomprehensible definition of the graphical item;
 - 2) inadequate language binding or data encoding (reference Annex C Language Binding Guidelines);
 - 3) existence of an identical or similar item in the register;
 - 4) not a permitted graphical item;

- 5) nonconformance to any of the standards listed in the references;
 - 6) inadequate justification for inclusion in the register.
- e) to forward to the Registration Authority those proposals that have their support;
- f) to make known within their respective countries or organizations the decisions taken on proposals as transmitted to them by the Registration Authority.

4.3 Registration form

Proposals shall be forwarded to the Registration Authority on standard forms, included in Annex A.



Steps to Register a Graphical Item

Annex A

Format of a Proposal

Each proposal for registration of a graphical item shall be submitted on a standard form provided by the Registration Authority. The following pages contain the forms to be used for each class of graphical item. An example of a completed form for each class of item is also given. These examples are hypothetical and are included for clarification. The "Relationship to Particular Standards" section will be extended as other computer graphics standards are developed; this extension will be done by the ISO Registration Authority under the direction of ISO/IEC JTC1/SC24.

Proposal Number	
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Date of Presentation	
Sponsoring Authority	
Class of Graphical Item	LINETYPE
Name	
Description	
Additional Comments	
Justification for Inclusion	
Relationship to Standards	
1) ISO 7942 (GKS) - Specifies a registered linetype to supplement those defined in subclause 5.4.1 of ISO 7942. 2) ISO 8632 (CGM) - Specifies a registered linetype to supplement those defined in subclause 5.7.2 of ISO 8632.	

Proposal Number	1
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Date of Presentation	3 June 1986
Sponsoring Authority	DIN
Class of Graphical Item	LINETYPE
Name	dashed-dotted-dotted
Description	
A repeating pattern of three line segments and three gaps, in which the first line segment is larger than the second and third line segments and the second and third line segments are equal in length. The gaps are equal in length. The intended visual representation of this linetype is illustrated below:	
	
Additional Comments	
EXAMPLE	
Justification for Inclusion	
This linetype is already present in the CGM. The same linetype value should be registered for use by other graphics standards.	
Relationship to Standards	
1) ISO 7942 (GKS) - Specifies a registered linetype to supplement those defined in subclause 5.4.1 of ISO 7942. 2) ISO 8632 (CGM) - Specifies a registered linetype to supplement those defined in subclause 5.7.2 of ISO 8632. It should be noted that this linetype is present in CGM as linetype 5.	

Proposal Number	
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Date of presentation	
Sponsoring Authority	
Class of Graphical Item	MARKERTYPE
Name	
Description	
Alignment Point	
Additional Comments	
Justification for Inclusion	
Relationship to Standards	
	1) ISO 7942 (GKS) - Specifies a registered markertype to supplement those defined in subclause 5.4.1 of ISO 7942. 2) ISO 8632 (CGM) - Specifies a registered markertype to supplement those defined in subclause 5.7.6 of ISO 8632.

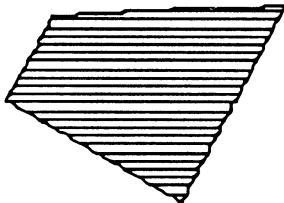
Proposal Number	2
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Date of presentation	3 June 1986
Sponsoring Authority	ANSI
Class of Graphical Item	MARKERTYPE
Name	diamond
Description	A symbol shaped like a diamond, with the following visual representation:
	
Alignment Point	center
Additional Comments	EXAMPLE
Justification for Inclusion	The diamond marker symbol is widely used in presentation graphics to denote positions of plotted statistical data. It is available in the character sets of many personal computers.
Relationship to Standards	1) ISO 7942 (GKS) - Specifies a registered markertype to supplement those defined in subclause 5.4.1 of ISO 7942. 2) ISO 8632 (CGM) - Specifies a registered markertype to supplement those defined in subclause 5.7.6 of ISO 8632.

Proposal Number	
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Date of Presentation	
Sponsoring Authority	
Class of Graphical Item	HATCHSTYLE
Name	
Description	
Additional Comments	
Justification for Inclusion	
Relationship to Standards	
1) ISO 7942 (GKS) - Specifies a registered hatchstyle as defined in subclause 5.4.1 of ISO 7942. 2) ISO 8632 (CGM) - Specifies a registered hatchstyle to supplement those defined in subclause 5.7.24 of ISO 8632.	

Proposal Number	3
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Date of Presentation	3 June 1986
Sponsoring Authority	BSI
Class of Graphical Item	HATCHSTYLE
Name	Horizontal equally spaced parallel lines
Description	
A hatchstyle consisting of horizontal equally spaced parallel lines. The intended representation of a filled-area element hatched in this style is illustrated below:	
	
Additional Comments	
EXAMPLE	
Justification for Inclusion	
This hatchstyle is already present in the CGM. The same style and index should be registered for use by other graphics standards.	
Relationship to Standards	
1) ISO 7942 (GKS) - Specifies a registered hatchstyle as defined in subclause 5.4.1 of ISO 7942. 2) ISO 8632 (CGM) - Specifies a registered hatchstyle to supplement those defined in subclause 5.7.24 of ISO 8632. It should be noted that this example hatchstyle is present in CGM as hatchstyle 1.	

Proposal Number		
Date of Presentation		
Sponsoring Authority		
Class of Graphical Item	TEXTFONT	
Name		
Description		
Additional Comments		
Justification for Inclusion		
Relationship to Standards		
1) ISO 7942 (GKS) - Specifies a registered textfont as defined in subclause 5.4.1 of ISO 7942. 2) ISO 8632 (CGM) - Specifies a registered textfont for use in the font list in subclause 5.3.13 of ISO 8632.		

Proposal Number	4
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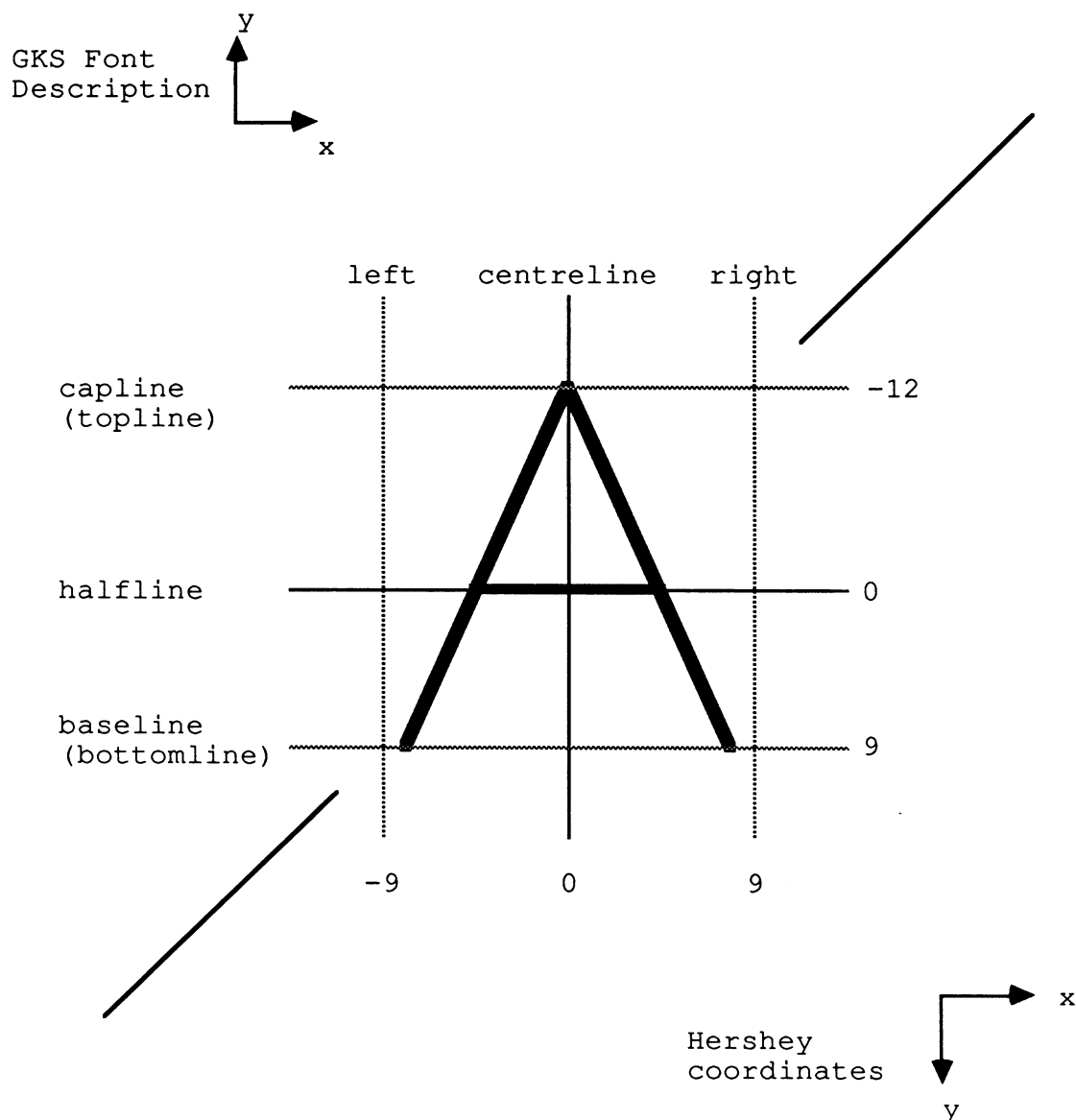
Date of Presentation	3 June 1986
Sponsoring Authority	ANSI
Class of Graphical Item	TEXTFONT
Name	Hershey Simplex
Description	See attached sheets.
Additional Comments	
	
Justification for Inclusion	
The Hershey Simplex fonts are supplied by most implementors of graphics software as one of their fonts. They are in the public domain and are available for a minimal licensing fee.	
Relationship to Standards	
1) ISO 7942 (GKS) - Specifies a registered textfont as defined in subclause 5.4.1 of ISO 7942. 2) ISO 8632 (CGM) - Specifies a registered textfont for use in the font list in subclause 5.3.13 of ISO 8632.	

Proposal for Registration of Hershey Simplex Roman UC, LC, Numerals, and Symbols

The Hershey Simplex Roman font is proportionally spaced as originally described by Dr. A. V. Hershey¹. It can be implemented as a monospaced font by assigning the character width of the widest character to all characters.

Hershey uses a right-handed coordinate system which defines positive y as towards the bottom of the page.

An illustration is given to show the mapping of the Hershey font coordinate system to the GKS font description coordinate system. Hershey does not differentiate between a topline and a capline or a bottomline and a baseline.



¹See National Bureau of Standards Special Publication 424.

Association of the Hershey Simplex Roman fonts to ISO 646

<u>character</u>	<u>ISO decimal code</u>	<u>Hershey index</u>
!	33	0714
"	34	not available
#	35	0733
\$	36	0719
%	37	not available
&	38	0734
'	39	0731
(	40	0721
)	41	0722
*	42	0728
+	43	0725
,	44	0711
-	45	0724
.	46	0710
/	47	0720
0	48	0700
1	49	0701
2	50	0702
3	51	0703
4	52	0704
5	53	0705
6	54	0706
7	55	0707
8	56	0708
9	57	0709
:	58	0712
;	59	0713
<	60	not available
=	61	0726
>	62	not available
?	63	0715
@	64	not available
A	65	0501
B	66	0502
C	67	0503
.	.	.
.	.	.
.	.	.
Y	89	0525
Z	90	0526
[	91	not available
\	92	not available
]	93	not available
^	94	not available
~	95	not available
`	96	0730
a	97	0601
b	98	0602
c	99	0603
.	.	.
.	.	.
.	.	.

y	121	0625
z	122	0626
{	123	not available
	124	0723
}	125	not available
~	126	not available

Proposal Number	
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Date of Presentation	
Sponsoring Authority	
Class of Graphical Item	PROMPT AND ECHO TYPE
Input Class	
Description	
include data record information	
Additional Comments	
Justification for Inclusion	
Relationship to Standards	
1) ISO 7942 (GKS) - Specifies a registered prompt and echo type to supplement those defined in subclause 5.7.1 of ISO 7942. 2) ISO 8651 (GKS Language Bindings) - Specifies a registered prompt and echo type.	