AS 3603.3—1988
ISO 8632-3—1987

Standards
Association of
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Australian Standard®
3603.3—1988

COMPUTER GRAPHICS—METAFILE FOR THE STORAGE AND TRANSFER OF PICTURE DESCRIPTION INFORMATION

Part 3—BINARY ENCODING

(ISO Title: Information processing systems—Computer graphics—Metafile for the storage and transfer of picture description information—Part 3: Binary encoding)

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This Australian Standard was prepared by Committee IS/1, Information Processing Systems. It was approved on behalf of the Council of the Standards Association of Australia on 12 September 1988 and published on 12 December 1988.

The following interests are represented on Committee IS/1:

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Telecom Australia

University of Technology, Sydney

AUSTRALIAN STANDARD

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(ISO Title: Information processing systems—Computer graphics—Metafile for the storage and transfer of picture description information—Part 3: Binary encoding)

AS 3603.3—1988

First published as AS 3603.3—1988.

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY, N.S.W.

ISBN 0 7262 5283 2

PREFACE

This Standard was prepared by the Association's Committee on Information Processing Systems in response to rapid developments and growth of interest in computer related graphics. It is identical with, and has been reproduced from, International Standard ISO 8632—1987; drawn up by ISO TC 97, Information Processing Systems.

The computer graphics metafile provides a file format suitable for the storage and retrieval of picture information. The file format consists of a set of elements that can be used to describe pictures in a way that is compatible between systems of different architectures and devices of different capabilities and design.

For the purpose of this Australian Standard, the text of the ISO Standard should be modified as follows:

(a) *Terminology*—The words 'Australian Standard' should replace the words 'International Standard' wherever they apply.

(b) *Cross-reference*—The references to International Standards should be replaced by reference to Australian Standards as follows:

Reference to International Standards		*Relevant Australian Standard*	
ISO		AS	
646	Information processing—ISO 7-bit coded character set for information interchange	1776	Information processing—7-bit coded character set for information interchange
2022	Information processing—ISO 7-bit and 8-bit coded character sets—Code extension techniques	1953	Information processing—ISO 7-bit and 8-bit coded character sets—Code extension techniques

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0 Introduction

0.1 Purpose of the Binary Encoding

The Binary Encoding of the Computer Graphics Metafile (CGM) provides a representation of the Metafile syntax that can be optimized for speed of generation and interpretation, while still providing a standard means of interchange among computer systems. The encoding uses binary data formats that are much more similar to the data representations used within computer systems than the data formats of the other encodings.

Some of the data formats may exactly match those of some computer systems. In such cases processing is reduced very much relative to the other standardized encodings. On most computer systems processing requirements for the Binary Encoding will be substantially lower than for the other encodings.

In cases where a computer system's architecture does not match the standard formats used in the Binary Encoding, and where absolute minimization of processing requirements is critical, and where interchange among dissimilar systems does not matter, it may be more appropriate to use a private encoding, conforming to the rules specified in clause 7 of ISO 8632/1.

0.2 Objectives

This encoding has the following features.

a) Partitioning of parameter lists: metafile elements are coded in the Binary Encoding by one or more partitions (see clause 4); the first (or only) partition of an element contains the opcode (Element Class plus Element Id).

b) Alignment of elements: every element begins on a word boundary. Alignment of partitions that require an odd number of octets is effected by padding with an octet with all bits zero. A no-op element is available in this encoding; it is ignored. It may be used to align data on machine-dependent record boundaries for speed of processing.

c) Uniformity of format: all elements have an associated parameter length value. The length is specified as an octet count. As a result, it is possible to scan the metafile, without interpreting it, at high speed.

d) Alignment of coordinate data: at default precisions and by virtue of alignment of elements, coordinate data always start on word boundaries. This minimizes processing by ensuring, on a wide class of computing systems, that single coordinates do not have to be assembled from pieces of multiple computer words.

e) Efficiency of encoding integer data: other data such as indexes, colour and characters are encoded as one or more octets. The precision of every parameter is determined by the appropriate precision as given in the METAFILE DESCRIPTOR.

f) Order of bit data: in each word, or unit within a word, the bit with the highest number is the most significant bit. Likewise, when data word are accessed sequentially, the least significant word follows the most significant.