Australian Standard®

# Computer graphics— Initial Graphics Exchange Specification (IGES) for digital exchange of product definition data

## Part 1: General

This Australian Standard was prepared by Committee IT/3, Computer Related Graphics. It was approved on behalf of the Council of Standards Australia on 2 November 1988 and published on 20 February 1989.

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The following interests are represented on Committee IT/3:

ACADS

Australian Vice Chancellors' Committee

Department of Defence

Royal Australian Institute of Architects

Telecom Australia

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# PREFACE

This Standard was prepared by Standards Australia's Committee on Computer Related Graphics. It is identical with and has been reproduced from the US Department of Commerce's National Bureau of Standards *Initial Graphics Exchange Specification (IGES) Version 4.0*—1989.

For the purposes of this Australian Standard the text of the NBS Publication should be modified as follows:

*Cross-references:*

The reference to ANSI Standards should be replaced by references to Australian Standards as follows:

| *Reference to ANSI Standard* (Refer to Appendix K) | | *Australian Standard* | |
|---|---|---|---|
| ANSI | | AS | |
| 74 | Code extension techniques for use with the 7-bit coded character set | 1776 | Information processing—7-bit coded character set for information interchange |
| 78 | Programming language—FORTRAN | 1486 | Programming language—FORTRAN |

ISO Standards: The reference to ISO Standard 1073.2 (ISO 1073)—*Alphanumeric character sets for optical recognition*, Part II: *Character set OCR-B—Shapes and dimensions of the printed image* should be replaced by references to Australian Standard AS 1436, *Alpha character set OCR-B full optical recognition*.

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STANDARDS AUSTRALIA

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### 1.1 Purpose

This Specification establishes information structures to be used for the digital representation and communication of product definition data. Use of this Specification permits the compatible exchange of product definition data used by various Computer-Aided Design and Computer-Aided Manufacturing (CAD/CAM) systems.

### 1.2 Field of Application

This Specification defines a file structure format, a language format, and the representation of geometric, topological, and non-geometric product definition data in these formats. Product definition data represented in these formats will be exchanged through a variety of physical media. The specific features and protocols for the communications media are the subject of other standards. The methodology for representing product definition data in this Specification is extensible and independent of the modeling methods used.

Chapter 1 is general in nature and defines the overall purpose and objectives of this Specification. Chapter 2 defines the communications file structure and format. It explains the function of each of the sections of a file. The geometry data representation in Chapter 3 deals with two- and three-dimensional edge-vertex models, with simple surface representations and Constructive Solid Geometry (CSG) representations. Chapter 4 specifies non-geometric representations, including common drafting practices, data organization methods, and data definition methods.

In Chapters 3 and 4, the product is described in terms of geometric and non-geometric information, with non-geometric information being divided into annotation, definition, and organization. The geometry category consists of elements such as points, curves, surfaces, and solids that model the product. The annotation category consists of those elements which are used to clarify or enhance the geometry, including dimensions, drafting notation, and text. The definition category provides the ability to define specific properties or characteristics of individual or collections of data entities. The organization category identifies groupings of elements from geometric, annotation, or property data which are to be evaluated and manipulated as single items.

### 1.3 Untested Entities

It is the policy of the organization to ensure that entities are tested before being introduced into the Specification. In cases where this testing is not yet complete, the entity is included in Appendix J. A prospective implementor is warned that, despite the fact that Appendix J entities represent the best judgment of the organization, there is a chance that changes will be required before these entities are introduced into the body of the Specification. If these entities are judged useful and implementation