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Technical product documentation — Organization and naming of layers for CAD —

Part 1: Overview and principles

Documentation technique de produits — Organisation et dénomination des couches de CAO —

Partie 1: Vue d'ensemble et principes

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html

This document was prepared by Technical Committee ISO/TC 10, *Technical product documentation*, Subcommittee SC 8, *Construction documentation*.

This second edition cancels and replaces the first edition (13567-1:1998), of which it constitutes a minor revision to update the Bibliography.

A list of all parts in the ISO 13567 series can be found on the ISO website.

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Introduction

The ISO 13567 series consists of two parts which deal with CAD layer organization and naming. ISO 13567-1 has a general application whereas ISO 13567-2 is applicable to construction projects.

The purpose of the ISO 13567 series is to establish a common international basis for organizing data in CAD systems that covers the structuring of data into layers.

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Technical product documentation — Organization and naming of layers for CAD —

Part 1: Overview and principles

1 Scope

This document establishes the general principles of layer structuring within CAD files. Layers are used to control visibility and to manage and communicate CAD file data. Layer names are used to represent this structure.

The principles are applicable to all parties involved in preparing and using technical documentation on computer systems. Although these principles are primarily for users, CAD system developers are expected to provide software tools capable of implementing and supporting this document. An important use is also to structure data in component libraries produced by third parties.

2 Normative reference

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
layer
organizational attribute of entities in a CAD data file, used to separate data in order to manage and communicate those data and to control visibility on the computer screen and on plotted drawings

Note 1 to entry: In CAD systems, synonyms for “layer” are used, for example “level”.

3.2
CAD model
structured CAD data file(s) organized according to the physical parts of the objects represented, for example a building or a mechanical device

Note 1 to entry: Models can be two-dimensional or three-dimensional, and can include graphical as well as non-graphical data attached to the objects.

3.3
CAD drawing
selected parts of a CAD model as presented on screen or on paper

Note 1 to entry: Visibility on the drawing can be controlled by views and layers. The drawing can contain additional graphics, such as border lines, title block and legends. CAD drawings can also be produced independently without an underlying CAD model (a drawing-oriented approach as opposed to the model-oriented approach).

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3.4
plot
graphic image created by a numerically controlled draughting machine and presented on draughting media

3.5
reference file
CAD file that is displayed and printed together with information from another file which can be stored and updated independently of the first file

Note 1 to entry: A typical use is a CAD drawing consisting of a file for the sheet and using the CAD model as a reference file. The view of the model in each drawing where it is referenced can thus be automatically updated.

3.6
wildcarding
using a special character to match any character, or group of characters, in a string comparison

4 General

When data are transferred between different systems, companies and countries, their structure needs to be understood in order to define responsibilities for parts of that data, to select from them to suit the needs of different specialists and to manage the data.

Layering is a commonly used technique to achieve such an organization of CAD data. Each graphical primitive, or collections of such primitives, in a CAD model is assigned to a layer. Layers are given unique names, from simple numbers to relatively long mnemonic codes, and can be selectively viewed or plotted.

A more sophisticated variation additionally allows the information in a CAD model to be split into different files, which are combined with each other in addition to the use of layering, i.e. reference file techniques.

Data classification techniques based on distributed databases, object-oriented programming, product modelling, etc., will be increasingly used in the future. For all these techniques the same fundamental principles for organizing information apply.

5 Fundamental principles

5.1 Organizational convention

The principle of organizing layers is based on the clear separation of the logical organization of information (conceptual level) from the way this information is coded in particular CAD implementations (internal level). This is a fundamental principle of database design. The primary focus is to establish clear organization of information which fulfils the functional requirements of the information users. The possibilities for coding this information using current technology (i.e. restricted number of layers or characters for layer names in some systems) has not been allowed to dominate the structure of the ISO 13567 series.

5.2 Layer name format convention

A second basic principle is based on the many ways of classifying information independently of each other so that they can be applied in combinations, often referred to as faceted classification. To achieve this, different classifiers are placed in different parts of the layer name. Among the benefits of this approach is that it makes it easy to split up the information in a CAD file according to the different needs of end users of the information.

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