

# SVENSK STANDARD

## SS-EN ISO 19125-1:2006



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### **Geografisk information – Hantering av enklare objekt – Del 1: Arkitektur (ISO 19125-1:2004)**

### **Geographic information – Simple feature access – Part 1: Common architecture (ISO 19125-1:2004)**

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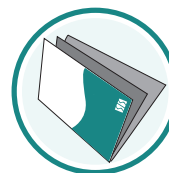
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Denna standard ersätter SS-ISO 19125-1:2004, utgåva 1.

The European Standard EN ISO 19125-1:2006 has the status of a Swedish Standard. This document contains the official English version of EN ISO 19125-1:2006.

This standard supersedes the Swedish Standard SS-ISO 19125-1:2004, edition 1.

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EUROPEAN STANDARD

**EN ISO 19125-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2006

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ICS 35.240.70

English Version

**Geographic information - Simple feature access - Part 1:  
Common architecture (ISO 19125-1:2004)**

Information géographique - Accès aux entités simples -  
Partie 1: Architecture commune (ISO 19125-1:2004)

Geoinformation - Simple feature access - Teil 1 :  
Gemeinsame Architektur (ISO 19125-1:2004)

This European Standard was approved by CEN on 16 February 2006.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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**SS-EN ISO 19125-1:2006 (E)**

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## **Foreword**

The text of ISO 19125-1:2004 has been prepared by Technical Committee ISO/TC 211 "Geographic information/Geomatics" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 19125-1:2006 by Technical Committee CEN/TC 287 "Geographic Information", the secretariat of which is held by NEN.

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 September 2006, and conflicting national standards shall be withdrawn at the latest by September 2006.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

### **Endorsement notice**

The text of ISO 19125-1:2004 has been approved by CEN as EN ISO 19125-1:2006 without any modifications.

## Introduction

This part of ISO 19125 describes the common architecture for simple feature geometry. The simple feature geometry object model is Distributed Computing Platform neutral and uses UML notation. The base Geometry class has subclasses for Point, Curve, Surface and GeometryCollection. Each geometric object is associated with a Spatial Reference System, which describes the coordinate space in which the geometric object is defined.

The extended Geometry model has specialized 0, 1 and 2-dimensional collection classes named MultiPoint, MultiLineString and MultiPolygon for modelling geometries corresponding to collections of Points, LineStrings and Polygons, respectively. MultiCurve and MultiSurface are introduced as abstract superclasses that generalize the collection interfaces to handle Curves and Surfaces.

The attributes, methods and assertions for each Geometry class are described in Figure 1 in 6.1.1. In describing methods, *this* is used to refer to the receiver of the method (the object being messaged).

The SFA COM function “signatures” may use a different notation from SFA SQL. COM notation is more familiar for COM programmers. However, UML notation is used throughout this part of ISO 19125. There may also be methods used in this International Standard that differ from one part to another. Where this is the case, the differences are shown within the part.

This part of ISO 19125 implements a profile of the spatial schema described in ISO 19107:2003, *Geographic information — Spatial schema*. Annex A provides a detailed mapping of the schema in this part of ISO 19125 with the schema described in ISO 19107:2003.



# Geographic information — Simple feature access —

## Part 1: Common architecture

### 1 Scope

This part of ISO 19125 establishes a common architecture and defines terms to use within the architecture.

This part of ISO 19125 does not attempt to standardize and does not depend upon any part of the mechanism by which Types are added and maintained, including the following:

- a) syntax and functionality provided for defining types;
- b) syntax and functionality provided for defining functions;
- c) physical storage of type instances in the database;
- d) specific terminology used to refer to User Defined Types, for example UDT.

This part of ISO 19125 does standardize names and geometric definitions for Types for Geometry.

This part of ISO 19125 does not place any requirements on how to define the Geometry Types in the internal schema nor does it place any requirements on when or how or who defines the Geometry Types.

### 2 Conformance

In order to conform to this part of ISO 19125, an implementation shall satisfy the requirements of one or more test suites specified in the other parts of ISO 19125.

### 3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 19107:2003, *Geographic information — Spatial schema*

ISO 19111:2003, *Geographic information — Spatial referencing by coordinates*

### 4 Terms and definitions

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

#### 4.1

##### **boundary**

set that represents the limit of an entity

NOTE Boundary is most commonly used in the context of geometry, where the set is a collection of points or a collection of objects that represent those points. In other arenas, the term is used metaphorically to describe the transition between an entity and the rest of its domain of discourse.

[ISO 19107]

#### 4.2

##### **buffer**

**geometric object** (4.14) that contains all **direct positions** (4.7) whose distance from a specified geometric object is less than or equal to a given distance

[ISO 19107]

#### 4.3

##### **coordinate**

one of a sequence of  $n$ -numbers designating the position of a **point** (4.17) in  $n$ -dimensional space

NOTE In a coordinate reference system, the numbers must be qualified by units.

[adapted from ISO 19111]

#### 4.4

##### **coordinate dimension**

number of measurements or axes needed to describe a position in a **coordinate system** (4.6)

[ISO 19107]

#### 4.5

##### **coordinate reference system**

**coordinate system** (4.6) that is related to the real world by a datum

[adapted from ISO 19111]

#### 4.6

##### **coordinate system**

set of mathematical rules for specifying how **coordinates** (4.3) are to be assigned to **point** (4.17)

[ISO 19111]

#### 4.7

##### **curve**

1-dimensional **geometric primitive** (4.15), representing the continuous image of a line

NOTE The boundary of a curve is the set of points at either end of the curve. If the curve is a cycle, the two ends are identical, and the curve (if topologically closed) is considered to not have a boundary. The first point is called the start point, and the last is the end point. Connectivity of the curve is guaranteed by the "continuous image of a line" clause. A topological theorem states that a continuous image of a connected set is connected.

[ISO 19107]

#### 4.7

##### **direct position**

position described by a single set of **coordinates** (4.3) within a **coordinate reference system** (4.5)

[ISO 19107]

#### 4.9

##### **end point**

last **point** (4.17) of a **curve** (4.7)

[ISO 19107]

#### 4.10

##### **exterior**

difference between the universe and the closure

NOTE The concept of exterior is applicable to both topological and geometric complexes.

[ISO 19107]

#### 4.11

##### **feature**

abstraction of real world phenomena

NOTE A feature may occur as a type or an instance. Feature type or feature instance is used when only one is meant.

[adapted from ISO 19101]

#### 4.12

##### **feature attribute**

characteristic of a **feature** (4.11)

NOTE A feature attribute has a name, a data type, and a value domain associated to it. A feature attribute for a feature instance also has an attribute value taken from the value domain.

[adapted from ISO 19101]

#### 4.13

##### **geometric complex**

set of disjoint **geometric primitives** (4.15) where the **boundary** (4.1) of each geometric primitive can be represented as the union of other geometric primitives of smaller dimension within the same set

NOTE The geometric primitives in the set are disjoint in the sense that no direct position is interior to more than one geometric primitive. The set is closed under boundary operations, meaning that for each element in the geometric complex, there is a collection (also a geometric complex) of geometric primitives that represents the boundary of that element. Recall that the boundary of a point (the only 0D primitive object type in geometry) is empty. Thus, if the largest dimension geometric primitive is a solid (3D), the composition of the boundary operator in this definition terminates after at most 3 steps. It is also the case that the boundary of any object is a cycle.

[ISO 19107]

#### 4.14

##### **geometric object**

spatial object representing a geometric set

NOTE A geometric object consists of a geometric primitive, a collection of geometric primitives, or a geometric complex treated as a single entity. A geometric object may be the spatial representation of an object such as a feature or a significant part of a feature.

[ISO 19107]

#### 4.15

##### **geometric primitive**

**geometric object** (4.14) representing a single, connected, homogeneous element of space

NOTE Geometric primitives are non-decomposed objects that represent information about geometric configuration. They include points, curves, surfaces, and solids.

[ISO 19107]