

SVENSK STANDARD

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Geografisk information – Hantering av enklare objekt – Del 2: SQL-gränssnitt (ISO 19125-2:2004)

Geographic information – Simple feature access – Part 2: SQL option (ISO 19125-2:2004)

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Denna standard ersätter SS-ISO 19125-2:2004, utgåva 1.

The European Standard EN ISO 19125-2:2006 has the status of a Swedish Standard. This document contains the official English version of EN ISO 19125-2:2006.

This standard supersedes the Swedish Standard SS-ISO 19125-2:2004, edition 1.

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Standarden är framtagen av kommittén för Ramverk för geodata, SIS/TK 323.

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EUROPEAN STANDARD

EN ISO 19125-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2006

ICS 35.240.70

English Version

**Geographic information - Simple feature access - Part 2: SQL
option (ISO 19125-2:2004)**

Information géographique - Accès aux entités simples -
Partie 2: Option SQL (ISO 19125-2:2004)

Geoinformation - Simple feature access - Teil 2: Structured
Query Language (SQL) (ISO 19125-2:2004)

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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| Contents | | Page |
|--|--|------|
| Foreword | | iv |
| Introduction | | v |
| 1 Scope..... | | 1 |
| 2 Conformance | | 2 |
| 3 Normative references | | 2 |
| 4 Terms and definitions | | 2 |
| 5 Symbols and abbreviated terms..... | | 3 |
| 6 Architecture | | 4 |
| 6.1 Architecture — SQL implementation of feature tables based on predefined data types | | 4 |
| 6.2 Architecture — SQL with Geometry Types implementation of feature tables..... | | 7 |
| 7 Clause component specifications..... | | 12 |
| 7.1 Components — Implementation of feature tables based on predefined data types | | 12 |
| 7.2 Components — SQL with Geometry Types implementation of feature tables..... | | 17 |
| Annex A (informative) Comparison of Simple feature access/SQL and SQL/MM – Spatial..... | | 31 |
| Annex B (normative) Conformance tests..... | | 32 |

Foreword

The text of ISO 19125-2:2004 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 19125-2:2006 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 19125-2:2004 has been approved by CEN as EN ISO 19125-2:2006 without any modifications.

Introduction

The purpose of this part of ISO 19125 is to define a standard Structured Query Language (SQL) schema that supports storage, retrieval, query and update of feature collections via the SQL Call-Level Interface (SQL/CLI) (ISO/IEC 9075-3:2003). A feature has both spatial and non-spatial attributes. Spatial attributes are geometry valued, and simple features are based on 2D geometry with linear interpolation between vertices. This part of ISO 19125 is dependent on the common architectural components defined in ISO 19125-1.

Feature collections are stored as tables with geometry valued columns in a SQL-implementation; each feature is a row in the table. The non-spatial attributes of features are mapped onto columns whose types are drawn from the set of standard SQL data types. The spatial attributes of features are mapped onto columns whose SQL data types are based on the underlying concept of additional geometric data types for SQL. A table whose rows represent these features is referred to as a feature table. Such a table contains one or more geometry valued columns. Feature-table schemas are described for two SQL-implementations: implementations based on predefined data types and SQL with Geometry Types.

In an implementation based on predefined data types, a geometry-valued column is implemented as a Foreign Key reference into a geometry table. A geometry value is stored using one or more rows in the geometry table. The geometry table may be implemented using either standard SQL numeric types or SQL binary types; schemas for both are described.

The term SQL with Geometry Types is used to refer to a SQL-implementation that has been extended with a set of Geometry Types. In this environment, a geometry-valued column is implemented as a column whose SQL type is drawn from this set of Geometry Types. The mechanism for extending the type system of an SQL-implementation is through the definition of user defined User Defined Types. Commercial SQL-implementations with user defined type support have been available since mid-1997.

Geographic information — Simple feature access —

Part 2: SQL option

1 Scope

This part of ISO 19125 specifies an SQL schema that supports storage, retrieval, query and update of simple geospatial feature collections via the SQL Call Level Interface (SQL/CLI) (ISO/IEC 9075-3:2003).

This part of ISO 19125 establishes an architecture for the implementation of feature tables.

This part of ISO 19125 defines terms to use within the architecture.

This part of ISO 19125 defines a simple feature profile of ISO 19107.

This part of ISO 19125 describes a set of SQL Geometry Types together with SQL functions on those types. The Geometry Types and Functions described in this part of ISO 19125 represent a profile of ISO 13249-3.

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 in the SQL environment including the following:

- a) the syntax and functionality provided for defining types;
- b) the syntax and functionality provided for defining SQL functions;
- c) the 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 of the SQL Types for Geometry;
- names, signatures and geometric definitions of the SQL Functions for Geometry.

This part of ISO 19125 describes a feature access implementation in SQL based on a profile of ISO 19107. ISO 19107 does not place any requirements on how to define the Geometry Types in the internal schema. ISO 19107 does not place any requirements on when or how or who defines the Geometry Types. In particular, a compliant system may be shipped to the database user with the set of Geometry Types and Functions already built into the SQL-implementation, or with the set of Geometry Types and Functions supplied to the database user as a dynamically loaded extension to the SQL-implementation or in any other manner not mentioned in this part of ISO 19125.

2 Conformance

In order to conform to this part of ISO 19125, an implementation shall satisfy the requirements of one of the following three conformance classes, as well as the appropriate components of ISO 19125-1:

- a) SQL implementation of feature tables based on predefined data types:
 - 1) using numeric SQL types for geometry storage and SQL/CLI access,
 - 2) using binary SQL types for geometry storage and SQL/CLI access;
- b) SQL with Geometry Types implementation of feature tables supporting both textual and binary SQL/CLI access to geometry.

Annex B provides conformance tests for each implementation of this part 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/IEC 9075-1:2003, *Information technology — Database languages — SQL — Part 1: Framework (SQL/Framework)*

ISO/IEC 9075-2:2003, *Information technology — Database languages — SQL — Part 2: Foundation (SQL/Foundation)*

ISO/IEC 9075-3:2003, *Information technology — Database languages — SQL — Part 3: Call-Level Interface (SQL/CLI)*

ISO/IEC 9075-4:2003, *Information technology — Database languages — SQL — Part 4: Persistent Stored Modules (SQL/PSM)*

ISO/IEC 9075-5:1999, *Information technology — Database languages — SQL — Part 5: Host Language Bindings (SQL/Bindings)*

ISO/IEC 13249-3:2003, *Information technology — Database languages — SQL multimedia and application packages — Part 3: Spatial*

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

ISO 19109:—¹⁾, *Geographic information — Rules for application schema*

ISO 19119:2004, *Geographic information — Services*

ISO 19125-1:2004, *Geographic information — Simple feature access — Part 1: Common architecture*

4 Terms and definitions

For the purposes of this part of ISO 19125, the following terms and definitions apply.

4.1

feature table

table where the columns represent feature attributes, and the rows represent features

1) To be published.

4.2**geographic feature**

representation of real world phenomenon associated with a location relative to the Earth

5 Symbols and abbreviated terms

| | |
|----------------------|---|
| FID | Feature ID column in the implementation of feature tables based on predefined data types |
| GID | Geometry ID column in the implementation of feature tables based on predefined data types |
| MM | Multimedia |
| SQL | Structured Query Language |
| SRID | Spatial Reference System Identifier |
| SRTEXT | Spatial Reference System Well Known Text |
| WKB | Well-Known Binary (representation for example, geometry) |
| WKTR | Well-Known Text Representation |
| 2D | 2-Dimensional |
| \mathbb{R}^1 | 1-Dimensional space |
| \mathbb{R}^2 | 2-Dimensional space |
| \emptyset | empty set |
| \cap | intersection |
| \cup | union |
| — | difference |
| \in | is a member of |
| \notin | is not a member of |
| \subset | is a proper subset of |
| \subseteq | is a subset of |
| \Leftrightarrow | if and only if |
| \Rightarrow | implies |
| \forall | for all |
| $\{ X \mid \dots \}$ | set of X such that... |
| \wedge | and |
| \vee | or |
| \neg | not |
| $=$ | equal |
| \neq | not equal |
| $<$ | less than |
| $>$ | greater than |