
**Geographic information — Simple feature
access —**

**Part 2:
SQL option**

Information géographique — Accès aux entités simples —

Partie 2: Option SQL



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 19125-2 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics* from a base document supplied by the Open GIS Consortium, Inc.

ISO 19125 consists of the following parts, under the general title *Geographic information — Simple feature access*:

- *Part 1: Common architecture*
- *Part 2: SQL option*

Part 3: COM/OLE option is under preparation.

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.

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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.