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## Geographic information — Positioning services

*Information géographique — Services de positionnement*

**ISO 19116**

**Third edition  
2025-04**

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This third edition cancels and replaces the second edition (ISO 19116:2019), which has been technically revised. It also incorporates the Amendment ISO 19116:2019/Amd 1:2021.

The main changes are as follows:

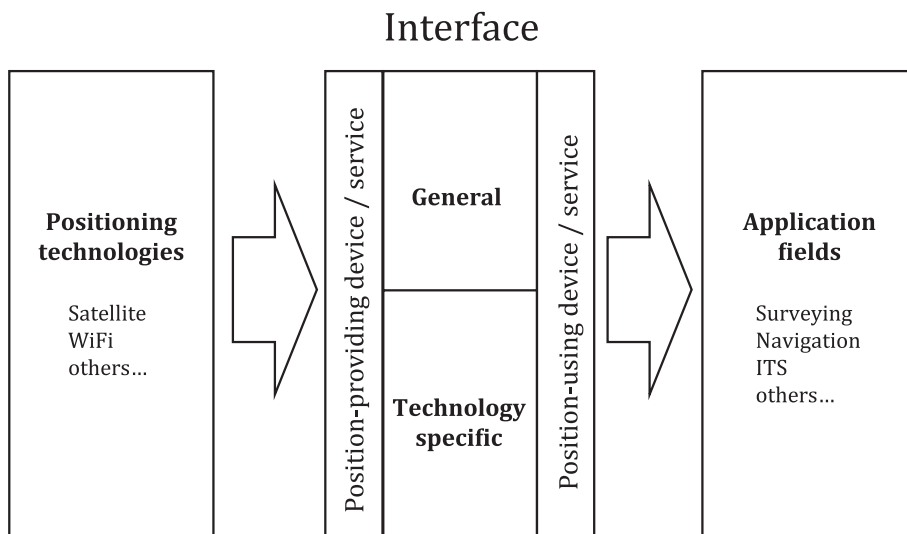
- ISO 19107 has been removed from [Clause 2](#) based on a re-examination of the provisions and UML models in this edition of the document;
- the document has been harmonized with ISO 19111:2019 (CoordinateMetadata) and ISO 19157-1:2023.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

**0.1 Overview**

Positioning services are among the processing services identified in ISO 19119. Processing services include services that are computationally oriented and operate upon the elements from the model domain, rather than being directly integrated in the model domain itself. This document defines and describes positioning services.

Positioning services employ a wide variety of technologies that provide position and related information to a similarly wide variety of applications, as depicted in [Figure 1](#). Although these technologies differ in many respects, there are important items of information that are common among them and serve the needs of these application areas, such as the position data, time of observation and its accuracy. There are also items of information that apply only to specific technologies and are sometimes required in order to make correct use of the positioning results, such as signal strength, geometry factors and raw measurements. Therefore, this document includes both general data elements that are applicable to a wide variety of positioning services and technology-specific elements that are relevant to specific technologies.



**Figure 1 — Positioning services overview**

Electronic positioning technology can measure the coordinates of a location on or near the Earth with great speed and accuracy, thereby allowing geographic information systems to be populated with any number of objects. However, the technologies for position determination have neither a common structure for expression of position information, nor common structures for expression of accuracy and reliability. The positioning services interface specified in this document provides data structures and operations that allow spatially oriented systems to employ positioning technologies with greater efficiency and interoperability.

**0.2 Decimal marker**

In accordance with the ISO/IEC Directives, Part 2, 2018, *Rules for the structure and drafting of International Standards*, in International Standards the decimal sign is a comma on the line. However, the General Conference on Weights and Measures (Conférence Générale des Poids et Mesures) at its meeting in 2003 passed unanimously the following resolution:

“The decimal marker shall be either a point on the line or a comma on the line.”

In practice, the choice between these alternatives depends on customary use in the language concerned. In the technical areas of geodesy and geographic information it is customary for the decimal point always to be used, for all languages. That practice is used throughout this document.