
**Language resource management —
Semantic annotation framework —**

**Part 7:
Spatial information**

*Gestion des ressources linguistiques — Cadre d'annotation
sémantique —*

Partie 7: Information spatiale



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see [Foreword - Supplementary information](#).

This document was prepared by Technical Committee ISO/TC 37, *Language and terminology*, Subcommittee SC 4, *Language resource management*.

This second edition cancels and replaces the first edition (ISO 24617-7:2014), which has been technically revised. It aims at satisfying the requirements and recommendations laid down in ISO 24617-6.

The main changes compared to the previous edition are as follows.

- Event-paths (<eventPath>), which are triggered by motions, are restored as objects of a basic entity type in concrete syntaxes as well as in the abstract syntax.
- It focuses on spatial relations only, thus tagging them as <sRelation>. There are no <motionSignal> or <measureSignal> as such. Path adjuncts are treated as pathDefining spatial relations, tagged as <sRelation type="pathDefining"/>.
- The movement link (<moveLink>) is very much modified to conform to the general link structure, as specified in ISO 24617-6. This general link structure minimally consists of a relation type and two required arguments, represented by two attribute names, @figure and @ground, which are single entity structures and sets of entity structures, respectively. The addition of optional (implied) attributes such as @trigger (relator) for <moveLink> or @bounds for <mLink> is allowed.
- The measure link (<mLink>) is generalized to accommodate not only spatial measures such as distances but temporal or spatio-temporal measures that include durations, time amounts or speeds. The two optional attributes @endPoint1 and @endPoint2 are also generalized to apply to areas (oceans) or borderlines (rivers, mountain ranges) with a new attribute @bounds, replacing those two attributes.
- As a result, most of the specifications of the attribute-value assignments to each of the entity types and those of the link types, represented in extended BNF, or XML DTD (data type declarations), are revised. The UML figures representing them are also revised or deleted.

- The list of tags associated with entity structures and link structures is presented in a tabular form to make these structures more comparable in a visual way. This list has been given in [Clause 4, Table 1](#).
- To make the document more compact and less burdensome for the readers, [Annex A](#), Guidelines, has been deleted.

A list of all parts in the ISO 24617 series can be found on the ISO website.

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.

Introduction

The automatic recognition of spatial information in natural language is currently attracting considerable attention in the fields of computational linguistics and artificial intelligence. The development of algorithms that exhibit “spatial awareness” promises to add needed functionality to natural language processing (NLP) systems, from named entity recognition to question-answering and text-based inference. However, in order for such systems to reason spatially, they require the enrichment of textual data with the annotation of spatial information in language. This involves a large range of linguistic constructions, including spatially anchoring events, descriptions of objects in motion, viewer-relative descriptions of scenes, absolute spatial descriptions of locations, and many other constructions.

This document provides normative specifications not only for spatial information, but also for information content in motion and various other types of event in language.

In this document, [Clause 8](#) treats the representation of static and dynamic spatial annotations by introducing an XML-based concrete syntax for representing spatial-related or motion-related annotations. This concrete syntax is based on the abstract syntax that is presented in [Clause 7](#) with a metamodel as a part of the specification of the spatial annotation structure. An informative [Annex A](#) is provided with a brief introduction to the annotation and interpretation of quantified spatial entities and eventualities including motions and event-paths.

A formal semantics, based on the abstract syntax, will be provided as part of a future new work item within the semantic annotation framework. This will be coordinated with the temporal semantics and specification of ISO 24617-1, thereby producing a rich semantics that will be directly useable by practitioners in computational linguistics and other communities (see [Clause 6](#)).

Language resource management — Semantic annotation framework —

Part 7: Spatial information

1 Scope

This document provides a framework for encoding a broad range of spatial information and spatiotemporal information relating to motion as expressed in natural language texts. This document includes references to locations, general spatial entities, spatial relations (involving topological, orientational, and metric values), dimensional information, motion events, paths, and event-paths triggered by motions.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 24617-1, *Language resource management — Semantic annotation framework (SemAF) — Part 1: Time and events (SemAF-Time, ISO-TimeML)*

ISO 24617-6, *Language resource management — Semantic annotation framework — Part 6: Principles of semantic annotation (SemAF Principles)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 24617-1 and ISO 24617-6, and the following apply.

3.1

document creation location

dcl

unique place or set of places associated with a document that represents the *location* (3.7) in which the document was created

Note 1 to entry: Some collaboratively written documents, such as GoogleDoc¹⁾ documents and chat logs, might refer not only to a single location but also to a set of locations spread out across the world. Besides, for example, the creation place of the Hebrew bible or the creation place of each of the books in it is uncertain. The attribute @dcl will, therefore, have the value "false", understood to mean "unspecified", while the value "true", is understood to mean "specified".

1) GoogleDoc is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product.