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Language resource management — Semantic annotation framework —

Part 7: Spatial information (ISOspace)

Gestion des ressources linguistiques — Cadre d'annotation sémantique —

Partie 7: Information spatiale (ISOspace)

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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 the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 37, *Terminology and other language and content resources*, Subcommittee SC 4, *Language resource management*.

ISO 24617 consists of the following parts, under the general title *Language resource management — Semantic annotation framework (semAF)*:

— *Part 1: Time and events (SemAF-Time, ISO-TimeML)*

— *Part 2: Dialogue acts*

— *Part 4: Semantic roles (SemAF-SR)*

— *Part 5: Discourse structures (SemAF-DS)*

— *Part 6: Principles of semantic annotation (SemAF-Basics)*

— *Part 7: Spatial information (ISOspace)*

— *Part 8: Semantic relations in discourse (SemAF-DRel)*

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 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 part of ISO 24617 was developed in collaboration with the ISOspace working group at Brandeis University with the aim to provide an International Standard for the representation of spatial information relating to locations, motions and non-motion events in language.

NOTE The ISOspace Working Group is headed by James Pustejovsky, jampesp@cs.brandeis.edu, Brandeis University, Waltham, MA, U.S.A.

This part of ISO 24617 provides normative specifications and guidelines not only for spatial information, but also for information content in motion and various other types of event in language.

The main parts of this part of ISO 24617 consist of the following:

a) Scope;

b) Normative references;

c) Terms and definitions;

d) List of tags or names of elements;

e) Overview;

f) Motivation and requirements;

g) Specification of the ISOspace annotation structure;

h) Representation of ISOspace-conformant annotations.

Clause 8 introduces an XML-based concrete syntax for representing spatial-related or motion-related annotations based on the annotation structure of ISOspace that is presented in Clause 7 with a UML-based metamodel.

A formal semantics for ISOspace 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 (SemAF-Time, ISO-TimeML), thereby producing a rich semantics that will be directly useable by practitioners in computational linguistics and other communities (see Clause 6). The multilingual extension of ISOspace will also be treated in a separate part of the ISO 24617- series in the near future.

NOTE Although the schema and DTD are not part of the present document as normative annexes, they will both be found in a webpage relating to the ISOspace specification.

Normative Annex A is an integral part of ISO 24617 and provides core annotation guidelines.

Language resource management — Semantic annotation framework —

Part 7: Spatial information (ISOspace)

1 Scope

This part of ISO 24617 provides a framework for encoding a broad range not only of spatial information, but also of spatiotemporal information relating to motion as expressed in natural language texts. This part of ISO 24617 includes references to locations, general spatial entities, spatial relations (involving topological, orientational, and metric values), dimensional information, motion events, and paths.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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/IEC 14977, *Information technology — Syntactic metalanguage — Extended BNF*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 24617-1 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 GoogleDoc[1)] 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" which is to be understood to mean "unspecified", while the value "true" is to be understood to mean "specified".

3.2
event
eventuality
something that can be said to obtain or hold true, to happen or to occur

Note 1 to entry: This is a very broad notion of event, also known in the literature as "eventuality" and includes all kinds of actions, states, processes, etc. It is not to be confused with the narrower notion of event (as opposed to the notion of "state") as something that happens at a certain point in time (e.g. the clock striking two or waking up) or during a short period of time (e.g. laughing). In ISO-TimeML, the term *event* is used in a broader sense and is equivalent to the term *eventuality*.

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 these products.