
**Language resource management —
Semantic annotation framework
(SemAF) —**

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

*Gestion des ressources langagières — Cadre d'annotation sémantique
(SemAF) —*

Partie 1: Temps et événements (SemAF-Time, ISO-TimeML)



This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2012

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Overview	4
5 Motivation and requirements	4
6 Basic concepts and metamodel	5
7 Specification of ISO-TimeML	8
7.1 Overview	8
7.2 Abstract syntax	8
7.2.1 Introduction	8
7.2.2 Conceptual inventory	9
7.2.3 Syntax rules	9
7.3 Concrete XML-based syntax	10
7.3.1 TimeML vs. ISO-TimeML: Stand-off annotation and other differences	10
7.3.2 Naming conventions	12
7.3.3 Example annotations	12
7.3.4 Basic elements: <EVENT>, <TIMEX3>, and <SIGNAL>	12
7.3.5 Link elements: <TLINK>, <SLINK>, <ALINK> and <MLINK>	18
7.3.6 Other tags: <CONFIDENCE>, <CERTAINTY> and <ISO-TimeML>	22
8 Towards a semantics for ISO-TimeML	26
8.1 Overview	26
8.2 Tense and aspect in language	26
8.2.1 Tense	26
8.2.2 Aspect	26
8.3 Temporal relations	27
8.4 An interval-based semantics for ISO-TimeML	28
8.4.1 Technical preliminaries for interval temporal logic	28
8.4.2 Basic event-structure	29
8.4.3 The interpretation of <TIMEX3>	31
8.4.4 Interpretive rule summary	36
8.5 An event-based semantics for ISO-TimeML	37
8.5.1 Introduction	37
8.5.2 Defining an event-based semantics	38
Annex A (normative) Core annotation guidelines	41
A.1 Introduction	41
A.2 ISO-TimeML elements and their attributes	41
A.2.1 The <EVENT> element	41
A.2.2 The <TIMEX3> element	48
A.2.3 The <SIGNAL> element	55
A.3 The link elements: <TLINK>, <SLINK>, <ALINK> and <MLINK>	56
A.3.1 Overview	56
A.3.2 The <TLINK> element	56
A.3.3 The <SLINK> element	59
A.3.4 The <ALINK> element	61
A.3.5 The <MLINK> element	62

Annex B (informative) Completely annotated examples	63
B.1 Complex TIMEX3 examples	63
B.2 Complex TLINK and SLINK examples	64
B.3 Causative examples	67
Annex C (informative) Event and temporal annotations for Chinese	68
Annex D (informative) Annotation for Italian fragment	74
D.1 Introduction	74
D.2 Basic references	74
D.3 ISO-TimeML elements and their attributes	74
D.3.1 How to annotate EVENTS	74
D.3.2 Event identification and tag span	75
D.3.3 What NOT to tag	78
D.3.4 Introductory note	78
D.4 The <SIGNAL> element	81
D.5 The link tags	82
D.6 Informative: Examples of tense, aspect and mood annotation in Italian.....	82
D.7 Sample of Italian annotation	84
Annex E (informative) Temporal annotation of predicates in Korean	89
E.1 Introduction	89
E.2 Basic references	89
E.3 Morphology of Korean predicates.....	89
E.4 Temporal structure: informative	91
E.5 Temporal annotation of non-Latin texts	92
E.6 Tense.....	93
E.6.1 Tense markers.....	93
E.6.2 Annotation guidelines for the attribute @tense	95
E.6.3 Contextual interpretation of tense	96
E.7 Aspect	114
E.7.1 Aspect markers	114
E.7.2 Annotation of aspect markers	115
E.7.3 Interpretation of aspectual features.....	116
E.7.4 Interpretation conditions of aspect.....	118
E.8 Modality	118
E.8.1 Conjectural modal markers	118
E.8.2 Annotation of modality CONJECTURAL	119
E.8.3 Interpretation of modality CONJECTURAL	120
E.9 Mood	120
E.9.1 Mood markers	120
E.9.2 Annotation of mood RETROSPECTIVE	121
E.9.3 Interpretation of RETROSPECTIVE mood	122
E.10 Specific values for <EVENT> attributes in Korean.....	122
E.11 Summary.....	122
Annex F (informative) Past and current activities on temporal and event annotation	124
F.1 Introductory remarks.....	124
F.2 Annotating temporal expressions.....	124
F.3 Annotating events.....	125
F.4 Annotating relations between times and events	127
F.4.1 Ways of capturing time-event relational information.....	127
F.4.2 Subordinating and aspectual relations	129
Annex G (informative) Tools and templates	130
G.1 Overview	130
G.2 Annotation tools and templates	130
G.2.1 Overview	130
G.2.2 The ALEMBIC workbench	131
G.2.3 The CALLISTO toolkit.....	131
G.2.4 The TANGO temporal relation editor	131
G.3 Analytic tools	132

G.3.1	Overview.....	132
G.3.2	The TARSQI toolkit.....	132
G.3.3	The IBM TimeML annotator	133
G.3.4	The Amsterdam temporal component extractor	133
G.3.5	The Time Calculus analyser	133
Annex H	(normative) Specification	134
H.1	Requirement.....	134
H.2	Attribute classes.....	134
H.2.1	att.anchored	134
H.2.2	att.annotate	135
H.2.3	att.id	135
H.2.4	att.lang	135
H.2.5	att.linguistic	136
H.2.6	att.pointing	138
H.2.7	att.typed	138
H.3	Elements.....	139
H.3.1	<ALINK>	139
H.3.2	<CONFIDENCE>.....	139
H.3.3	<EVENT>	140
H.3.4	<MLINK>	141
H.3.5	<SIGNAL>	141
H.3.6	<SLINK>.....	142
H.3.7	<TIMEX3>	143
H.3.8	<TLINK>	145
H.3.9	<div>	146
H.3.10	<isoTimeML>.....	146
H.3.11	<s>.....	146
H.3.12	<w>.....	146
Bibliography		147

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 24617-1 was prepared by Technical Committee 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*

The following parts are under preparation:

— *Part 4: Semantic roles (SemAF-SRL)*

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

The following parts are planned:

— *Part 3: Named entities (SemAF-NE)*

— *Part 6: Principles of semantic annotation*

— *Part 7: Spatial information (ISO-Space)*

— *Part 8: Relations in Discourse (SemAF-DRel)*

Introduction

This part of ISO 24617 results from the agreement between the TimeML Working Group and the ISO Working Group, ISO/TC 37/SC 4/WG 2, *Language resource management – Semantic annotation*, that a joint activity should take place to accommodate the two existing documents for annotating temporal information, *TimeML 1.2.1* and *TimeML Annotation Guidelines*, into ISO international standards. This work should lead to the achievement of two objectives:

- modification of the two documents in conformance to the ISO International Standards;
- verification of the annotation guidelines for a wide coverage of multilingual resources.

It should be noted that this part of ISO 24617 provides normative guidelines not just for temporal information, but also for information content in various types of events in English as well as other languages.

Language resource management — Semantic annotation framework (SemAF) —

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

1 Scope

Temporal information in natural language texts is an increasingly important component to the understanding of those texts. This part of ISO 24617, *SemAF-Time*, specifies a formalized XML-based markup language called *ISO-TimeML*, with a systematic way to extract and represent temporal information, as well as to facilitate the exchange of temporal information, both between operational language processing systems and between different temporal representation schemes. The use of guidelines for temporal annotation has been fully attested with examples from the TimeBank corpus, a collection of 183 documents that have been annotated by TimeML before the current version of *ISO-TimeML* was formulated.

NOTE Throughout this document, *SemAF-Time* refers to the ISO 24617-1, while *ISO-TimeML* refers to the annotation language specified in this document.

2 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.

NOTE The first reference shows how dates and times are represented and the second provides a format for the standoff representation of *ISO-TimeML* annotation presented here.

ISO 8601:2004, *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO 24612:2011, *Language resource management — Linguistic annotation framework (LAF)*

3 Terms and definitions

For the purposes of this document, the terms and definitions in ISO 8601:2004 and the following apply.

NOTE The terms and definitions provided below are provided to clarify the terminology relating to the metamodel, specification, and semantics of *ISO-TimeML*. Terminology derived from XML and other formal languages as well as from general temporal logics is not defined here.

3.1

ALINK

linking tag that represents a phase relation between an aspectual verb (or morpheme) and a predicate denoting an **event** (3.5)

3.2

annotation

process of adding information to segments of language data or that information itself