Temporal Expressions

Adapted from the "TimeML Annotation Guidelines version 1.2.1" by Roser Saurí et al., 2006.

What is a Temporal Expression?

A temporal expression is some sequence of words that tell us when something happened (1), how long something lasted (2), or how often something occurs (3). Temporal expressions may be calendar dates, times of day, or durations, such as periods of hours, days, or even centuries. Temporal expressions can be precise, like (1), or ambiguous, like (2).

(1)   The train arrived at <u>8:10 p.m.</u>

(2)   He was stuck on that island for <u>almost a year</u>.

(3)   <u>Every day</u> he gets a caffe americano double-soy no-sugar.

Here, as in all examples in this guide, the temporal expressions are indicated by underlining.

Temporal expressions that should be marked usually contain one of the lexical triggers indicated in Table 1. The table also includes examples of non-trigger words that usually indicate a particular expression is not a markable temporal expression.

Part of Speech	Lexical Trigger	Non-Triggers
Noun	day, minute, weekend, midnight, millennium, era, semester, summer, the future, the past, months	instant, jiffy
Proper name	Monday, January, New Year's Eve, Washington's Birthday	
Time Pattern	8:00, 12/2/00, 1994, 1960s	
Adjective	current, future, former, past, next, medieval, monthly	earlier, ahead, subsequent, frequent, later
Adverb	currently, lately, then, next, hourly, daily, monthly	immediately, instantly, forthwith, previously, beforehand, soon, sooner, shortly, eventually, once.
Time noun / Adverb	today, yesterday, now	
Number	3 (as in "He arriaved at 3."), three	

Table 1: Examples of Lexical Triggers for Temporal Expressions

You will annotate the following items for every temporal expression

- Extent – the tokens that comprise the expression
- Type – is the expression a Date, Time, Duration, or Set?
- Value – the time or duration indicated by the expression

In addition, some temporal expressions may require additional information

- Modifier – is there a modifier such as Early or Late in the expression?
- Quantification – is there a quantifier such as Every or Some in the expression?

- Frequency – if there a frequency stated or implied by the expression?
- Temporal Function – does the expression have a particular function in relation to the text, such as when the text was published or distributed?

Extent of Temporal Expressions

When marked, the full extent of a temporal expression must be one of noun (4), noun phrase (5), adjective (6), adjectival phrase (7), adverb (8), or adverbial phrase (9).

(4)   They arrived on <u>Thursday</u>.
(5)   They arrived in <u>the morning</u>.
(6)   The <u>current</u> state of affairs is troubling.
(7)   The tour is <u>a half an hour long</u>.
(8)   He has been causing quite a bit of trouble <u>recently</u>.
(9)   The <u>almost half-hour</u> flogging nearly killed him.

Prepositions (10), prepositional phrases and clauses, on the other hand, are never, by themselves, temporal expressions – if anything, some subpart may be a temporal expression, or they may be included in a larger temporal expression that falls into one of the above categories.

(10)   He has seen such a thing *before*.
(11)   He planned to leave *before Thursday*.
(12)   *Over the last two years* there have been numerous strikes and riots.

Rule NN: The full extent of a temporal expression must be a noun, noun phrases, adjective, adjectival phrase, adverb, or adverbial phrase, but may not be a preposition, prepositional phrase, or clause.

All pre- and post-modifiers to the temporal expression, and only the temporal expression. should be included in the expression, including determiners, premodifiers that qualify as Modifier attributes, prepositional phrases, appositives, and dependent clauses. The time expression may be included within a larger phrase whose head is not part of the time expression; if so, this head and its non-temporal modifiers are not included within the expression. For example:

(13)   His partner is a 22-year-old <u>future</u> accountant who holds much promise.

In example (13), both the noun phrase "account who holds much promise" and its non-temporal premodifier "a 22-year-old" are included in the temporal expression.

Rule NN: Include all pre- and post- modifiers to the temporal expression in the expression's extent.

Non-Markable Expressions

Following is a sample of negative examples, that is, expressions that look like a temporal expression, but which we will not mark. Examples (14)-(17) only vaguely refer to a point in time or duration.

(14)   The world watched the U.S.-led bombing and *subsequent* freeing of Kuwait.

(15)   The truth will come out, *eventually*.

(16)   Iraqi leader Saddam Hussein, *meanwhile*, sent a message to the Russian President.

(17)   There were signs of trouble *ahead*.

Examples (18)-(21) reference reoccurring times. While some of these terms, such as "usually" and "always" indicate the presence of a markable set-denoting expression, they are not markable when found alone.

(18)   He has been in *frequent* touch with the Iraqi government

(19)   She has dealt gracefully with the *frequently* tedious tasks that have been assigned.

(20)   April is *usually* wet.

(21)   We *always* watch the game on Super Bowl Sunday.

Proper names that include a date but do not designate a temporal entity will not be marked. Examples include:

(22)   We infiltrated the terrorist group *Black September*.

(23)   I had to read Orwell's *1984* in high school.

(24)   Have you ever heard of *the 21st Century Party*?

Determining the Type

Each temporal expression needs to be assigned a type. Valid types are DATE, TIME, DURATION, and SET.

DATE

Assign this type to temporal expression that indicate a calendar time.

(25)   Mr. Smith left Friday, October 1, 1999.

(26)   Mr. Smith left the second of December.

(27)   Mr. Smith left yesterday.

(28)   Mr. Smith left in November 1943.

(29)   Mr. Smith will leave two weeks from next Tuesday.

TIME

Assign this type to temporal expression that indicate a time of the day, even in a very indefinite way..

(30)   Mr. Smith left ten minutes to three.

(31)   Mr. Smith left at five till eight.

(32)   Mr. Smith left at 9.a.m. Friday, October 1, 1999.

(33)   Mr. Smith left late last night.

DURATION

Assign this type to temporal expression that explicitly indicates a duration.

(34)   Mr. Smith stayed 2 months in Boston.

(35)   Mr. Smith stayed 48 hours Boston

(36)   Mr. Smith stayed all last night in Boston.

If any specific calendar or time of day information is supplied in the temporal expression, it must be considered either DATE or TIME, not a duration. This means that most range expressions, such as the following examples, will be marked as two separate DATE or TIME expressions, not one DURATION:

(37)   Mr. Smith left between 9 and 10 a.m. (both marked as TIME)
(38)   Mr. Smith stayed in Boston between the third and fifth of March. (both marked as DATE)

SET
Assign this type to temporal expression that indicate a set of times or dates. For example:

(39)   John swims twice a week.
(40)   John swims every 2 days.

The quantification and frequency properties go hand-in-hand with the SET type. If you mark a temporal instance as a SET, you will be required to fill in at least one of the Quantification property or the Frequency property, and may fill in both.

Determining the Value

Rule NN: If you can determine any part of the temporal value for an expression, it should probably be tagged.

Rule NN: Determination of the value must be based on evidence internal to the document that is being annotated.

Determining the Modifier

Some temporal expressions are modified in some way. For example, (41) is an unmodified temporal expression, but (42) is modified by the use of the word "late". In general, we want to capture the basic semantics of quantifier modifiers (e.g., approximately, no more than) and lexicalized aspect markers (e.g., early, start of).

(41)   Party like its 1999.
(42)   He started his job in late 1999.

We do not want to capture the semantics of leading prepositions or other terms that are outside the extent of the tagged temporal expression. For example, "before Tuesday" is not considered a modified expression for our purposes because "before", as a preposition, is not included in the full extent of the temporal expression. Table 2 gives the values for the modifier attribute.

Applies to	Modifier	Sample Expression
Points	BEFORE	More than a decade ago
	AFTER	Less than a year ago
	ON_OR_BEFORE	No less than a year ago
	ON_OR_AFTER	No more than a year ago
Durations	LESS_THAN	
	MORE_THAN	
	EQUAL_OR_LESS	

	EQUAL_OR_MORE	
Points and Durations	START	The early 1960s
	MID	The middle of the month
	END	The end of the century
	APPROX	About three years ago

Table 2: Example uses of the twelve modifier tags

Determining the Quantification

TBD

Determining the Frequency

TBD

Determining the Temporal Function

TBD

Summary of Rules

Temporal Expressions

#	Rule
1	A rule

Glossary

Idiom. A time expression where the literal meaning of the expression or its parts is not being used. Examples include "the last minute" in "Saddam will not cave in at the last minute", and "the day", in "Beer-drinking is the order of the day". Idioms aren't assigned a value.

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