Annotating Time Expressions in Spanish
TimeML Annotation Guidelines

Version TempEval-2010

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February 22, 2010

Contents

1   Introduction

This document describes the annotation guidelines for marking up instances of *time expressions* in the Spanish dataset of the TempEval 2010 Evaluation, one of the tasks in the SemEval International Workshop on Semantic Evaluation.[1] The annotation will be based on TimeML (Pustejovsky et al., 2005), a specification language for events and time expressions. TimeML was first developed in 2002 in an extended workshop called TERQAS

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[1]http://nlp.cs.swarthmore.edu/semeval/tasks/index.php

(Time and Event Recognition for Question Answering Systems),[2] which focused on the issue of answering temporally based questions regarding events and entities in news articles. In 2003, TimeML was further developed in the context of the TANGO workshop (TimeML Annotation Graphical Organizer).[3] In addition, TimeML has been consolidated as an international cross-language ISO standard (ISO WD 24617-1:2007), and has been approved as the annotation language for TempEval, one of the tasks in the SemEval International Workshop on Semantic Evaluations (Verhagen et al., 2007, 2009).

In the context of the current document, time expressions are referred to as *timexes*. *Timex* stands for TIMe EXpression. In TimeML, they are marked up with the tag `timex3`. Early annotation schemes for time expressions included the tags `timex` and `timex2`. TimeML's `timex3` tag was developed with these earlier schemes in mind, as will be appreciated by the experienced reader in specific areas of the current annotation guidelines. The tag `timex3`, however, has some significant differences with respect to its predecessors –hence, the different name.

The current annotation guideliens parallel those for Catalan time expressions (Saurí & Pustejovsky, 2009), while focusing on the specifics of time expressions as expressed in the Spanish language. The annotation process will be split into two sequential subtasks. The first one is devoted to identifying the time expressions in text, while the second explains how to characterize these with their appropriate attributes (e.g., `type`, `value`, `mod`, or `anchorTimeID`).

Section 2 analyzes the notion of temporal expression (or *timex*) as understood in TimeML. Then, sections 3 and 4 address the task of **time expression identification**, laying out first what to annotate as such and then describing how much text to mark up –i.e., its extent. Finally, section 5 focuses on the task of **attribute annotation**.

2   Time expressions in TimeML

Time expressions in TimeML (*aka* `timex3`) are those constructions referring to points or intervals on the timeline. They can express: (a) **day times**, e.g., *mediodía* ('noon'), *las 3h de la tarde* ('3:00pm'), *esta mañana* ('this morning'); (b) **dates**, e.g., *20 de abril de 2008* ('April 28th, 2008'), *ayer* ('yesterday'), *la semana que viene* ('next week'), *tres meses después* ('three months later'), *el año pasado* ('last year'); (c) **durations**, e.g., *dos meses* ('two months'), *cinco horas* ('five hours'), *los 9 próximos años* ('the coming 9 years'); and (d) **sets**, e.g., *una vez al mes* ('once a month'), *cada martes* ('every Tuesday'). The following subsections present these types in some detail.

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[2]http://www.timeml.org/site/terqas/index.html
[3]http://www.timeml.org/site/tango/index.html

2.1 Dates

Dates include all sorts of calendar dates. They can refer to a point in time (e.g., *14 de abril de 1931*, 'April 14, 1931') or to a full interval (*los sesenta*, 'the 60s').

Different degrees of granularity. Dates can have different degrees of granularity:

- **Days:** *ayer, 8 de enero de 2001, el próximo viernes, este sábado*, etc.
- **Weeks:** *la próxima semana, la segunda semana del mes*, etc.
- **Months:** *tres meses después, el mes próximo, agosto del 2000*.
- **Seasons or business quarters:** *la próxima primavera, el primer trimestre*, etc.
- **Years and decades:** *1980, el año que viene, los setenta*.
- **Centuries, millennia:** *el siglo pasado, el nuevo milenio*, etc.

Precise vs. fuzzy dates. Dates can be precise or fuzzy. A *precise date* refers to a specific calendar point or duration. For example:

(1) a. El primer encuentro tuvo lugar <u>el 20 de mayo del 2009</u>.
  b. La compañía aplicaba descuentos a las nóminas por la crisis de <u>1994</u>.

Sometimes, the value of a precise date is not fully specified, but needs to be interpreted based on contextual information.

(2) a. El concurso público que se convocó en <u>noviembre</u> ha quedado desierto.
  b. El nuevo primer ministro japonés, Susuke Uno, sucedió <u>ayer</u> a Noboru Takeshita.

Additional examples of (fully or partially specified) precise dates follow below.

(3) a. Visitaremos Noruega dentro de <u>dos semanas</u>.
  b. Clinton estudió como becario en Oxford a <u>finales de los sesenta</u>.
  c. Para la comunidad científica el legado de la encefalopatía bovina marcará <u>el próximo siglo</u>.

Fuzzy dates, on the other hand, express vague calendar points, or calendar intervals with imprecise boundaries. This is particularly the case of time expressions referring to the past, the present, or the future in general, imprecise terms, as exemplified in table 1.

Anchored dates. Some dates are explicitly anchored to a second date by means of a modifier of sequence, such as *anterior, siguiente, que sigue, posterior, antes, después* ('preceding', 'following', 'that follows', 'next', 'before', 'after'), etc.

(4) a. el siguiente martes

  b. el martes pasado

  c. el martes que viene

Table 1: Fuzzy dates in TimeML

Present reference:	*Ahora, hoy* (both of them when interpreted as 'currently', 'nowadays'), *actualmente, en este momento, en el momento presente, en el momento actual.*
Future reference:	*En el/un futuro,* *el día de mañana, mañana* (when referring to a future time), *a medio/corto/largo plazo.*
Past reference:	*Pasado, en el pasado, ayer* (referring to a past time), *entonces* (e.g., *desde entonces*), *recientemente, últimamente, antiguamente,* *(hubo) una vez.*

In the examples above, the anchored date is expressed by *martes* ('Tuesday'), whereas the anchoring date is implicit. Other constructions, however, have the anchoring date explicit. Note that this anchoring element can denote either a date (e.g., *el domingo de Pascua* 'Easter') or an event (e.g., *su boda* 'their wedding').

(5) el martes $\left\{ \begin{array}{l} siguiente \\ que\ sigue \\ posterior \\ anterior \end{array} \right\} a \left\{ \begin{array}{l} el\ domingo\ de\ Pascua \\ su\ boda \end{array} \right\}$

(6) el martes $\left\{ \begin{array}{l} antes \\ después \end{array} \right\} de \left\{ \begin{array}{l} el\ domingo\ de\ Pascua \\ su\ boda \end{array} \right\}$

See section 4.2.3 for a complete description of these elements.

2.2   Times of day

Times of day include expressions referring to points or intervals of time smaller than a day. In the following examples, the time of day expression is underlined.

(7)   a. El patrocinador llegó a <u>las 3 menos 10</u>.

    b. El reloj marcaba <u>la una</u>.

    c. El día 19 estaré en clase hasta <u>las 11 de la mañana</u>.

    d. Cuando llegó, <u>faltaban pocos minutos para las tres de la tarde</u>.

    e. Estuvo viendo la tele hasta <u>medianoche/madrugada/....</u>

    f. Enviado: <u>12:27 PM EDT</u>.

Time expressions that have a reference to a calendar date but which also include a reference to a time of day will, in any case, be considered a `timex3` of type time of day.

(8)   Enviado <u>el 11 de abril de 1996, 11:13 GMT</u>.

2.3 Durations

An expression of duration indicates how long something lasts. In TimeML, duration expressions are those that denote a quantification over time.

Precise vs. fuzzy durations. Like dates, durations can be precise or fuzzy. *Precise durations* include a quantity expression, namely, a numeral (*dos, 52*) or a quantifier (*unos, pocos, muchos* –'some', 'few', 'many'), plus a time unit (e.g., *día, semana, mes, año* –'day', 'week', 'month', 'year'):

(9) *38 semanas*   ('38 weeks')
    ocho años y medio   ('eight years and a half')
    muchos años   ('many years')
    varios días   ('several days')

Some examples:

(10) a. Un estadounidense cobró durante <u>seis años</u> la jubilación de su madre.

   b. Saura tardó <u>tres días</u> en informar al alcalde de Mataró.

   c. La recesión duró <u>una década</u>.

Precise durations can also be expressed by means of lexical items conveying a quantification over a time unit. For example, partitive nouns like *mitad* ('half') or *tercio* ('third'), and collective nouns like *quincena* ('fortnight').

(11) *la segunda quincena*   ('the second fortnight')
    la mitad de los días   ('half of the days')

Other expressions denote *fuzzy durations*. For example, nouns like *temporada* ('season, period'), *periodo* ('period'), and *rato* ('while') in examples such as (12), quantifying adverbs such as *mucho* ('a lot') and *poco* ('a little') in (13), or constructions such as *mucho tiempo* ('a long time'), *poco rato* ('a short time').

(12) a. Tras despedirse de sus amigos, la víctima estuvo <u>un rato más</u> en la parada de autobuses.

   b. Neira pasará <u>una temporada</u> en el hospital debido a los dolores tras su craneoplastia.

(13) a. La euforia duró <u>poco</u> en el mercado de arte.

   b. Spanair no tardó <u>mucho</u> en dar la lista", señaló Fernández.

Durations vs. dates. It is important to distinguish between durations (like those just exemplified) and dates that can be interpreted as referring to intervals, such as:

(14) Durante <u>el 1992</u> estudiamos el kleptoparasitismo en una colonia mixta de Larus dominicanus.

Deciding whether a time expression refers to a point or an interval is, to some extent, an arbitrary issue related to the granularity of the time system. Bigger time units (e.g., years, decades) can be more easily considered as intervals or durations than smaller ones (e.g., seconds). Here, we will consider as durations those expressions defined above as precise or fuzzy durations. For example: *algunos días* ('some days'), *4 meses* ('4 months'), una década ('one decade'), *38 semanas* ('38 weeks'), *varios años* ('several years'), *mucho rato* ('a while'), *poco* ('a little'), etc., as exemplified above.

These expressions give no indication of their position in the calendar, contrary to, e.g., *1992* in (14), although in some cases the context places them in the timeline. For instance:

(15) a. Al menos 57 personas murieron a consecuencia de las inundaciones de <u>las pasadas dos semanas</u> en los valles de los ríos Shabelle y Juba.

      b. <u>Los próximos 5 años</u> serán los mejores de su vida.

In TimeML, these expressions will still be considered durations. Their placement in the timeline will be codified by means of temporal links (or `TLINKs`). Refer to the appropriate guidelines for that.

Anchored durations. Special attention should be paid to duration expressions which, due to the constructions they appear in, refer in fact to points in time and hence can be seen as denoting *dates*. We call them *anchored durations* because they are anchored by a second time reference. For instance:

(16) a. México dejó pasar <u>hace 2 años</u> el tren de los bioenergéticos.

      b. El miércoles <u>hará tres años</u> de su fallecimiento.

In (16a), the duration expressions *hace 2 años* ('2 years ago') is employed to determine a point in time two years earlier. Similarly, in (16b) the expression *hará tres años* ('it will be 3 years') uses the value provided by *el miércoles* ('Wednesday') in order to compute the point in the timeline 3 years previous to the referred Wednesday.
Additional examples include:

(17) a. [<u>dos semanas</u>] a partir [del próximo jueves]   ('two weeks from next Thursday')

      b. [<u>dos días</u>] antes de [fin de año]   ('two days before New Year's Day')

Framed durations. Some duration expressions appear in constructions here referred to as *framed durations*, given that they locate (or frame) a duration within the scope of a temporal unit which has a precise reference in the calendar. The following are examples of this kind of constructions. The extent of the duration timex is underlined, whereas the extent of the framing date is in bold face.

(18) a. la segunda quincena de **noviembre**   ('the second fortnight in November')

b. la primera mitad de **la semana**   ('the first half of the week')

c. los últimos días **del año**   ('the last days of the year)

d. las tres primeras décadas **del siglo XX**   ('the first three decades of the 20th century')

In this kind of constructions, we will also accept as durations those expressions that are compliant with the pattern below, whenever followed by the PP: *de* $\mathtt{N}_{time}$ (which will be expressing the framing date).

(19) *lo que* $\left\{ \begin{array}{ll} \textit{queda/quedaba/quedará/...} & \text{(lit., 'what remains/remained/...)} \\ \textit{sigue/siguió/seguirá/...} & \text{(lit., 'what follows/followed/...)} \\ \textit{va/iba/...} & \text{(lit., 'what goes/went/...')} \end{array} \right\}$ + *de* $\mathtt{N}_{time}$

For instance:

(20) Telefónica podría duplicar en lo que queda de año.

2.4   Sets

Whereas time expressions of type *time of day* and *date* refer to when something happened, and *durations* indicate how long something lasted, *sets* tell how often something happened. Typical examples of set-denoting time expressions are:

(21) *cada día/mes/lunes/martes/...*   ('each day/month/Monday/Tuesday/...')
todos los días/meses/lunes/martes/...   ('every day/month/Monday/Tuesday/...')
diariamente, a diario, mensualmente, anualmente,... ('daily, monthly, yearly')
x *veces al/cada día/mes/año/...*   ('x times a/every day/month/year/...')

3   What to annotate as time expressions

3.1   Markable expressions

3.1.1   Lexical triggers

In TimeML, we will mark as `timex3` those constructions which have an appropriate lexical trigger as their syntactic head. Lexical triggers are words:

- whose meaning conveys a temporal unit or concept, such as *día* ('day') o *mensualmente* ('monthly'), or

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- whose referent can be oriented on a timeline, or at least oriented with relation to a time (past, present, future).

Table 2 contains a sampling of lexical triggers. In the case of nouns (and adjectives), only the singular (and masculine) forms are presented, but other forms are possible as well.

Table 2: Lexical triggers sampling

Part of Speech	Lexical triggers
Noun	*Mañana, mediodía, tarde, noche.* *Día, semana, fin de semana, mes, año, década, siglo, milenio.* *Semestre, trimestre, cuatrimestre.* *Solsticio, equinoccio.*
Noun/Proper name	*Enero, febrero, marzo, abril, mayo, junio, julio, agosto,...* *Navidad, Navidades, Semana santa, ...*
Time noun/adverb	*Ayer, hoy, mañana.* *Lunes, martes, miércoles, jueves, viernes, sábado, domingo.*
Adjective	*Diario, mensual, anual.* *Semestral, bimensual, trimestral.* *Pasado, reciente; presente, actual; próximo, futuro.*
Adverb	*Diariamente, mensualmente, anualmente.* *Semestralmente, bimensualmente, trimestralmente.* *Recientemente; ahora, actualmente; próximamente.* *Entonces* (in constructions like: *'desde entonces hasta ahora'.*) *Aquí* (in constructions like: *'de aquí a Navidades'*)
Number	*3, tres, tercero*, etc., as in: *el 3 de febrero, el tercero de cada mes.*
Patterns	*08:00, 19:47, 31/11/2008, 2007, ...*

Sometimes, the trigger word is not the syntactic but the semantic head of the expression, such as in partitives like *la mayor parte de la semana* ('the main part of the week'). These constructions will, in any case, be considered `timex3`. In other cases, however, these (or similar) lexical triggers are non-referring, and thus impossible to relate to a timeline. For example, the use of *día* ('day') in the idiomatic phrase *estar a la orden del* **día** ('be the order of the day'). These expressions will not be marked up as `timex3`s expressions.

3.1.2 Fuzzy expressions

Expressions denoting fuzzy dates, presented in table 1, are `timex3` markables as well.

3.1.3 Metonymic expressions

Some time expressions such as *11-S*, *11-M*, etc., have been recategorized into proper nouns and refer to specific events (in these cases, the terrorist attacks that occurred on September 11th, 2001 and March 11th, 2004, respectively), and not simply to the original date.

Regardless of that, in TimeML these expressions will be annotated as `timex3`. Other time expressions that will receive the same treatment are: *Fiesta de la Ascención* ('Festivity of the Ascencion'), *Día internacional del niño* ('International Day of the Childhood'), and *Primero de mayo* ('Labor Day').

3.2 Non-Markable expressions

On the other hand, there are a set of lexical items that, although they are temporal in their semantics, are less amenable to being pinned down to a timeline. Broadly speaking, they belong to one of the classes presented in the following subsections.

3.2.1 Parts of speech: Prepositions and subordinating conjunctions

Prepositions (which introduce noun phrases) and *subordinating conjunctions* (which introduce clauses) are two parts of speech that are never triggers; that is, they never appear as the syntactic head of an annotated expression. Table 3 provides some examples. It includes both simple (e.g., *de*, *cuando*) and complex (*antes de*, *tan pronto como*) expressions.

Table 3: Non-Triggers. Prepositions and Subordinating conjunctions

Part of Speech	Non-triggers
Subordinating conjunctions:	*Ahora que, antes de que, cada vez que, cuando, después de que, mientras, tan pronto como, ...*
Prepositions:	*A, antes de, de, durante, en, desde, hasta, ...*

3.2.2 Expressions of sequencing

Expressions establishing temporal sequencing between two or more events will not be marked up as timexes. The following examples illustrate some of them. The two events are in bold face, whereas the sequencing expression appears underlined.

(22) La Bolsa **fue sometida** a un vaivén que concluyó en una ligera pérdida. El franco, <u>mientras tanto</u>, **sufrió** un nuevo acceso de debilidad.

(23) El **11-S** y la **situación** <u>subsiguiente</u> es una venganza de aquellas personas que consideran el diálogo entre civilizaciones como algo que atenta contra sus intereses.

Expressions of sequencing belong mainly to the parts of speech of adjectives and adverbs. Table 4 lists the most frequent ones.

Non-trigger adjectives are permitted within the extent of a markable expression, as in *los **pasados** años* ('the preceding years'), *el **último** día* ('next day'), or *las horas **previas*** ('the previous hours'). They are not markable on their own, as in *la **última** reunión* ('the next meeting').

Table 4: Non-Triggers. Sequencing expressions

Part of Speech	Non-triggers
Adjectives	*Antes, después* (e.g., *El día después.*) *Temprano; tardío.* *Primer, primero; último, final.* *Anterior, previo.* *Simultáneo, coetáneo.* *Posterior, siguiente, subsiguiente, ulterior.*
Adverbs and adverbial constructions	*Antes, después* (e.g., *Llegó después.*) *Temprano; tardíamente.* *Primeramente, inicialmente; eventualmente, finalmente.* *Anteriormente, previamente.* *Simultáneamente, coetáneamente, mientras, mientras tanto, entre tanto, en tanto.* *Posteriormente, seguidamente, subsiguientemente, ulteriormente, en cualquier momento.* *Todavía, de nuevo, nuevamente.*

Note that some adjectives and adverbs presented here (e.g., *previo, siguiente* –'previous', 'subsequent') are semantically very similar to those presented as lexical triggers in Table 2 (e.g., *reciente, próximo* –'recent', 'coming'). Notwithstanding, there is a distinctive feature between the two groups. Namely, lexical triggers are necessarily anchored to the time of the speech (or utterance) act, whereas adjectives and adverbs presented as non-triggers can have any time point as their anchoring reference. In case of doubt, use this test to decide whether to mark up the expression.

3.2.3 Expressions of speed (or celerity)

Some manner adverbs (or adverbial constructions) express how soon or how quickly something happens. They are known as speed (or celerity) adverbs. They will be not marked up as `timex3s`. Table 5 provides some examples.

(24) Los asesinatos se conocieron <u>casi instantáneamente</u>.

(25) El equipo japonés afirma que con las fibras que logró crear se podrán producir <u>muy pronto</u> materiales resistentes.

3.2.4 Expressions of frequency

Bare frequencies (that is, frequency expressions which do no convey a time unit) are not markable. Some of them are presented in Table 6.

(26) Sólo ocurrió <u>una vez</u>.

Table 5: Non-Triggers. Expressions signaling speed

Part of Speech	Non-triggers
Adjectives	*Instantáneo, inmediato.* *Lento.*
Adverbs and adverbial constructions	*Instantáneamente, inmediatamente, rápidamente.* *Al instante, de inmediato, pronto, en seguida.* *Apresuradamente, con prisas.* *Lentamente.*

Table 6: Not markable frequency expressions

Part of Speech	Expressions
Adjectives:	*Frecuente, normal, habitual, usual, común.*
Adverbs:	*Normalmente, frecuentemente, habitualmente, usualmente, comúnmente.* *Repetidamente.* *Siempre; nunca.*
Constructions:	*A menudo.* *Una vez, tres veces, en cinco ocasiones, ….* *Rara vez, alguna vez.*

(27) La UCE denuncia además las <u>frecuentes</u> denuncias de consumidores acerca del precio abusivo que se establece en numerosas terrazas gijonesas.

(28) La elección de la mesa que debía presidir el congreso, un órgano <u>usualmente</u> elegido por aclamación, necesitó de una votación de las delegaciones asistentes.

(29) Y, como <u>siempre</u> ocurre con las escenas violentas, el asesino ha vuelto al lugar del crimen, y lo hemos vuelto a contemplar, y la fechoría ha quedado habitualmente impune.

By contrast, frequencies whose semantics include a temporal unit will be marked up. Table 7 illustrate some of them.

Table 7: Markable frequency expressions

Part of Speech	Expressions
Adjectives:	*Diario, mensual, anual, trimestral, semestral.*
Adverbs:	*Diariamente, mensualmente, anualmente, trimestralmente, semestralmente.*
Constructions:	*Dos veces al día, cinco veces a la semana, …* *A diario, cada dia/mes/año/…* *Todos los días/meses/años/…*

3.2.5 Expressions of non-quantifiable duration

Non-quantifiable durations are expressed by means of items such as those presented in Table 8. They will not be marked up.

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(30) Nigeria ha sido suspendida <u>temporalmente</u> de la Commonwealth y en la UE se estudia si se la sancionará.

Table 8: Non-Triggers. Non-quantifiable durations

Part of Speech	Non-triggers
Adjectives:	*Permanente, perpetuo, eterno.*
	Temporal, provisional.
Adverbs:	*Permanentemente, perpetuamente, eternamente.*
	Temporalmente, provisionalmente.

3.2.6 The word *tiempo* ('time') when it means 'situation' or 'occasion'

The word *tiempo* ('time') is one of the most difficult expressions in terms of markability. In many cases, it is not referring to a time interval but it means 'situation' or 'occasion'. This use of the word is not markable. Hence, *tiempo* ('time') in (31b) will be marked up (since it expresses a vague duration), but not in (31a).

(31) a. El verano es <u>tiempo</u> de vacaciones, incluso para las estrellas de la radio.

   b. LoQUo estuvo <u>mucho tiempo</u> corriendo desde la sala de mi casa en Pintor Fortuny.

3.2.7 Time expressions in proper names

Proper names that designate something other than a temporal entity (e.g., films, books, organizations) but happen to correspond to lexical triggers are not markable. For example:

(32) La película *Cuatro días de septiembre* está dirigida por Bruno Barreto.

(33) *El sueño de <u>una noche de verano</u>* es una comedia escrita por William Shakespeare alrededor de 1595.

(34) Los suministros son proporcionados a través de la empresa <u>DIA</u> (Distribuidora Internacional de Alimentos), una subsidiaria de ALSEA.

However, triggers that are functioning as temporal modifiers within titles are markable. Examples include titles of conferences (35a) and awards (35b).

(35) a. TERQAS <u>2002</u>

   b. El entrenador <u>del año</u>

4 Timex3 extents

This section provides the rules for determining where each time expression begins and ends. We refer to this as the **extent** of the expression.

The criteria to be used here can be grammatical (section 4.1) or relational (4.2). Grammatical criteria are applied first, whereas relational criteria are employed in case of complex expressions, for which it is not clear whether one or more timexes must be distinguished.

4.1 Grammatical criteria

For most timexes, the full extent of the tag corresponds to one of the following categories:

Noun phrase, including also noun phrases with proper nouns. Some examples: *la tarde, el pasado verano, ayer, domingo, aproximadamente media hora* ('the afternoon', 'last summer', 'yesterday', 'Sunday', 'approximately half an hour'). With regard to annotating `timex3`-referring NPs, we will apply the following considerations:

- **Prepositions.** Any preposition preceding the temporal expression will not be included as part of the tag.[4] For example, the following expressions will have only the underlined part marked up as the `timex3` element: *durante la tarde* ('during the afternoon'), *antes de aquel martes* ('before that Tuesday'), *en media hora* ('in half an hour').

   However, some corpora do not have the `preposition + determinant` contractions split, such as *del* (*de*, 'of' + *el*, 'the') and *al* (*a*, 'to' + *el*, 'the'). In this situation, the preposition will be included in the span of the temporal expression. For example: *antes del martes*, *anteriormente al domingo de Pascua*.

- **Postnominal modifiers.** Some temporal noun postmodifiers express an event. In the following examples, the temporal noun is underlined while the event is in bold face.

   (36) a. [El día] de su **muerte**.
   b. [El mejor cuatrimestre] que ha **tenido** nunca.
   c. [Aproximadamente cuatro décadas] de renovada **hostilidad**.

   Postnominal modifiers like these will not be included as part of the `timex3` tag, which will span as indicated by the square brackets in the preceding examples.

Adjective phrase; e.g., *reciente* ('recent'), as in *un viaje reciente* ('a recent trip').

Adverbial phrase; e.g., *muy recientemente* ('very recently').

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[4]Temporally relevant prepositions will be annotated as `signals`, as established in the annotation guidelines for this other TimeML entity.

Special pattern expressions. Constructions like *hace un mes* ('a month ago' –lit., 'it makes one month'), *falta un mes* ('in one month' –lit.: 'it misses one month'), or *dentro de un mes* ('in a month'), are characteristic time expressions in Spanish which do not correspond to any of the previous categories. They will be considered as time expressions as well. Specifically, the following patterns apply here:

1. $\text{NP}_{duration} + \left\{ \begin{array}{c} antes \\ después \\ _{[adv]} \ más\ tarde \end{array} \right\}$ (e.g., *tres días más tarde*)

2. $\left\{ \begin{array}{c} hace/hacia/... \\ pasan/pasaban/... \end{array} \right\} + \text{NP}_{duration}$ (e.g., *hace una hora, hace mucho rato*)

3. $\left\{ \begin{array}{c} quedan/quedaban/... \\ faltan/faltaban/... \end{array} \right\} + \text{NP}_{duration}$ (e.g., *faltan diez años, falta un poco*)

4. $\left\{ \begin{array}{c} el \\ la \end{array} \right\} + \text{N}_{time} + que \left\{ \begin{array}{c} viene \\ sigue \end{array} \right\}$ (e.g., *el martes que viene*)

5. $\left\{ \begin{array}{c} el \\ la \end{array} \right\} + \left\{ \begin{array}{c} siguiente \\ anterior \\ pasado \\ próximo \end{array} \right\} + \text{N}_{time}$ (e.g., *el siguiente martes*)

In items 1-3, $\text{NP}_{duration}$ simbolizes an NP denoting a duration (as defined in section 2.3), such as *temporada* ('season, period'), *período* ('period'), or *rato* ('while'), or alternatively, an NP consisting of a numeral (*dos, 52*) or quantifier (*unos, pocos, muchos* –'some', 'few', 'many'), plus a time unit (e.g., *día, semana, mes, año* –'day', 'week', 'month', 'year').

On the other hand, N_{time} in items 4-5 represents time units such as: *día, semana, mes, año, enero...diciembre, lunes...domingo*, etc. ('day', 'week', 'month', 'year', 'January, ..., December', 'Monday, ..., Sunday', etc.).

Refer to the tables in appendix A, for an overview of the treatment for these and similar constructions.

4.2 Relational criteria

There are time expressions that present a more complex structure, which makes it difficult to determine the extent of the `timex3` tag. For example, does an expression like *el martes 30 de junio* ('Tuesday, June 30th') contain one or two `timex3`s? That is, one for the NP *el martes*, and the other for the NP *30 de junio*.

In cases like this, the `timex3` extent will be determined according to the relation that holds between the two time expression candidates. The following sections present the possible relations between two time

4.2.1   Specification relation

Definition.   Involving two time expressions, one of which is helping to further specify the other. The specification relation between two elements is characterized based on the classification of temporal units shown in Table 9, which can be smaller than a day ($t < day$), as long as a day ($t = day$), bigger than a day but smaller than a year ($day < t < year$), as long as a year ($t = year$), and bigger than a year ($t > year$).

t<day	t=day	day<t<year	t=year	t>year
12 en punto	miércoles	la cuarta semana	1984	el último siglo
2 menos 10	mañana	mes	próximo año	
medianoche	2 de enero	semestre		
madrugada	el día 8	enero		
tarde	el día de Navidad	temporada		
noche	el día del trabajador	Otoño		

Table 9: Classification of time units.

Two temporal expressions in a specification relation can belong to the same type of time unit (according to Table 9). For example, in (37a), the referents of both *las doce en punto* ('twelve o'clock') and *la medianoche* ('midnight') correspond to the same unit type, namely, units smaller than a day ($t < day$).

(37)   a. [*las doce en punto*] *de* [*la medianoche*]   ('12 o'clock midnight')
     b. [*las cuatro*] *de* [*la tarde*]   ('4pm in the afternoon')
     c. [*el martes*] [*18 de enero*]   ('Tuesday, January 18th')

In other cases, one of the expressions (generally, the first one) refers to a temporal unit smaller than the second. For example:

(38)   a. [*el verano*] *de* [*este año*]   ('the summer of the current year')
     b. [*algunos martes*] *de* [*1984*]   ('some Tuesdays of 1984')

Note that in these and the previous set of examples, the temporal expressions are related by the preposition *de* ('of'), or by its absence (37c).

A third possible type of constructions holding a specification relation expresses a duration, which is modified by another duration of smaller size. The modification can be additive (39a) or substractive (39b-c).

(39)   a. *tres años, tres meses y tres días*   ('three years, three months and three days')
     b. *las 4 menos 10*   ('10 minutes to 4', lit. '4 (hours) minus 10 (minutes)')
     c. *un mes menos 3 días*   ('one month minus 3 days')

Annotation. Two time expressions in a specification relation will be marked up with a single tag if:

- The two expressions belong to the same time unit, according to Table 9. For example, *las 12h en punto de la medianoche* ('12 o'clock midnight'); *el martes, 18 de enero* ('Tuesday, January 18th'); *las 11h de la mañana* ('11am in the morning').

- The two expressions refer to durations of different magnitude, and the smaller one modifies (shortens or lengthens) the bigger one. For example: *tres meses y tres días* ('three months and three days'); *las 4h menos 10* ('10 minutes to 4'); *un mes menos 3 días* ('one month minus 3 days').

- The two expressions belong to the same syntactic constituent and are (generally, but not always) connected with the preposition *de* ('of'). This preposition appears, for example, when expressing dates that include the month and/or the year.

  Syntactic constituency can be checked using the fronting and clefting tests (sentences *b-c* and *d-e* in the examples below, respectively). Two different constituents will allow for fronting and clefting, but not two parts of the same constituent. For example, the two time constructions in square brackets in (40) are part of the same constituent, while those in (41) are not.[5]

  (40) a. Los diferentes grupos se reunirán [a las 11h] [del jueves 18 de enero].
       b. *[Del jueves 18 de enero], los diferentes grupos se reunirán [a las 11h].
       c. *[A las 11h], los diferentes grupos se reunirán [del jueves 18 de enero].
       d. *Será [a las 11h], cuando los diferentes grupos se reunirán [del jueves 18 de enero].
       e. *Será [del jueves 18 de enero], cuando los diferentes grupos se reunirán [a las 11h].

  (41) a. Los diferentes grupos se reunirán [a las 11h] [el jueves 18 de enero].
       b. [El jueves 18 de enero], los diferentes grupos se reunirán [a las 11h].
       c. [A las 11h], los diferentes grupos se reuniran [el jueves 18 de enero].
       d. Será [el jueves 18 de enero], cuando los diferentes grupos se reunirán [a las 11h].
       e. Será [a las 11h], cuando los diferentes grupos se reunirán [el jueves 18 de enero].

  Some other examples of one-constituent temporal expression are:

  (42) *viernes noche*   ('Friday night')
       la noche del 3 de enero de 2005 ('the night of January 3rd, 2005')
       el dos de diciembre   ('December 2nd')
       octubre del 1963   ('October 1963')
       el verano del año pasado   ('last year's summer')
       11 de abril de 1996, 11:13 GMT. ('April 11th, 1996')

---

[5]Note that fronting and clefting tests must be applied to the whole PP containing the time expression, and not only to the NP part considered as the `timex3` extent. That is, it will be applied to: **a** *las 11h* ('**at** 11am'), instead of: *las 11h* ('11am'). And to: **de**l *jueves 18 de enero* ('**of** Thursday, January 11th'), instead of: *el jueves 18 de enero* ('Thursday, January 18th').

4.2.2 Anchoring relation: Involving a duration expression

Definition. Some of the constructions with anchoring relations are here referred to as *anchored durations*. Anchored durations contain a typical duration expression (see section 2.3), but refer in fact to a point in time (i.e., a date or time of day). They are so called because the duration is anchored to a further temporal reference. In Spanish, anchored durations are typically expressed by means of any of the following structures, which involve the use of temporal prepositions (simple or complex) denoting sequencing, like *a partir de, antes de, después de, anterior a, desde*. Some constructions have the anchoring element explicit, whereas others have it implicit.

- **With an explicit anchoring reference:** In the examples by the side, the explicit anchoring element is in bold face, whereas the anchored duration extent is underlined.

  1. $\text{NP}_{duration} + \left\{ \begin{array}{l} antes \\ después \\ a\ partir\ de \end{array} \right\} + de + \text{NP}_{time}$ (e.g., _tres días_ antes de **Navidad**)

  2. $\left\{ \begin{array}{l} quedan/... \\ faltan/... \end{array} \right\} + \text{NP}_{duration} + para + \text{NP}_{time}$ (e.g., _quedan tres días_ para **Navidad**)

  3. $\text{NP}_{time} + \{\ hace/hizo/...\ \} + \text{NP}_{duration} + de$ (e.g., **ayer** _hizo cinco meses_)

  4. $de + \text{NP}_{date} + \left\{ \begin{array}{l} a \\ en \end{array} \right\} + \text{NP}_{duration}$ (e.g., *de* **hoy** *en* _dos semanas_)

- **With an implicit anchoring reference:** The anchoring element here is interpreted based on contextual information.

  1. $\text{NP}_{duration} + \left\{ \begin{array}{l} antes \\ después \\ [adv]\ más\ tarde \end{array} \right\}$ (e.g., _tres días más tarde_)

  2. $\left\{ \begin{array}{l} quedan/quedaban/... \\ faltan/faltaban/... \end{array} \right\} + \text{NP}_{duration}$ (e.g., _quedan dos años_, _falta un poco_)

  3. $\left\{ \begin{array}{l} hace/hacía/... \\ pasan/pasaban/... \end{array} \right\} + \text{NP}_{duration}$ (e.g., _hace una hora_, _hacía mucho rato_)

Annotation. Anchored durations will be annotated as indicated below:

- **With an explicit anchoring reference:** Two different treatments will be applied, depending on whether the resulting temporal reference denoted by the whole construction corresponds to a date or a time of day.

  a. If the resulting temporal entity refers to a **date**, such as:

(43)   a.   Llegó **hoy** <u>hace un mes</u>.
       b.   Llegó cuando <u>faltaban 3 días</u> para **Navidad**.

The annotation of these constructions will include:

- A `timex3` tag of type `duration`, containing the expression denoting the anchored duration (underlined in the examples above).
- A `timex3` tag of type `date`, encoding the explicit anchoring reference (in bold face above).
- A non-consuming (or empty) `timex3` tag of type `date`, representing the resulting date that the whole construction is expressing. For instance, assuming that today is Friday, July 30, 2009, the construction *hoy hace un mes* ('one month ago today') in example (43a) refers to the date June 30, 2009. This will be the value of such empty tag.[6]

b. If the resulting temporal entity refers to a **time of day**, as in:

(44) Llegó cuando <u>faltaban dos minutos para las 3h de la tarde</u>.

The annotation of these constructions will involve:

- A single `timex3` tag, of type `time`. Compare this treatment with that in construction (43b)

- **With an implicit anchoring reference**, such as:

(45)   a.   Llegó <u>hace un mes</u>.
       b.   Llegó <u>hace unos meses</u>.

These constructions will be marked up with the following set of tags:

- A `timex3` tag of type `duration`, corresponding to the span of the anchored duration in (45), underlined.
- A non-consuming (or empty) `timex3` tag of type `date`, representing the resulting date that the anchored duration is expressing. The value of this expression can be precise, as it would be the case in example (45a), or fuzzy, as in (45b), where we can interpret that the arrival took place in a past reference, few months earlier, but we do not know precisely how many.

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[6]Furthermore, links will be used to express the relative ordering of the two time expressions. See the annotation guidelines for Link entitites in TimeML.

4.2.3   Anchoring relation: Involving a date expression

Definition.   The second type of constructions with anchoring relations are called here *anchored dates*. Anchored dates contain at least one date expression (see section 2.1), followed by an element of sequencing such as *anterior, siguiente, que sigue, posterior, antes, después* ('preceding', 'following', 'that follows', 'next', 'before', 'after'), etc. Like anchored durations, anchored dates can have the anchoring reference explicit or implicit.

- **With an explicit anchoring reference:** The anchoring element can denote either a date (e.g., *Navidad* 'Christmas') or an event (e.g., *la reunión* 'the meeting'). In the examples by the side, the explicit anchoring reference is in bold face, whereas the anchored date is underlined.

  1. $\text{NP}_{time} + \left\{ \begin{array}{l} siguiente \\ que\ sigue \\ previo \\ posterior \\ anterior \end{array} \right\} + a + \left\{ \begin{array}{l} \text{NP}_{\texttt{time}} \\ \text{NP}_{\texttt{event}} \end{array} \right\}$ (e.g., <u>*el martes*</u> siguiente a $\left\{ \begin{array}{l} \textbf{Navidad} \\ \textbf{la reunión} \end{array} \right\}$)

  2. $\text{NP}_{time} + \left\{ \begin{array}{l} antes \\ después \end{array} \right\} + de + \left\{ \begin{array}{l} \text{NP}_{\texttt{time}} \\ \text{NP}_{\texttt{event}} \end{array} \right\}$ (e.g., <u>*el martes*</u> antes de $\left\{ \begin{array}{l} \textbf{Navidad} \\ \textbf{la reunión} \end{array} \right\}$)

- **With an implicit anchoring reference:** The elements expressing the sequencing (or anchoring) relation have an adjectival use. Some of them can be found preceeding the noun (as in pattern 1 below), althought its most typical use is following it (pattern 2).[7]

  1. $\left\{ \begin{array}{l} el \\ la \end{array} \right\} + \left\{ \begin{array}{l} siguiente \\ anterior \\ pasado \end{array} \right\} + \text{N}_{time}$ (e.g., <u>*el siguiente martes*</u>)

  2. $\left\{ \begin{array}{l} el \\ la \end{array} \right\} + \text{N}_{time} + \left\{ \begin{array}{l} siguiente \\ que\ sigue \\ que\ viene \\ pasado \\ anterior \\ posterior \\ antes \\ después \end{array} \right\}$ (e.g., <u>*el martes siguiente*</u>)

---

[7]The expressions 'el N_{time} *que sigue*' (lit. 'the N_{time} *which follows*') and 'el N_{time} *que viene*' (lit. 'the N_{time} *which is coming*') are included here as well given their equivalence with the construction 'el N_{time} *siguiente*' ('the coming N_{time}').

Annotation. The annotation of these constructions is as follows:

- **With an explicit anchoring reference**, such as:

    (46) La fiesta de los Huevos Pintos se celebra a la localidad asturiana de Pola de Siero <u>el martes</u> *siguiente* **al domingo de Pascua**.

  The annotation of these constructions will include:

    – A `timex3` tag of type `date`, containing the expression denoting the anchored date (underlined in the example above).
    – A `timex3` tag of type `date`, encoding the explicit anchoring date (in bold face above).

- **With an implicit anchoring reference**, such as:

    (47) a. Me dieron hora para <u>al martes siguiente</u> a las 9h de la mañana.
          b. <u>El año que viene</u> cada persona comerá unos 40 Kg de carne.

  The annotation of these constructions will include only:

    – A `timex3` tag of type `date`, containing the expression that denotes the anchored date (underlined in the example above). Note that, given the adjectival behaviour of the sequencing elements in these constructions (e.g., *siguiente, que viene*, etc.), the span of the `timex3` tag will include them as well. This contrasts with their treatment of anchored durations with explicit anchoring elements, where sequencing elements are disregarded as part of any `timex3` tag extent and, instead, annotated as `signal`s.

4.2.4   Range relation

Definition. A range relation involves two time expressions of type date, which respectively denote the begin and end points of an interval. For example:

 (48) a. entre <u>el 2005</u> y <u>el 2012</u>
       b. <u>del 5 de diciembre</u> hasta <u>el 30 de marzo</u>
       c. la temporada <u>92-93</u>

Typical patterns in Spanish for range relations of this type are:

1. $entre + \text{NP}_{time} + i + \text{NP}_{time}$ (e.g., *entre <u>lunes</u> y <u>jueves</u>*)

2. $(des)de + \text{NP}_{time} + \left\{ \begin{array}{c} a \\ hasta \end{array} \right\} + \text{NP}_{time}$ (e.g., *de <u>lunes/entonces/ahora</u> hasta <u>jueves</u>*)

3. $\text{NP}_{time} + \left\{ \begin{array}{c} - \\ / \end{array} \right\} + \text{NP}_{time}$ (e.g., *<u>1992/93</u>, <u>92-93</u>*)

Annotation. Some examples illustrating this relation are:

(49) Desde <u>entonces</u> hasta <u>Navidad</u> se intensificaron los ensayos.

(50) Pero desde <u>el 2005</u> hasta <u>el 2008</u>, la fiesta se desarrolló en el Museo Casa Copetti.

Their annotation includes:

- Two tags of type `date`, each spanning over the two date expressions (underlined above).

- An additional empty tag of type `duration`, encoding the span of the interval delimited by these two dates. In example (50), for instance, it will encode an interval of 3 years.

It must be pointed out, however, that these annotation guidelines may not be applicable in the case of pattern 3. In particular, when it is not possible to annotate only token fragments, be it given a limitation in the annotation tool or because the text has not previously tokenized these elements into separate tokens, as is the case here. Hence, in the current annotation effort, pattern 3 will be annotated as follows:

- A single `timex3` tag of type `duration`, scoping over the extent of the 2 date expressions.

- Two empty tags of type `date`, each referring to one of the date expressions.

4.2.5 Framing relation

Definition. Similar to range relations, constructions conveying framing relations also denote a time interval. However, they contain a date (in bold face below) and a duration expression (underlined), instead of the two date expressions observed before. The date refers to a particular temporal frame within which the duration is located.

(51) a. <u>tres semanas</u> de **octubre**   ('three weeks in October ')

    b. <u>los dos últimos meses</u> de **año**   ('the last two months of the year')

(52) a. <u>la segunda quincena</u> de **octubre**   ('the second fortnight of October ')

    b. <u>el primer tercio</u> de **siglo**   ('the first third of this century')

(53) a. <u>lo que va</u> de **año**   (lit., 'what is gone from this year')

    b. <u>lo que queda</u> de **año**   (lit., 'what is left from this year')

The date expresses one of the boundaries of the interval. For instance, in (53b), the boundary is set by the end of the present year. In Spanish, the typical patterns for constructions presenting a framing relation is:

1. $N_{duration} + de + N_{date}$ (as in examples (51-52))

2. $lo\ que \left\{ \begin{array}{l} queda \\ sigue \\ va \end{array} \right\} de + N_{date}$ (as in examples (53))

Annotation. The following tags will be introduced:

– A tag of type `duration`, spanning over the expression with the pattern *lo que queda/va/ sigue/...* (underlined above).

– A tag of type `date`, spanning over the N_{time} (in bold face above).

– Two (potentially empty) tags of type `date`, expressing the begin and end points from which the length of the duration is computed. For example, if the expression in (53b) is uttered in April 2009, the values of these two tags will be, respectively, January of 2009, and April of 2009.

4.2.6 Conjunction relation

Definition. Involving two time expressions related by a coordination conjunction, mainly, *y* and *o* ('and' and 'or'). For example: [*sis meses*] *o* [*un año*] ('six months or a year').

Annotation. The two coordinated expressions will be marked up as two different tags if they refer to two independent points or intervals of time. For example, the conjunction in (54) is expressing an alternative between two different durations. Therefore, the two time expressions will be marked up independently, as indicated by the underlining.[8]

(54) Saddam jugará las mismas cartas de nuevo de aquí a <u>seis meses</u> o <u>un año</u> a partir de hoy.

On the other hand, the conjunction in (54) is expressing a relation of specification between the three time expressions. That is, *tres años* ('three years') is modified by *tres meses* ('three months') and *tres días* ('three days'). The three constructions will be marked up as one single `timex3` entity.

(55) A primeros de marzo del 2009 dará comienzo en Dag Shang Kagyu el primer retiro tradicional de <u>tres años, tres meses y tres días</u>.

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[8]In example (54), the time expression *hoy* ('today') is in an anchoring relation with both *seis meses* ('six months') and *un año* ('one year'). Hence, `hoy` ('today') needs to be marked up as an additional `timex3` entity. We omit it here for the sake of simplicity.

5 Timex3 attributes

The attributes for `timex3` entities in TimeML are listed below. Those between parentheses are not relevant for the current annotation edition.

1. `type`
2. `value`
3. `mod`
4. (`temporalFunction`)
5. `anchorTimeID`
6. (`valueFromFunction`)
7. (`functionInDocument`)
8. `beginPoint`
9. `endPoint`
10. `quant`
11. `freq`

5.1 Attribute `type`

Each `timex3` is assigned one of the following types: `DATE`, `TIME` (for times of day), `DURATION`, or `SET`. Section 2 provides a detailed description of the different time expressions corresponding to each of these values.

5.2 Attribute `value`

The attribute `value` indicates the temporal reference expressed by the `timex3` expression, that is, the date, time of day, length of the duration that it is being denoted, etc. This value is given in an extended ISO 8601 format, which applies a different pattern depending on the `type` attribute. For instance, a `DURATION` must have a value that begins with 'P' (standing for 'period of time'), and a `TIME` a value beginning with the letter 'T' (standing for 'time'). The main guidelines for annotating this attribute are presented in the following subsections, based on the `timex3` types.

5.2.1 Dates

Days. They are expressed in the form of 8 digits separated by means of hyphens: `YYYY-MM-DD`. The first 4 digits represent the year, the next 2 express the month, and the last 2 convey the day. For example, the time expression in (56a) will be represented as (56b).

(56)   a. El 29 de junio del 2009
     b. `value: 2009-06-29`

The annotator will introduce as much information as is available. For example, given the sentence in (57a), and assuming that the document creation time is Friday, July 12, 2002, then the `value` attribute of the underlined `timex3` must specify the full date that can be computed from the document creation time, that is (57b).

(57) a. La reunión <u>del último viernes</u> fue un éxito
      b. `value:  2002-07-05`

Unknown information is left underspecified by means if the placeholder 'X'. In the next example, the year is unknown:

(58) a. El 20 de mayo
      b. `value:  XXXX-05-20`

Week and weekend dates.   The format for weeks is `YYYY-Www`, where `YYYY` indicates the year, and `Www` is the week number prefixed by the letter 'W'. `W01` refers to the first week of the year and `W53` to the last one.

(59) a. La semana pasada.
      b. `value:  2009-W30`

References to the day of the week (i.e., Monday to Sunday) will be expressed with the more complete format: `YYYY-Www-D`, where D is the weekday number, from 1 (Monday) to 7 (Sunday). This format will be applied if the text presents the trigger expression *semana* ('week'), or if the timex expresses a generic reference, as in (60). Otherwise, dates will be represented in the year-month-date format introduced earlier (`YYYY-MM-DD`).

(60) a. El lunes no es buen día para muchos.
      b. `value:  XXXX-WXX-1`

If the timex refers to a weekend, the token `WE` will be appended at the weekday position:

(61) a. El primer fin de semana de este año.
      b. `value:  2009-W01-WE`

As before, the annotator should include as much information as possible. Unknown or underspecified information is left underspecified with the placeholder 'X'.

Months and years.   References to months are specified as: `YYYY-MM`. References to years are expressed as: `YYYY`.

(62) a. Nació en <u>marzo del 1963</u>.
      b. `value:  1963-03`

(63) a. Nació en <u>1963</u>.
      b. `value:  1963`

Given that ISO assumes that years have four digits, years before the year 1000 (or after 1000 BCE) are written with leading 0s:

(64) a. Wifredo recibió en <u>el año 878</u> los condados de Barcelona, Gerona y Besalú.
     b. `value:  0878`

Decades, Centuries, Millenia. In order to represent these units, we will follow TIDES 2005, which introduces a flexible solution on top of the fix-width, four-place annotation for years in ISO (i.e., `YYYY`). Specifically, we consider the first position to represent the "millenium" element, the second the "century" element, the third the "decade" element, and the fourth the "year" component.

Thus, according to this version, a well-formed value can consist of only three digits, two, or one. **Decades** will be expressed with the format `YYY` (65), **centuries** will follow the format `YY` (66), and **millenia** will apply the format `Y` (69).

(65) a. los años sesenta
     b. `value:  196`

(66) a. el próximo siglo
     b. `value:  21`[9]

(67) a. el próximo milenio
     b. `value:  3`

Before Current Era (BCE). The ISO standard has no way to capture Before Current Era (BCE) dates, and so we follow the solution adopted by TIDES 2005 and others in the community. Namely, we will use the token `BC` as a prefix to the year portion of the ISO value.

(68) a. Buda nació allá por <u>el año 563 antes de nuestra era</u>.
     b. `value:  BC0536`

We also follow the convention of pretending that there is a year 0 in the Judeo-Christian calendar, to make the arithmetic straightforward for computers.

(69) a. Este rey vivió <u>hace 4000 años</u>.   [Stated in 2009]
     b. `value:  BC1990`   [2009+1990+1 = 4000]

Note that in TimeML, the timex *hace 4000 años* above is considered an anchored duration. Hence, the value showed in (69b) corresponds to the value of the non-consuming `timex3` tag of type `date`, which is associated to the duration. Review section 4.2.2 for further details.

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[9]Note that the value is not in accordance with the name of the century (twenty-second, and thus `22`, but it agrees with the prefix of the years during that century (21XX), hence `21`.

Seasons. Seasons have different meanings to different people. For example, some might interpret "summer" as the hot part of the year, while others interpret it more literaly, from summer solstice to fall equinox. This is the reason why tokens, rather than precise numerical values, are used in the `value` attribute. Seasons will be represented using the tokens in Table 10.

Table 10: Season tokens

Period	Token	Position in value	Example expression	Example annotation
Spring	SP	YYYY-SP	*La primavera del 2009*	`value:2008-SP`
			El periodo primaveral	`value:XXXX-SP`
Summer	SU	YYYY-SU	*El verano pasado*	`value:2008-SU`
			La época de verano	`value:XXXX-SU`
Fall	FA	YYYY-FA	*El otoño que viene*	`value:2009-FA`
			En otoño	`value:XXXX-FA`
Winter	WI	YYYY-WI	*El invierno del 1962*	`value:1962-WI`
			Durante el invierno	`value:XXXX-WI`

Yearly quarters, trimesters, and halves (or semesters). Quarters (equivalent to *trimestres* in Spanish), quatrimesters, and halves (equivalent to *semestres*) will be expressed using the tokens in Table 11. Quatrimesters are units not contemplated by the ISO 8601 standards, but given that it is a time unit quite frequent in (at least some parts of) the Spanish-speaking culture, we include here the notation `TX` for the sake of convenience.

Table 11: Season tokens

Period	Token	Position in val.	Example expression	Example
First quarter	Q1	YYYY-Q1	*el primer trimestre del 2001*	`2001-Q1`
Second quarter	Q2	YYYY-Q2	*el segundo trimestre del 2001*	`2001-Q2`
Third quarter	Q3	YYYY-Q3	*el tercer trimestre del 2001*	`2001-Q3`
Fourth quarter	Q4	YYYY-Q4	*el cuarto trimestre del 2001*	`2001-Q4`
First quatrimester	T1	YYYY-T1	*el primer cuatrimestre de 2001*	`2001-T1`
Second quatrimester	T2	YYYY-T2	*el segundo cuatrimestre de 2001*	`2001-T2`
Third quatrimester	T3	YYYY-T3	*el tercer cuatrimestre de 2001*	`2001-T3`
First half	H1	YYYY-H1	*el primer semestre de 2001*	`2001-H1`
Second half	H2	YYYY-H2	*el segundo semestre de 2001*	`2001-H2`

Geologic eras. In referring to the far distant past, scientific convention does not use the standard calendar and instead gives the time as offset. We adopt the same two-letter abbreviations used by geologists, and place them at the initial position in the `value` attribute:

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KA   Some number of thousand years ago.
    MA   Some number of million years ago.
    GA   Some number of billion years ago.

For example:

(70) a. El Parque Jurásico empezó <u>hace 210 millones de años</u>.
      b. `value:  MA210`

Fiscal years.   They are expressed using the token `FY` prefixed to the year number.

(71) a. El año fiscal actual.
      b. `value:  FY2009`

Fuzzy time expressions.   Table 1 provides some of the expressions in Spanish bearing fuzzy semantics. The tokens in (99) below will be used for annotating this type of expressions.

(72) `PAST_REF:`   The time expression denotes a past reference.
      `PRESENT_REF:`   The time expression denotes a present reference.
      `FUTURE_REF:`   The time expression denotes a future reference

5.2.2   Times of day

Precise day times.   They have the format: `THH:MM:SS`, where the digits at the `H` positions express the hour (conceived in cycles of 24 hours), those at the `M` positions express the minutes, and those at the `S` positions express the seconds. The positions for minutes and seconds are optional. Thus, alternative formats in case that minutes and/or seconds are not specified are: `THH:MM` and `THH`. For example:

(73) a. Se marchó a <u>las 6h de la tarde</u>.
      b. `value:  T18:00`

Note that when the time referred to is at the top of the hour (e.g., *las dos en punto*, '2 o'clock'), the minute portion is given as `:00` to ensure that it is not misinterpreted as unknown (expressed with the placeholder `X`).

If the text includes some reference to the specific date in which the time is anchored (74a), then the `value` attribute must also contain the date. This is exemplified in the sentence below. Note that the date expression (*el 29 de junio de 2009*, 'June 29th, 2009') is annotated independently from the time expression (*las 6h de la tarde*, '6pm in the afternoon'). The former receives the `value` in (74b), while the second receives that in (74c). However, the information in the former is used to complete the `value` attribute of the latter.

(74) a. Se marchó **el 29 de junio de 2009** a <u>las 6h de la tarde</u>.
    b. `value: 2009-06-29`
    c. `value: 2009-06-29T18:00`

For purposes of annotation consistency, '12:00am midnight' will always be represented as hour 24 of the earlier day:

(75) a. Ayer estuve despierto hasta <u>las 12h de la medianoche</u>. [Uttered on July 30, 2009]
    b. `value: 2009-07-29T24:00`

If the time is given in Universal Coordinated Time (UTC) or Greenwich Meridian Time (GMT), the letter `Z` will be added at the end of the value:

(76) a. 8 de enero de 2001, 11:13 GMT
    b. `value: 2001-01-08T11:13Z`

If the time is given relative to UTC or GMT, as e.g. UTC+2 or GMT-4, the value will then be normalized to the corresponding UTC or GMT value. For example:

(77) a. 8 de enero de 2001, 10:13 GMT+4
    b. `value: 2001-01-08T06:13Z`

Periods of the day. Periods of the day, such as *mañana, tarde, noche* ('morning', 'afternoon', 'night'), will be represented by the tokens in Table 12, placed at the hour position in the standard ISO representation, namely, at the position signaled with $$ in: `YYYY-MM-DDT$$`.

Table 12: Season tokens

Period	Token	Example expression	Example annotation
Morning	MO	*hoy por la mañana*	`2009-07-30TMO`
Mediodía	MI	*hoy al mediodía*	`2009-07-30TMI`
Tarde	AF	*hoy por la tarde*	`2009-07-30TAF`
Anochecer	EV	*hoy al anochecer*	`2009-07-30TEV`
Noche	NI	*hoy por la noche*	`2009-07-30TNI`
Horario laboral (i.e., mañana + tarde)	DT	*en horas de trabajo*	`2009-07-30TDT`

These tokens will be used only if the precise time is not present in the expression. For instance, *las 11h de la mañana* ('11am in the morning') will be given the day time `value` of `T11:00`.

5.2.3 Durations

They are represented by the format `P[n]Y[n]M[n]DT[n]H[n]M[n]S` or `P[n]W`. In these representations, the [n] is replaced by the value for each of the date and time elements that follow the [n]. Letter `P` is the duration designator (historically called *period*) placed at the start of the duration value, and letter `T` is the time designator, preceding the time components of the representation. Furthermore, the other capital letters in the formula express:

`Y`	Year designator that follows the value for the number of years.
`M`	Month designator.
`W`	Week designator.
`D`	Day designator.
`H`	Hour designator.
`M`	Minute designator (always needs to be preceded by the `T`)
`S`	Seconds designator.

For example, `P1Y2M3DT4H5M6S` represents a duration of *one year, two months, three days, four hours, five minutes, and six seconds.* Date and time elements including their designator may be omitted if their value is zero. Similarly, lower order elements may also be omitted for reduced precision. For example, `P11DT22H` (i.e., 11 days and 22 hours) and `P33Y` (i.e., 33 years) are both acceptable duration representations.

The value may also have a decimal fraction, as in `P0.5Y` to indicate half a year. Note that this same duration can be expressed as `P6M` as well. However, the format should follow the linguistic expression wherever possible. Hence:

(78) a. ... durante <u>medio año</u>   `value:P0.5Y`
     b. ... durante <u>seis meses</u>   `value:P6M`

To avoid ambiguity between references to months and references to minutes, `P1M` is a one-month duration and `PT1M` is a one-minute duration (note the time designator, `T`, that precedes the minute value).

Durations can also be expressed using the tokens to refer to: periods of the day (`MO, MI, AF, EV, NI, DT`), weekends (`WE`), yearly seasons (`SP, SU, FA, WI`), quarters (`Q`), quatrimesters (`T`), year halves (`H`), and fiscal years (`FY`). For example:

(79) a. Las sesiones de introducción al Linux duran <u>dos tardes</u>.
     b. `value:PT2AF`

(80) a. El periodo de reproducción de esta ave se prolonga durante <u>toda la primavera</u>.
     b. `value:P1SP`

(81) a. El curso de interpretación de nivel avanzado ocupa <u>tres trimestres</u>.
     b. `value: P3Q`

5.2.4 Sets

To fully annotate sets, we need, in addition to the attribute `value`, either the `quant` or `freq` attributes, if not both. The meaning of these two attributes will be presented later (section 5.9). For the time being, we focus on the `value` attribute.

For sets, the `value` attribute expresses the time interval in which the iteration (of events or times) takes place. For example, in the expression *dos veces por semana* ('twice a week'), the interval is a duration of one week –hence, `value=P1W`. Additional examples follow:

(82) a. cada dos días
      b. `value:P2D`

(83) a. cada Octubre
      b. `value:XXXX-10`

(84) a. todos los martes
      b. `value:XXXX-WXX-2`

5.3 Attribute `mod`

This attribute is inherited directly from TIDES 2005 (Ferro et al., 2005). Hence, the section is highly based on the description offered there.

Time expressions can be qualified or modified in some ways. For instance, *2009* is an unmodified expression, whereas *principios del 2009* ('beginning of 2009') is modified. In general, we want the annotation to capture the basic semantics of quantity modifiers, such as *aproximadamente, no más de* ('approximately', 'no more than'), and lexicalized aspect markers, e.g., *principios de, mediados de* ('the beginning of', 'mid').

The attribute `mod` captures the semantics of those modifiers within the scope of the `timex3` expression, but not the semantics of leading prepositions or other terms that are outside the extent of the tagged `timex3`. For example, the expression *antes del martes* ('before Tuesday') is not considered a modified expression for our purposes, because the preposition *antes de* ('before') is not included within the tag extent.

Some of the `mod` values apply only to points in time (i.e., dates and times of day), other values apply only to durations, and finally other values apply to either, as presented in Table 13.

Note that the examples in the first 4 rows seem to be referring to durations instead of points –e.g., *más de un año, al menos un año* ('more than one year', 'at least one year'). Recall, however, the notion of *anchored durations* (end of section 2.3): they are time constructions denoting a duration anchored to a point in time in order to express a second point in time. The duration corresponds, in fact, to the temporal distance between the two points. Hence, the complete annotation of the temporal expressions in (85) and (87) is as shown in (86) and (88), respectively.

Table 13: Values for the `mod` attribute

	Token	Example
Points	BEFORE	*hace más de un año*
	AFTER	*hace menos de un año*
	ON_OR_BEFORE	*hace al menos un año*
	ON_OR_AFTER	*no hace mas de un año*
Durations	LESS_THAN	*menos de dos horas, casi dos horas.*
	MORE_THAN	*más de 5 minutos*
	EQUAL_OR_LESS	*no más de tres días*
	EQUAL_OR_MORE	*al menos tres días*
Both	START	*al principio de, los primeros (días, meses, etc.), comenzando (el día, mes, etc.)*
	MID	*a mitad de, a mediados de*
	END	*acabando, a finales de*
	APPROX	*alrededor de, aproximadamente, más o menos*

(85) Microsoft ha admitido conocer desde <u>hace más de un año</u> un error de seguridad en Internet Explorer. [Published: 2008]

(86) a. extent: *hace más de una año* type:DURATION value:P1Y mod:MORE_THAN
 b. extent: [empty tag] type:DATE value:2007 mod:BEFORE

(87) <u>Ahora</u> <u>hace casi veinte años</u> de la caída del muro de Berlín. [Published: September 24, 2008]

(88) a. extent: *ahora* type:DATE value:PRESENT_REF mod:--
 b. extent: *hace casi veinte años* type:DURATION value:P20Y mod:LESS_THAN
 c. extent: [empty tag] type:DATE value:1988 mod:AFTER

5.4 Attribute `temporalFunction`

This attribute will not be used for TempEval-2010.[10]

`Temporalfunction` is a binary attribute which expresses whether the value of the temporal expression needs to be determined via evaluation of a temporal function. The value for this attribute will be positive for those cases that do not contain all the information necessary to fill the higher-order (or left-hand) positions in the `value` attribute. Consider for example, the time expression *las diez de la mañana* ('10am in the morning') in (100). Given that the part of information concerning the date in its `value` attribute has been provided by another time expression (i.e., *el 30 de junio de 2009*, 'June 30th, 2009'), the `temporalFunction` value for *las 10h. de la mañana* will be `True`:

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[10]The presence of the attributes `anchorTimeID` (see section 5.5), `beginPoint` or `endPoint` (both in section 5.8) will suffice to set the `temporalFunction` attribute to `True`.

(89) Llegó el 30 de junio de 2009, a <u>las 10h. de la mañana</u>.

(90) a. `ext:`*el 30 de junio de 2009* `type:DATE  value:2009-06-30      temporalFunction:False`
b. `ext:`*las 10h. de la mañana* `type:TIME  value:2009-06-30T10:00 temporalFunction:True`

Even if the context is not providing the complete information, all expressions that have some higher-order position underspecified will have `temporalFunction: True`. Some examples are:

(91) *31 de enero*   ('January 31st')
la noche de ayer   ('yesterday's night')
la semana pasada   ('last week')

On the other hand, for cases in which the higher-order position of the values are filled, the `temporalFunction` attribute should be assigned a `False` value. Such cases include:

(92) *las 4h. del 1 de marzo de 1980*   ('4am on March 1st, 1980')
el verano de 2008   ('summer of 2008')
miércoles, 20 de marzo del 1963   ('Wednesday, March 20th 1963')

Time expressions of type `DURATION` will receive `True` in case of underspecification. Examples of expressions in this situation are:

(93) *varios meses*   ('several months')
algunos años   ('some years')
las horas siguientes ('the following hours')

Examples of durations that will receive `False` as the value of their `temporalFunction` attribute are:

(94) *dos horas*   ('two hours')
31 días   ('31 days')
9 meses   ('9 months')

5.5 Attribute `anchorTimeID`

Optional attribute. It introduces the ID of the time expression to which the `timex3` in question is anchored. That is, the time expression that is needed in order to compute the `value` attribute of the current `timex3`.

In (95), for instance, the two underlined `timex3` expressions are anchored to another time expression. In order to know the particular year in the `value` attribute of *el lunes 15 de julio* ('Monday, July 15th'), this expression needs to be evaluated with respect to the document creation time (DCT), with ID number `ID: t0`. And the `value` of the expression *las 9h. de la mañana* ('9am in the morning') needs to be evaluated relative to *el lunes 15 de julio* (Monday, July 15th), with `ID: t1`.

(95) El taller TERQAS se reanudará el lunes 15 de julio. La sesión empezará a las 9 de la mañana.

(96) a. ext: *2002-07-12* (DCT)   `ID:t0`   `value:2002-07-12`
    b. `ext:`*el lunes 15 de julio*   `ID:t1`   `value:2002-07-15`   `anchorTimeID:t0`
    c. `ext:`*las 9h. de la mañana*   `ID:t2`   `value:2002-07-15T09:00` `anchorTimeID:t1`

Similarly, some duration timexes need information provided by other duration expressions in order to have its `value` attribute filled, as is the case with expression *tres* in the following example:

(97) El viaje dura entre tres y cinco horas.

(98) a. `ext:`*tres*   `ID:t1`   `value:PT3H`   `anchorTimeID:t2`
    b. `ext:`*cinco horas* `ID:t2`   `value:PT5H`

5.6   Attribute `valueFromFunction`

Attribute not relevant for the purpose of manual annotation. Omitted for TempEval 2010.

5.7   Attribute `functionInDocument`

Omitted for TempEval 2010. It indicates the function of a `timex3` in providing a temporal anchor for otjer temporal expressions in the document. There are several times that mark the major milestones in the life of a textual document:

(99) `CREATION_TIME:`   The time the text is created.
    `MODIFICATION_TIME:`The time the text is modified.
    `PUBLICATION_TIME:`The time the text is published.
    `RELEASE_TIME:`   The time it may be released (if not immediately).
    `RECEPTION_TIME:`   The time it is received by a reader.
    `EXPIRATION_TIME:` The time that the text expires (if any).
    `NONE:`   This attribute is not explicitly supplied.

5.8   Attributes `beginPoint` and `endPoint`

Optional attributes. These two attributes are present in tags of type `DURATION` used for annotating *anchored durations* and *range* expressions. In particular, they encode the ID of the temporal expressions referring to the begin and end points of such durations.

Examples (100)-(101) illustrate their use in the case of anchored durations, whereas examples (102)-(103) show it for range expressions. Focus on the tags of type `DURATION`, in (101a) and (103c). The `timex3` Ids given as values of the attributes `beginPoint` and `endPoint` refer to the Ids of the two other `timex3` tags (of type `DATE`) in each annotation.

(100) Indicó que la tercera reunión es <u>una semana después</u> <u>del 10 de julio</u>.

(101) a. ext:*una semana después*   `ID:t1`   `type:DURATION`   `value:P1W`
                                             `beginPoint:t2`   `endPoint:t3`
    b. ext:*del 10 de julio*   `ID:t2`   `type:DATE`   `value:2009-07-10`
                                             `temporalFunction:True` `anchorTimeID:t0`
    c. ext: [empty tag]   `ID:t3`   `type:DATE`   `value:2009-07-17`
                                             `temporalFunction:True` `anchorTimeID:t1`

(102) Las golondrinas llegan entre <u>principios de mayo</u> y <u>finales de junio</u>.

(103) a. ext:*principios de mayo*   `ID:t1` `type:DATE`   `value:XXXX-05`   `mod:START`
                                             `temporalFunction:False`
    b. ext:*finales de junio*   `ID:t2` `type:DATE`   `value:XXXX-06`   `mod:END`
                                             `temporalFunction:False`
    c. ext: [empty tag]   `ID:t3` `type:DURATION` `value:P2M`
                                             `beginPoint:t1`   `endPoint:t2`

Finally, the next example illustrates the use of these two attributes in the case of range expressions following pattern: $\mathrm{NP}_{time} + \left\{ \begin{array}{c} - \\ / \end{array} \right\} + \mathrm{NP}_{time}$.

Two alternative annotations are provided for the same expression in sentence (104). In the first case (105), we see what would be the annotation in optimal conditions, that is, when it is possible to mark up only token fragments. The second annotation variation (106), on the other hand, illustrates the annotation for when, due to constraints in the annotation tool, the two date expressions will need to be annotated as a unique `timex3` tag of type `duration` (refer to section 4.2.4).

(104) A principios de la temporada <u>94</u>-<u>95</u> fue traspasado a Golden State Warriors.

(105) a. ext: *94*   `ID:t1` `type:DATE`   `value:1994-XX`
                                  `temporalFunction:False`
    b. ext: *95*   `ID:t2` `type:DATE`   `value:1995-XX`
                                  `temporalFunction:False`
    c. ext: [empty tag]   `ID:t3` `type:DURATION` `value:P1Y`   `mod: APPROX`
                                  `beginPoint:t1`   `endPoint:t2`

(106) a. ext: [empty tag]   `ID:t1` `type:DATE`   `value:1994-XX`
    b. ext: [empty tag]   `ID:t2` `type:DATE`   `value:1995-XX`
    c. ext: *94-95*   `ID:t3` `type:DURATION` `value:P1Y`   `mod: APPROX`
                                  `beginPoint:t1`   `endPoint:t2`

5.9 Attributes `quant` and `freq`

These attributes are used for a temporal expressions of type `SET`. `quant` is generally a literal from the text that quantifies over the expression. `freq` contains an integer value and a time granularity that represent the frequency at which the temporal expression regularly reoccurs. These attributes are only used if their values are supplied by the temporal expression (or by a temporal anchor). Though it seems on occasions that values for these attributes can be inferred, they will not be for purposes of manual annotation. Although, if there is no specified `quant`, one imagines that the set is universally quantified. The following examples complete the annotations of the sets listed earlier in this section:

(107) a. *dos veces por semana*   `type:SET`   `value:P1W`   `freq:2X`
       b. *cada dos horas*   `type:SET`   `value:P2H`   `quant:EVERY`
       c. *3 días cada semana*   `type:SET`   `value:P1W`   `quant:EVERY`   `freq:3D`
       d. *cada octubre*   `type:SET`   `value:XXXX-10` `quant:EVERY`

A Complex time expressions

A.1 Dates

Pattern	Example	Annotation
Range expressions		
1. *entre* + NP$_{time}$+ *i* +NP$_{time}$	*entre <u>lunes</u> y <u>jueves</u>*	2 tags of type DATE (underlined)
2. *(des)de* +NP$_{time}$+ $\left\{ \begin{array}{c} hasta \\ a \end{array} \right\}$ +NP$_{time}$	*de <u>lunes</u> a <u>viernes</u>*	1 empty tag of type DURATION (for the resulting interval value)
3. NP$_{time}$+ $\left\{ \begin{array}{c} - \\ / \end{array} \right\}$ +NP$_{time}$	*<u>1992-93</u>*	1 tag of type DURATION 2 empty tags of type DATE
Anchored dates		
*– **With an implicit anchoring reference:*** 1. $\left\{ \begin{array}{c} el \\ la \end{array} \right\}$+$\left\{ \begin{array}{c} siguiente \\ anterior \\ pasado \end{array} \right\}$ +N$_{time}$ 2. $\left\{ \begin{array}{c} el \\ la \end{array} \right\}$ +N$_{time}$+$\left\{ \begin{array}{c} siguiente \\ que\ sigue, viene \\ pasado \\ previo \\ anterior \\ posterior \\ antes \\ después \end{array} \right\}$	*<u>el siguiente martes</u>* *<u>el martes siguiente</u>*	1 tag of type DATE (underlined)
– With an explicit anchoring reference: 3. NP$_{time}$+$\left\{ \begin{array}{c} siguiente \\ que\ sigue \\ posterior \\ anterior \\ previo \end{array} \right\}$+ *a* +$\left\{ \begin{array}{c} \text{NP}_{time} \\ (\text{NP}_{event}) \end{array} \right\}$ 4. NP$_{time}$+$\left\{ \begin{array}{c} antes \\ después \end{array} \right\}$+ *de* +$\left\{ \begin{array}{c} \text{NP}_{time} \\ (\text{NP}_{event}) \end{array} \right\}$	*<u>el dia</u> previo a <u>fin de año</u>* *<u>el martes</u> antes de <u>Navidad</u>*	2 tags of type DATE (underlined)

A.2   Durations

Pattern	Example	Annotation
Framed durations		
1. *lo que +* $\left\{ \begin{array}{c} queda \\ va \\ ... \end{array} \right\}$ *de +* N$_{time}$ 2. *el resto de +* N$_{time}$ 3. *el/la +* $\left\{ \begin{array}{c} primer/a \\ ... \end{array} \right\}$ *+*N$_{part/coll}$*+de* N$_{time}$	<u>*lo que queda* de</u> **año** <u>*el resto* **del año**</u> <u>*el primer cuarto de*</u> **mes**	1 tag of type DURATION (underlined) 1 tag of type DATE (bold face) 2 (possibly empty) tags of type DATE (for the begin and end points of the duration)
Anchored durations		
– **With an implicit anchoring reference:** 1. NP$_{duration}$+$\left\{ \begin{array}{c} antes \\ después \\ más\ tarde \end{array} \right\}$ 2. $\left\{ \begin{array}{c} quedan/... \\ faltan/... \end{array} \right\}$ +NP$_{duration}$ 3. $\left\{ \begin{array}{c} hace/... \\ pasan/... \end{array} \right\}$+NP$_{duration}$	 <u>*tres días más tarde*</u> <u>*quedan dos años*</u> <u>*hace una hora*</u>	 1 tag of type DURATION (underlined) 1 empty tag of type DATE (for the resulting date value)
– **With an explicit anchoring reference:** 4. NP$_{dur}$+$\left\{ \begin{array}{c} antes \\ después \\ a\ partir\ de \end{array} \right\}$+*de*+NP$_{time}$ 5. $\left\{ \begin{array}{c} quedan/... \\ faltan/... \end{array} \right\}$ +NP$_{dur}$ +*per*+NP$_{time}$ 6. NP$_{time}$+{ *hace/...* } + NP$_{dur}$+*de* 7. *de* + NP$_{time}$ + *en* + NP$_{dur}$	 <u>*tres días* antes de</u> **Reyes** <u>*quedan tres días para*</u> **Reyes** **ayer** <u>*hizo cinco meses*</u> *de* **hoy** *en* <u>*tres días*</u>	**a. Referring to a DATE:** 1 tag of type DURATION (underlined) 1 tag of type DATE (bold) 1 empty tag of type DATE (for the resulting date value) **b. Referring to a TIME:** 1 tag of type TIME

B   TimeML attributes and values for `timex3`

Attribute:	Possible values:		
type	DATE TIME DURATION SET		
value	Value compliant with the extended 8601 format.		
mod	For points:	BEFORE AFTER ON_OR_BEFORE ON_OR_AFTER	
	For durations:	LESS_THAN MORE_THAN EQUAL_OR_LESS EQUAL_OR_MORE	
	For both:	START MID END APPROX	
anchorTimeId	ID of another `timex3` (e.g., `t11`).		
beginPoint	ID of another `timex3` (e.g., `t12`).		
endPoint	ID of another `timex3` (e.g., `t13`).		
quant	Literal from the text quantifying over the time expression (e.g., `EVERY`).		
freq	Integer value and time granularity that represent the frequency at which the time expression reoccurs (e.g., `3D`).		

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