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Language resource management — Syntactic annotation framework (SynAF)

Gestion de ressources langagières — Cadre d'annotation syntaxique (SynAF)

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</table>

Contents

Page

Foreword

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ISO 24615 was prepared by Technical Committee ISO/TC 37, *Terminology and other language and content resources*, Subcommittee SC 4, *Language resource management*, in collaboration with the European eContent Project "LIRICS" (**L**inguistic **I**n**f**rastructure for **I**nteroperable Resour**c**es and **S**ystems), under the contract e-Content-22236-LIRICS.

ISO 24615 is designed to coordinate closely with ISO 24612, *Language resource management — Linguistic annotation framework (LAF)*, ISO 24613:2008, *Language resource management — Lexical markup framework (LMF)*, and ISO 24611, *Language resource management — Morpho-syntactic annotation framework*.

Introduction

This International Standard is based on numerous projects and pre-standardisation activities that have taken place in the last few years (see Abeillé, 2001[9]), to provide reference models and formats for the representation of syntactic information, whether as the output of a syntactic parser, or as annotations of language resources (treebanks). For several years, the Penn Treebank initiative has served as a *de facto* standard for treebanking, but more recent works e.g. the Negra/Tiger initiative (see: http://www.ims.uni-stuttgart.de/projekte/TIGER/TIGERCorpus/) in Germany or the ISST initiative in Italy [see Montemagni (2003)[18]] demonstrate the viability of a more coherent framework that can account for both (hierarchical) constituency and dependency phenomena in syntactic annotation.

The eContent project "LIRICS", has been seminal in gathering a group of experts, who initiated the ISO 24615 (SynAF) project. While preparing SynAF, this group confirmed that existing initiatives indeed share a common data model that offers a good basis for the SynAF metamodel (see the study made in Deliverable D.3.1 "Evaluation of initiatives for morpho-syntactic and syntactic annotation" of the EU project LIRICS, available at http://lirics.loria.fr/doc_pub/Del3_1_V2.pdf).

This International Standard proposes a metamodel for syntactic annotation together with a list of relevant data categories for syntactic annotation. The data categories are available on the ISOCat server (http://www.isocat.org/) in the syntax profile (as defined in ISO 12620:2009).

Language resource management — Syntactic annotation framework (SynAF)

1   Scope

This International Standard describes the syntactic annotation framework (SynAF), a high level model for representing the syntactic annotation of linguistic data, with the objective of supporting interoperability across language resources or language processing components. This International Standard is complementary and closely related to ISO 24611 (MAF, morpho-syntactic annotation framework) and provides a metamodel for syntactic representations as well as reference data categories for representing both constituency and dependency information in sentences or other comparable utterances and segments.

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.

ISO 1087-1:2000, *Terminology work — Vocabulary — Part 1: Theory and application*

ISO 1087-2:2000, *Terminology work — Vocabulary — Part 2: Computer applications*

ISO 12620:2009, *Terminology and other language and content resources — Specification of data categories and management of a Data Category Registry for language resources*

ISO 24611, *Language resource management — Morpho-syntactic annotation framework*

3   Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1087-1, ISO 1087-2, ISO 12620:2009, ISO 24611 and the following apply.

3.1
adjunct
non-essential element associated with a verb as opposed to **syntactic arguments** (3.19)

NOTE   Adverbs are possible adjuncts for a sentence.

3.2
chunk
non-recursive **constituent** (3.4)

3.3
clause
group of **phrases** (3.14), usually containing a predicate

NOTE   A clause can be either a **main clause** (3.10) or a **subordinate clause** (3.17). In languages distinguishing finiteness, clauses whose predicate is a verb can be either finite or non-finite, depending on the form of the verb. A main clause alone can build a complete **sentence** (3.15). In the SynAF model, a clause is a special case of a **constituent** (3.4).

3.4
constituent
syntactic grouping of words [into **phrases** (3.14)], phrases [into **clauses** (3.3) or **other phrases**] or clauses [into a **sentence** (3.15)] on the base of structural (or hierarchical) properties

3.5
dependency
dependency relation
syntactic relation between **word forms** (3.24) or **constituents** (3.4) on the basis of the **grammatical functions** (3.7) that **constituents** play in relation to each other

3.6
syntactic edge
edge
triplet with a source **node** (3.12), a target **node**, and optional **annotations** (3.9)

NOTE   **Non-terminal nodes** (3.13) have an outgoing constituency syntactic edge.

3.7
grammatical function
grammatical role of a **word form** (3.24) or **constituent** (3.4) within its embedding syntactic environment

NOTE   For example, a noun phrase (NP) can act as a subject within a **sentence** (3.15), or a noun may act as a subject dependent of a verb in a dependency graph. There is a grammatical relation between the subject – NP and the main verb in a sentence. All grammatical relations (subject – predicate, head – modifier, etc.) are subsumed under the concept of **dependency relations** (3.5), whether between terminal or non-terminal nodes.

3.8
syntactic head
head
part of a **constituent** (3.4) which determines its distribution (the syntactic environments in which the constituent may appear) and its grammatical properties (e.g. if the grammatical gender of the head is feminine, then the gender of the entire constituent will be feminine)

NOTE   The head of a constituent usually cannot be left out.

3.9
linguistic annotation
annotation
feature-value pair denoting a linguistic property of a linguistic segment

3.10
main clause
clause (3.3), which can act on its own as a complete **sentence** (3.15)

NOTE   In languages distinguishing finiteness, the main clause is usually finite. Example: *The train is late*.

3.11
modifier
part of a **constituent** (3.4) which ascribes a property to the **head** (3.8) of the **constituent**

NOTE   A modifier can be placed before or after the head of the **phrase** (3.14) (pre-modifier or post-modifier). Modifiers are optional in a constituent.

3.12
node
syntactic node
word form (3.24) or **constituent** (3.4) seen as an elementary syntactic component of a syntactic analysis

3.13
non-terminal node
syntactic node (3.12) which is not a **word form** (3.24)

NOTE   A non-terminal node has an outgoing constituency **edge** (3.6).

3.14
phrase
group of **word forms** (3.24) (usually containing one or more words) which can fulfill a **grammatical function** (3.7), e.g. in a **clause** (3.3)

NOTE   Empty phrases are permitted (being non-realised pronouns, sometimes marked as "pro", and having the role of subjects in clauses). A phrase is typically named after its **head** (3.8), for example noun phrases, verb phrases, adjective phrases, adverbial phrases and prepositional phrases. Phrases have been informally described as "bloated words", in that the parts of the phrase added to the head elaborate and specify the reference of the head. In our model, a phrase is a special case of a **constituent** (3.4)**.**

3.15
sentence
related group of **word forms** (3.24) containing a predication, usually expressing a complete thought and forming the basic unit of discourse structure

NOTE   A sentence consists of one or more **clauses** (3.3)*.* When describing speech, it is common to talk about "utterances" rather than sentences.

3.16
span
pair of points (p1, p2), where p1 ⩽ p2, identifying the segment of the document to which an **annotation** (3.9) is applied

NOTE   A multiple span is a sequence of spans where the ending point of each span is less than or equal to the starting point of the subsequent span.

3.17
subordinate clause
clause which fulfils a **grammatical function** (3.7) in a **phrase** (3.14) [for example a relative **clause** (3.3) modifying the **head** (3.8) noun of a nominal phrase] or in another clause

NOTE   A subordinate clause usually does not act on its own as a sentence, but is part of a larger sentence**.**

3.18
subcategorization frame
set of restrictions indicating the properties of the **syntactic arguments** (3.19) that can or must occur with a verb

EXAMPLE   Alfred (/syntacticArgument/) reads a book (/syntacticArgument/) today (/adjunct/).

NOTE   The subject, indirect object and direct object are subcategorized **grammatical functions** (3.7) within a sentence; they are dependents of the verb (i.e. they can appear in subcategorization frames).

3.19
syntactic argument
functionally essential element that is required and given its interpretation by the head of its **phrase** (3.14) or the **node** (3.12) of which it is a dependent (e.g. the nominal argument of a prepositional phrase or verb)

NOTE   For verbs and verbal phrases, arguments identify the participants in the process referred to by the verb. In some frameworks, syntactic arguments are called complements.

3.20
syntactic graph
graph
connected set of **syntactic nodes** (3.12) and **edges** (3.6)

3.21
syntactic tree
syntactic graph (3.20) in which each node has a single parent

3.22
syntax
way in which **word forms** (3.24) are interrelated and/or grouped together into phrases, thus capturing the relations that exist between those units

3.23
terminal node
syntactic node (3.12) which is a single **word form** (3.24) or an empty element involved in a syntactic relation

3.24
word form
contiguous or non-contiguous entity from a speech or text sequence identified as an autonomous lexical item

4   SynAF metamodel

4.1   Introduction

Syntactic annotations have at least two functions in language processing:

a) to represent linguistic constituency, as in noun phrases (NP), describing a structured sequence of morpho-syntactically annotated items (including empty elements or traces generated by movements at the constituency level), as well as constituents built from non-contiguous elements, and

b) to represent dependency relations, such as head-modifier relations, and also including relations between categories of the same kind (such as the head-head relations between nouns in appositions, or nominal coordinations in some formalisms). The dependency information can exist between morpho-syntactically annotated items within a phrase (an adjective is the modifier of the head noun within an NP) or describe a specific relation between syntactic constituents at the clausal and sentential level (i.e. an NP being the "subject" of the main verb of a clause or sentence). The dependency relation can also be stated for empty elements (e.g. the pro element in romance languages, which serves a grammatical function).

As a consequence, syntactic annotations shall comply with a multi-layered annotation strategy interrelating syntactic annotation for both constituency and dependency as stated in the SynAF metamodel.

4.2   SynAF metamodel

4.2.1   Overview

The SynAF metamodel is represented as a set of UML classes complemented by UML attribute-value pairs, which represent the associated syntactic data categories. The SynAF textual descriptions specify more complete information about the SynAF classes, relations and extensions than can be included in the UML diagram. Developers shall define a data category selection (DCS) as specified for SynAF data category selection procedures (see Figure 1). The data categories given in Annex A shall be used for the representation of syntactic annotations.
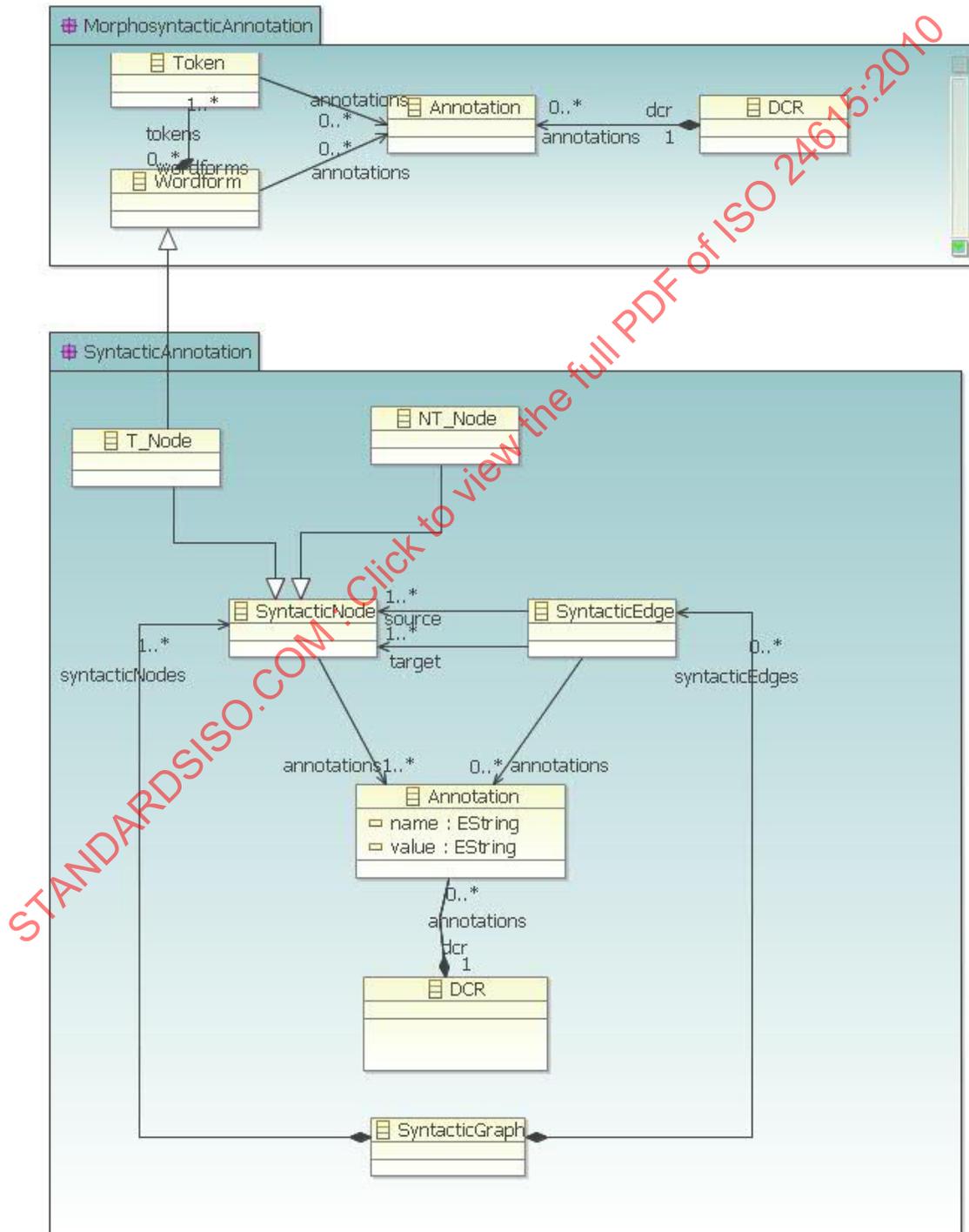

Figure 1 — SynAF metamodel (articulated with MAF)

4.2.2   SyntacticNode class

The *SyntacticNode* class is a generic class subsuming both the class of terminal nodes and the class of non-terminal nodes. Syntactic nodes can be involved in as many syntactic relations as necessary (see 3.6, **syntactic edges**).

4.2.3   T_Node class

The *T_Node* class represents the terminal nodes of a syntactic tree, consisting of morpho-syntactically annotated word forms, as well as empty elements when appropriate. The T_Nodes are defined over one or more *spans* (multiple spans can account for discontinuous constituents). T_Nodes are annotated with syntactic categories valid for the word level.

4.2.4   NT_Node class

The *NT_Node* class represents the non-terminal nodes of a syntax tree. Syntax trees mainly consist of T_Nodes and NT_Nodes, including empty elements when appropriate. T_Nodes make reference to a span. Thus by virtue of the syntactic tree representation, spans can also be inferred for NT_Nodes. The NT_Nodes are annotated with syntactic categories valid at the phrasal level and higher (clausal, sentential).

4.2.5   SyntacticEdge class

The *SynacticEdge* class represents a relation between syntactic nodes (both terminal and non-terminal nodes). For example, the dependency relation is binary, consisting of a pair of source and target nodes, with one or more annotations. In particular, a syntactic edge can be annotated by a /syntacticEdgeType/ (see Annex A), whose conceptual domain can be one of, but is not limited to, /primarySyntacticEdge/, /secondarySyntacticEdge/.

4.2.6   Annotation class

The *Annotation* class represents the application of syntactic information to SynAF annotated data, as well as (see Figure 1) the application of morphosyntactic information to MAF annotated data.

Annex A
(normative)

Data categories for SynAF

A.1 General

The following data categories shall be used for the representation of syntactic annotations in combination with the SynAF metamodel. When necessary, specific applications may define additional data categories, which shall be described in compliance with ISO 12620 and provided in the ISOCat data category registry.

A.2 Basic syntactic data categories

/annotation/
Definition [en]   information added to a word, phrase, clause, sentence, a text or to a relation among them

/annotationDepth/
Conceptual Domain   /deepParsing/, /shallowParsing/, /tagging/
Definition [en]   level of information richness the annotation describes

/annotationStyle/
Conceptual Domain   /embeddedNotation/, /mixedNotation/, /standoffNotation/
Definition [en]   style of annotation

/annotationType/
Conceptual Domain   /constituency/ /constituencyAndDependency/ /dependency/
Definition [en]   type of annotation

/clitic/
Definition [en]   unstressed word which cannot stand on its own as a normal utterance and is phonologically dependent upon a neighboring word for pronunciation
— Note [en]   There is a great variation concerning clitics. Sometimes, in English, the cliticized forms are restricted to the contracted forms of auxiliaries, as in I'm, she'll, etc. However in some instances, articles are also referred to as clitics.

/constituency/
Definition [en]   mechanism allowing the construction of words into phrases, phrases into higher phrases or clauses, and clauses into sentences
— Note [en]   The construction of sentences into text is not usually called constituency.

/constituencyAndDependency/
Definition [en]   union of constituency and dependency

/contiguous/
Definition [en]   property of a grammatical unit sharing a boundary with another

/deepParsing/
Definition [en]   process of fully decoding the clauses and relations present in a sentence

7

/dependency/
Definition [en]   mechanism allowing the linking of words, or in some formalisms also phrases and clauses, based on the binary head-dependent division and a possible annotation of grammatical function

/doubleNegation/
Definition [en]   construction consisting of two negative forms in the same clause
— Note [en]   Example: In English, "I'm not unhappy".

/embeddedNotation/
Definition [en]   annotation that is added in the text
— Note [en]   The original organization of the text is modified.

/enclitic/ - BC: /clitic/
Definition [en]   clitic that depends upon a preceding word

/first/
Definition [en]   before anything according to a certain order

/mixedNotation/
Definition [en]   hybrid style annotation where standoff and embedded are mixed

/morphosyntacticAnnotation/ - BC: /annotation/
Definition [en]   annotation related to the morphology of the words and their part of speech

/negation/
Definition [en]   construction that expresses the contradiction of some or all of a sentence's, word's or phrase's meaning
— Note [en]   Negation may be based on negative particles (like "not") or on prefixes (like "un", or "non"). Example: In English, "I'm not happy".

/next/
Definition [en]   immediately afterwards

/primarySyntacticEdge/
Definition [en]   the default edge expressing the constituency relationship, originating in a constituent and terminating in a component of that constituent

/predicate/
Definition [en]   a phrase or word in a clause which provides a statement regarding the subject of that clause. Most clauses can thus be divided into a subject and predicate, where the predicate is a function expanding on the subject.
— Note [en]   Example: "Kevin kicks the ball" is seen as a subject ("Kevin") associated with a predicate phrase ("kicks the ball").

/previous/
Definition [en]   immediately before
Definition [fr]   immédiatement avant
Name [en]   previous
Name [fr]   précédent

/proclitic/ - BC: /clitic/
Definition [en]   clitic that depends upon a following word
— Note [en]   Example: "the" in "the boy".

/propagation/
Definition [en]   act of spreading a linguistic property from a grammatical unit to another

/secondarySyntacticEdge/
Definition [en]	an indirect edge expressing syntactic constituency. These edges may be used to express the relationship between a head and a coreferent of its omitted dependent.
— Note [en]	Example: In "I saw Bill, but went straight back home afterwards", "I" may serve as an explicit subject to the first clause, dominated by a primary syntactic edge, but in the second clause, a further secondary syntactic edge leading to "I" can make it clear that it is also the subject of the second clause, without being one of the explicit parts of that clause, which are dominated by primary edges. This device is used in some formalisms to avoid the introduction of empty elements standing in for such 'missing' bearers of grammatical function.

/shallowParsing/
Definition [en]	process of identifying the chunks in a sentence

/standoffNotation/
Definition [en]	annotation that is recorded externally from the grammatical units and that refers to these units
— Note [en]	The original organization of the text is kept unchanged.

/syntacticAnnotation/ - BC: /annotation/
Definition [en]	annotation describing constituency and/or dependency
— Note [en]	syntactic annotation does not directly deal with the meaning of an utterance

/syntacticFeature/
Definition [en]	feature used in the description of the syntax of a language

/syntacticEdgeType/
Conceptual Domain	/primarySyntacticEdge/, /secondarySyntacticEdge/
Definition [en]	characterizes the syntactic edge according to its role in the syntactic representation

/syntacticRestriction/
Definition [en]	rule that limits what the syntax allows in a particular language

/tagging/
Definition [en]	process of annotating the part of speech for every word

/whType/
Definition [en]	property for a clause beginning by a question word
— Note [en]	In English, "who is he ?" is a whType question.

/yesNoType/
Definition [en]	property for a clause where only a positive or a negative answer or position is possible
— Note [en]	In English, "Are you coming?" is a yesNoType question.

A.3 Constituency related data categories

/adjectiveChunk/ - BC: /chunk/
Definition [en]	chunk headed by an adjective

/adjectivePhrase/ - BC: /phrase/
Definition [en]	phrase headed by an adjective

/adpositionChunk/ - BC: /chunk/
Definition [en]	chunk introduced by one or several adpositions that are not necessarily contiguous and on the same end of the chunk

/adpositionPhrase/ - BC: /phrase/
Definition [en]   phrase introduced by one or several adpositions and containing a complement such as a noun phrase
— Note [en]   The adpositions are not necessarily contiguous and on the same end of the phrase.

/adverbChunk/ - BC: /chunk/
Definition [en]   chunk headed by an adverb

/adverbPhrase/ - BC: /phrase/
Definition [en]   phrase headed by an adverb

/chunk/ - BC: /grammaticalUnit/
Definition [en]   flat sequence of words typically containing more than one word
— Note [en]   A chunk cannot contain any sub-structures. A chunk is frequently similar to a phrase and mostly continuous.

/clause/ - BC: /grammaticalUnit/
Definition [en]   unit of grammatical organization smaller than or equal to the sentence but larger than phrases and words, and generally containing its own predicate
— Note [en]   The traditional classification is of clausal units into main (independent or superordinate) and subordinate (or dependent) clauses, e.g. the boy arrived (main clause) after the rain started (subordinate clause). A clause may form a whole sentence, as in "they came". A clause may contain sub-clauses.

/comparativePhrase/ - BC: /phrase/
Definition [en]   phrase expressing a comparative meaning
— Note [en]   In English, there is both an inflection (e.g. larger) and a comparative phrase construction (e.g. more beautiful) to express the comparative.

/coordinatedPhrase/ - BC: /phrase/
Definition [en]   phrase expressing a coordination

/declarativeClause/ - BC: /clause/
Definition [en]   clause referring to the expression of a statement and having a contingent truth value
— Note [en]   Usually, the term is seen in contrast to interrogative and imperative.

/grammaticalUnit/
Definition [en]   term referring to either a word, a phrase, a clause or a sentence

/imperativeClause/ - BC: /clause/
Definition [en]   clause referring to the expression of a command
— Note [en]   Usually, the term is seen in contrast to interrogative and declarative.

/interrogativeClause/ - BC: /clause/
Definition [en]   clause referring to the expression of a question
— Note [en]   Usually, the term is seen in contrast to declarative and imperative. Example: In English, "who are you?".

/nounChunk/ - BC: /chunk/
Definition [en]   chunk headed by a noun

/nounPhrase/ - BC: /phrase/
Definition [en]   phrase headed by a noun

/phrase/ - BC: /grammaticalUnit/
Definition [en]   structural element built around a head which determines its grammatical properties, formed of zero, one or more words and/or other phrases and lacking the subject-predicate structure typical of clauses.
— Note [en]   A phrase may embed sub-structures. Traditionally, it is seen as part of a structural hierarchy, falling between clause and word. Several types are usually distinguished, e.g. adverb phrase, adjective phrase, etc. depending on the head.

/postpositionChunk/ - BC: /chunk/
Definition [en]   chunk headed by a postposition

/postpositionPhrase/ - BC: /phrase/
Definition [en]   phrase headed by a postposition

/prepositionChunk/ - BC: /chunk/
Definition [en]   chunk headed by a preposition

/prepositionPhrase/ - BC: /phrase/
Definition [en]   phrase headed by a preposition

/prepositionVerbPhrase/ - BC: /phrase/
Definition [en]   verb phrase that is introduced by a preposition

/relativeClause/ - BC: /clause/
Definition [en]   clause that serves as an attribute to a noun phrase, introduced by a relative pronoun, that may be elliptic.
— Note [en]   In English, a relative clause is introduced by a relative pronoun, like "who". Relative clauses may be restrictive, specifying a subset of the noun they expand, or non-restrictive, merely adding an attribute, e.g. "the men who were fighting were brave" (and the ones who weren't fighting were not) vs. "the men, who were fighting, were brave" (all the men were brave, and incidentally, they were fighting at the time.)

/sentence/ - BC: /grammaticalUnit/
Definition [en]   grammatical organization consisting of a main clause and all of its subordinate clauses and their subordinate clauses recursively.
— Note [en]   Sentences may be classified into simple vs. complex types, i.e. consisting of one subject-predicate unit, as opposed to more than one.

/superlativePhrase/ - BC: /phrase/
Definition [en]   phrase expressing a superlative meaning
— Note [en]   In English, there is both an inflection (e.g. largest) and a superlative phrase construction (e.g. the most interesting) to express superlative.

/syntacticConstituent/
Definition [en]   a grammatical unit forming part of a larger grammatical unit is a constituent of that latter unit. If the two units are linked directly by a syntactic constituency edge, it is a direct constituent, otherwise it is an indirect constituent.

/verbNucleus/ - BC: /chunk/
Definition [en]   chunk consisting of an isolated verb and possibly associated with its clitics

/verbPhrase/ - BC: /phrase/
Definition [en]   phrase headed by a verb

A.4 Dependency related data categories

/adjectiveModifier/ - BC: /adjectiveModifier/
Definition [en]   relation in which modification is operated through an adjective

/adjunct/
Definition [en]   optional or secondary grammatical unit that may be removed without the grammaticality of the rest of the construction being affected
— Note [en]   Adverbs are usually adjuncts, as in "Peter kicked the ball" instead of "Peter kicked the ball yesterday", both of which are grammatical.

/adverbModifier/ - BC: /modifier/
Definition [en]   relation in which the modified is an adverb

/apposed/
Definition [en]   property of being in apposition

/apposition/
Definition [en]   relation between linguistic units that share the same (or similar) referent and the same grammatical function in the same clause, with one unit expanding the other
— Note [en]   Example: "Smith, the barber, came in".

/attribute/
Definition [en]   relation concerning an adjective or a noun when it occurs as modifier of the head of a noun phrase

/auxiliary/
Definition [en]   relation between a subordinate verb and the main verb

/comparativeRelation/ - BC: /relation/
Definition [en]   relation expressing a comparative meaning

/complementizer/
Definition [en]   relation between a subordinating conjunction and a verb, which marks an embedded sentence of a complement type
— Note [en]   For instance in "I said that he was leaving", the embedded sentence is "he was leaving" and the subordinating conjunction is "that".

/coordination/
Definition [en]   relation that links linguistic units which are of equivalent syntactic status, e.g. a series of phrases or words, possibly through a conjunction

/coordinator/
Definition [en]   word or series of words that coordinates a coordination
— Note [en]   Typically, a coordinator is a coordinating conjunction.

/directObject/
Definition [en]   relation between a verb and its argument, in which the argument is not mediated by an adposition or marked with an oblique case.
— Note [en]   In "the man gave the boy a book", the phrase "a book" is a direct object, whereas many formalisms treat "the boy" as an indirect object on account of an assumed (and historically observed) oblique case (the dative).

/genitive/ - BC: /relation/
Definition [en]   relation usually expressing a possessive or otherwise adnominal relationship of a modifier noun

/head/
Definition [en]   central word of a phrase determining its distribution and grammatical properties

/introducer/
Definition [en]   linguistic element (e.g. word form) marking the beginning of a syntactic group
— Note [en]   For instance, a preposition is an introducer of a noun phrase.

/juxtaposition/
Definition [en]   relation where two linguistic units are put together

/leftCoordinated/
Definition [en]   clause member located before a coordinator

/modifier/
Definition [en]   relation of one grammatical unit to another, where the one unit depends on and
                     expands the other.
— Note [en]   In "the big tree in the garden", both "the big" and "in the garden" modify "tree".

/nounModifier/ - BC: /modifier/
Definition [en]   relation in which the modified is a noun

/postnominalModifier/ - BC: /modifier/
Definition [en]   noun modifier where the modifier is after the noun

/prenominalModifier/ - BC: /modifier/
Definition [en]   noun modifier where the modifier is before the noun

/prepositionModifier/ - BC: /modifier/
Definition [en]   relation in which the modified is a preposition

/relation/
Definition [en]   annotated link between two or more grammatical units

/relativeRelation/ - BC: /relation/, /nounModifier/
Definition [en]   relation linking a relative clause to the noun phrase it refers to

/rightCoordinated/
Definition [en]   clause member located at the right of a coordinator

/structureHead/
Definition [en]   boolean that indicates if the component is a syntactic head

/subject/
Definition [en]   relation between a phrase and a verb that represents the person or thing about which
                     something is stated

/superlativeRelation/ - BC: /relation/
Definition [en]   relation expressing a superlative meaning

/syntacticArgument/
Definition [en]   argument of a syntactic construction

/syntacticFunction/
Definition [en]   relationship between a linguistic form and other parts of the linguistic system in which it
                     is used
— Note [en]   For instance: subject.

/syntacticHead/

Definition [en]   element which determines the distribution and grammatical properties of the unit comprising itself and its dependents

/verbComplement/

Definition [en]   relation between a phrase and a verb, in which the given phrase is not central to the verb

— Note [en]   As opposed to direct object.

/verbModifier/ - BC: /modifier/

Definition [en]   relation that represents a modification of a verb