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From Linguistic Annotations to Knowledge Objects

Bonnie J. Dorr
University of Maryland and HLT Center of Excellence

Saif Mohammad
University of Maryland

Boyan A. Onyshkevych
Department of Defense

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Human Language Technology Center of Excellence
810 Wyman Park Drive
Baltimore, Maryland 21211
www.hltcoe.org

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Human Language Technology Center of Excellence
810 Wyman Park Drive
Baltimore, Maryland 21211
410-516-4800,
www.hltcoe.org

1. Introduction

An important step in the development of systems that require deeper knowledge (e.g., systems that might ultimately infer person-person relationships, event-event relationships, sentiment, and other important information about the world) is the mapping between linguistic annotations that have been developed by researchers and the knowledge objects that might be derived from those linguistic annotations. The difference between linguistic annotations and knowledge objects is that the former are tags on raw data, whereas the latter are representational entities that are derived beyond the actual surface tokens in the raw data.

At HLT Center of Excellence, we are in the defining atomic units (both at the linguistic level and at the deeper knowledge level) that have not been captured entirely in earlier annotation efforts. In our preliminary investigation the linguistic annotations for which we are defining APIs are as follows (based on a wide range of existing annotation schemes in the literature including, but not limited to [1,2,3,4,5,6,7,8,9,10,11]):

Arg, Aspect, Assertion, Attribute Structure, Communicative Opposition, Committed Belief, Comparison, Complex Coref, Event Coref, Simple Coref, Dialog act, Dialog Function Unit, Dialog Link, Discourse Relation, Entity, Event Status, Lexical Relation, Modality, Morphological Class, Predicate, Quantity, Referential Type, Rhetorical Device, Sentence Structure, Social Register, Temporal Connective, Thematic Role, Time, Word Sense.

The knowledge objects for which we are defining APIs are as follows (based on a wide range of existing annotation schemes in the literature including, but not limited to [1,2,5,12,13,14]):

Composite Event, Condition, Confidence, Deontic, Epistemic, Epitautic, Evaluative, Event Object, Event-Event Relation, Intent, Location Object, Organization Object, Other Attribute, Other Entity Relation, Permission, Person Object, Personal Attribute, Person-Person Relationship, Philosophy, Potential, Quality, Role, State of Affairs, Time object, Timeline.

Examples of the instantiation of these two types of APIs are provided in the following sections. Once the task of defining (and ultimately implementing) these APIs is complete, it is our intention to develop prototype "language understanding" modules that take the output of an automatic tagger of linguistic information and produce these knowledge objects.

We expect that the automatically produced knowledge objects will be crucial for language analysis systems and will improve the performance of those systems. In addition, confidence values—an expected output of such systems—are a critical aspect of information that may enable a more focused analysis of incoming data.

2. Sample APIs for Linguistic Annotations

Below is an enumeration of a set of sample APIs for linguistic annotations. Each instance of a linguistic annotation type below will have a unique identifier, that is, each Entity annotation has

an id (e.g., ENTITY-202), each ModalityUnit annotation has an id (e.g., MODALITY-336), and so on. This may be used internally in cases where there is a forward or backward link to a previous annotation. (For example, Event coreference annotations refer back to specific instances of Event annotations.)

Note: All representations in 2 and 3 below are borne out in a mock-up interface in Appendix A.

- **Arg:** [ARG: <argType= ARG0 | ARG1 | ARG2 | ARG3 | ARG4 | ARG5 | ARGM> <startSpan> <endSpan>], where, roughly, Arg0 is agent, Arg1 is theme, Arg2 is goal/beneficiary, Arg3 is source, Arg4 is goal, Arg5 is instrument, Argm is a modifier (usually time or location). The Span is a numeric range delimiting the extent of the argument.
 - **SubType = Span:** a numeric range delimiting the name string (used in several types below)

- **Aspect/Aktionsart:** [ASPECT: <Pred> <predType = state | activity | accomp | achieve>, <lexAspect=duration,telic,dynamic> <gramAspect=prog,perf> <Time>], where Pred corresponds to the aspectual trigger (the main predicate and its argument list), predType is an aspectual category (state, activity, accomplishment, achievement), lexAspect is a binary number between 0 and 7 indicating the values of “duration” (0 or 1), “telic” (0 or 1), and “dynamic” (0 or 1), gramAspect is a binary number between 0 and 4 indicating the values of “progressive” (0 or 1) and “perfective” (0 or 1), and Time conforms to Time below. Note: Time includes tense (past, present, future).

- **Assertion Type (quantification/negative/positive, scope):** [ASSERTION: <assertionType = Pos, Neg, Univ, Exist> <scope> <startSpan> <endSpan>], where assertionType indicates the assertion type (positive|negative|existential|universal), scope refers to the event or entity to which the quantifier applies, and Span is a numeric range delimiting the quantifier string.

- **Attribute Structure (attributes, adjectives, adverbs) [ATTR STRUCT:** <predOrEntity> <modType= DescriptiveAdj | DescriptiveComp | DescriptivePP | Time | Location | Reason | Manner> <startSpan> <endSpan>], where predOrEntity is either a Pred or an Entity (as defined below). The span of the entity or pred is already encoded in the Entity or Pred structure. Each Mod itself has a span as well. Note that the mod is an adjectival, prepositional, or a descriptive relative clause (for entities) or predicative modifiers such as manner, location, time, etc. In the case of a predicate, there is overlap between Argm and Mods included in this structure.
 - **SubType = Mod**

- **Committed Belief:** [COMMITTED BELIEF: <predOrEntity> <status=CB | NCB | NA>], where predOrEntity is either a Pred or an Entity about which a belief is assigned and status is one of the three values shown here (committed belief, non-committed-belief, not-applicable).

Citation: Diab, Rambow, Annotating Committed Belief, March 25, 2008

- **Communicative Opposition:** [COMM OPPOS: <predOrEntity> <predOrEntity> <oppositionType = Dominance, Rheme-Theme, Given-New, Foreground-Background, Emphasis, Presupposedness, Unitariness, Locutionality>], where oppositionType is a binary number that specifies 2⁸ possible combinations of opposition (see 8 types above) between the two predOrEntity types.

- **Comparatives:** [COMPARE: <primarySpan> <secondarySpan> <comparativeSpan> <scalarComparative=more|less|better|worse|same|older|younger...> <quantityUnit>], where primary, secondary, and comparative spans are numeric ranges delimiting the associated lexical tokens (e.g., “my favorite DISH_{primary} is the SAME_{comparative} as the ONE_{secondary} Anne likes”), and quantityUnit is described below. For example: “I have THREE_MORE_{comparative} BOOKS_{primary} than Mary has [e]_{secondary}” would induce a QuantityUnit with quantType=count, quantValue=3.0+, quantUnit=<none>.

Citation: Ramshaw, Proposed Annotation Directions, May, 2008

- **Coreference - Complex (entity):** [COREF COMPL: <Entity1> <Entity2> <coRefID1> <coRefID2> <docNo1> <docNo2> <coRefType=member|subset|base>], where Entity1, Entity2 conform to Entity below, coRefID1, coRefID2 refer to unique ids associated with the normalized name, and docNo1, docNo2 refer to the docs in which they appear.

Citation: Ramshaw, Coreference Involving Complex Entities, January 31, 2008

- **Coreference - Event (and sub-event):** [COREF EVENT: <Pred1> <Pred2> <coRefID1> <coRefID2> <docNo1> <docNo2> <coRefType=member|subset|base>], where Pred1 and Pred2 conform to the Pred description below, coRefID1, coRefID2 refer to unique ids associated with the normalized name, and docNo1, docNo2 refer to the docs in which they appear.

Citation: Davis, Levin, Mitamura, Annotating Event Coreference, March 9, 2008

Citation: Ramshaw, Coreference involving complex entities, January 31, 2008

- **Coreference - Simple (entity):** [COREF SIMP: <Entity1> <Entity2> <coRefID> <docNo1> <docNo2>], where Entity1, Entity2 conform to Entity below, coRefID refers to a unique id associated with the normalized name, and docNo1, docNo2 refer to the docs in which they appear.

Citation: Ramshaw, Coreference involving complex entities, January 31, 2008

- **Dialog Act / Speech Act:** [DIALOG ACT: <daType = Inform | Suggest | Commit | Reject | RequestInfo | RequestAction | Perform | Conventional | NoDA> <startSpan> <endSpan>], where daType is a speech act from a finite set and delimits the content of the request or suggestion, etc.

Citation: Passonneau, Rambow: Annotating Dialog Structure, March 25, 2008

- **Dialog Function Units:** [DF UNIT: <daType = Inform | Suggest | Commit | Reject | RequestInfo | RequestAction | Perform | Conventional | NoDA> <dialogActList>], where dialogActList is a list of dialog acts that correspond to DialogAct above and daType specifies the speech act associated with the entire list of adjacent DialogActs that make up the DFU.

Citation: Passonneau, Rambow: Annotating Dialog Structure, March 25, 2008

- **Dialog Link:** [DF LINK: <linkType=Flink|Blink|Sflink>, <DFUnit1> <DFUnit2>], where <linkType> is either a forward link (Flink), a backward link (Blink), or a secondary forward link (Sflink) from DFUnit1 to DFUnit2. Note that an Sflink is like a Flink (but Flink is obligatory; Sflink is not). Also, some DialogAct's have obligatory flinks (request-information, request-action) and some DialogAct's have obligatory blinks (commit, reject).

Citation: Passonneau, Rambow: Annotating Dialog Structure, March 25, 2008

- **Discourse/Rhetorical Relations:** [DISC RELN: <predOrEntity> <predOrEntity> <relnType=agree | disagree | support | contradict | evidence | explanation-argumentative | reason | problem-solution | question-answer | statement-response | topic-comment | comment-topic | example | consequence |...| same-unit|attribution|elaboration>], where relnType is a RST relation from a finite set (from which it might be possible to infer "agree", "disagree", "support", "contradict") that relate to predicates or entities.

- **Entity:** [ENTITY: <normalizedName> <entityType= PER | LOC | ORG | FAC | GPE | TIM> <startSpan> <endSpan>], where normalizedName is a normalized form of the name string, entityType has one of values above (may be expanded), and Span is a numeric range delimiting the extent of the named entity.

Citation: Strassel, ACE Corpus Development, 2002

- **SuperType: PredOrEntity is an interface (implemented by Pred or Entity).**

- **Event Status:** [EVENT STATUS: <Pred> <status = happened | didNotHappen | planned | presupposed | habitual>], where Pred (the main event) is as defined below and status is one of the five values shown here.

Citation: Davis, Levin, Mitamura, CMU Event Coref Guidelines March 9 2008

- **Lexical Relation:** [LEX RELN: <startSpan1> <endSpan1> <startSpan2> <endSpan2> <relnType =| hypernymy | hyponymy | synonymy | antonymy | troponymy | meronymy>], where relnType is a scalar value from a finite set and Span is a numeric range delimiting the two textual triggers for that relationship.

Citation: Mohammad, Dorr, Hirst, EMNLP-2008 paper

- **Modality:** [MODALITY: <modalityType = Obligative | Epiteuctic | Epistemic | Permissive, Potential | Volitive | Intentional | Evaluative> <startSpan> <endSpan>], where modalityType is a scalar value from a finite set and Span is a numeric range delimiting the textual trigger for this modality.

Citation: Nirenburg,McShane, Annotating Modality, March 19, 2008

- **Morphosyntactic class:** [MORPH CLASS: <startSpan> <endSpan> <gender=M|F|N> <person=1,2,3> <number=0|1|2|2+> <semClass=concrete, location, animate, dynamic, ...>], where gender, person, number are morphosyntactic features (there may be several others) and semantic class is a binary number that specifies 2ⁿ possible combinations of semantic features (some of which are listed above).

- **Predicate:** [PRED: <predType=GO | EXIST | INGEST | MOVE |...> <startSpan> <endSpan> <argList>], where predType is a normalized form of the predicate string (a set of predicate types has yet to be defined). The Span is a numeric range delimiting the extent of the predicate. Note that Pred is an Event—but it need not be associated with a verb (e.g., “destruction” is a Pred).
- **Quantity:** [QUANT UNIT: <quantType=length | height | width | depth | area | volume | mass | time | temperature | duration | strength | age | price | count | none...> <Quantvalue=realNumber> <quantUnit=meter | liter | Euro | Celsius | percent | hours | ounces |...> <startSpan> <endSpan>], where quantType is a scalar from a finite set, quantValue is a real number (may have + or – to indicate more than or less than), quantUnit is a scalar from a finite set, and Span is a numeric range delimiting the quantity phrase. The phrase “full-blown attack” would have quantType=strength, quantValue=0.9, quantUnit=<none>. The phrase “nine yards wide” would have quantType=width, quantValue=9.0, quantUnit=yards.
- **Reference type:** [REF TYPE: <Entity> <refType = ASCR | DESCR | DEF | INDEF | REF | NEG | INT | GEN | UNSPEC> <startSpan> <endSpan>], where refType is a scalar type from a finite set (ascr|descr|def ...) that describes the spanned token such as “the” in “the dog” with respect to the entity (which conforms to Entity above) such as “dog” in “the dog.”
- **Rhetorical Devices:** [RHET DEV: <predOrEntity> <rhetoricalType = Alliteration, Allusion, Amplification, Anacoluthon, Anadiplosis, Analogy, Anaphora, Anastrophe, Antanagoge, Antimetabole, Antiphrasis, Antistrophe, Antithesis, Apophasis, Aporia, Aposiopesis, Apostrophe, Appositive, Archaism, Assonance, Asyndeton, Aureation, Brachylogy, Cacophony, Catachresis, Cataphora, Chiasmus, Chiastic structure, Climax, Conduplicatio, Copulatio, Diacope, Diction, Dirimens, Distinctio, Enthymeme, Enumeration, Epanalepsis, Epistrophe, Epithet, Epizeuxis, Eponym, Euphemism, Exemplum, Expletive, Hendiadys, Hypallage, Hyperbaton, Hyperbole, Hypophora, Hypotaxis, Hysteron-Proteron, Imagery, Irony, Litotes, Metabasis, Metanoia, Metaphor, Metonymy, Onomaton, Onomatopoeia, Oxymoron, Parade of horribles, Paradox, Parallelism, Paraprosochian, Parataxis, Parenthesis, Paronomasia, Personification, Pleonasm, Polysyndeton, Praeteritio, Procatalepsis, Prolepsis, Question, Rhetorical, Rhetorical organization, Rhetorical question, Scesis, Sententia, Simile, Syllepsis, Symbolism, Symploce, Synchysis, Synecdoche, Synesis, Syntax, Tautology, Understatement, Zeugma>], where rhetoricalType is a binary number that specifies 2^{92} possible combinations of rhetorical devices (see 92 types above). *Question: Should include “sarcasm”?* *Note: Several of the values refer to other linguistic annotation types, e.g., Syntax (Sentence Structure), anaphora (Coreference), etc.*
- **Sentence Structure:** [SENT STRUCT: <startSpan> <endSpan> <structDevice = active, passive, fronted, rheme, theme, given, new, focus, interog, imperative, exclamatory, expletive, cleft, emphasis, simplex, complex, compound, coord, subord, relative>], where structDevice is a binary number that specifies 2^{20} possible combinations of structural devices (see 20 types above). *Note: There is some overlap with the previous category, as well as with communicative opposition..*

- **Social Register (Formality, Politeness):** [**SOC REG:** <predOrEntity> <formalityValue = realNumber>], where formalityValue is a real number that identifies the strength of politeness/formality (where -10 is vulgarity/swearing, 0 is neutral, 10 is highly formal).
- **Temporal Connectives:** [**TEMP CONNECT:** <predOrEntity> <predOrEntity> <tempConn = during | before | after | since | while [...] <connType = After | Before | Overlap | During | Meet [...] <startSpan> <endSpan>], where the two temporally connected clauses are of type predOrEntity,, tempConn is a string form of the temporal connective, connType is a scalar type from a finite set (before | after|during|since|while|...), conform to Pred above, and Span is a numeric range delimiting the connective string,
- **Thematic Role:** [**THEM ROLE:** <Pred> <Arg> <roleType= Seller | Sallee | Buyer | Buyee | Attacker | Attackee | ...> <startSpan> <endSpan>], where Pred (the main event) is as defined above, predOrEntity is either a Pred or an Entity that participates in the main event, roleType is a role assigned to the participant—with one of the values above (may be expanded), and Span is a numeric range delimiting the extent of the item assigned the role.
Citation: Davis, Levin, Mitamura, Annotating Event Coreference, March 9, 2008
- **Time (temporal expressions):** [**TIME:** <normalizedTime> <temporalType = E | S | B | D | R> <inherentTime = (U | S), (P | C) | F> <assertionType><startSpan> <endSpan>], where normalizedTime is a normalized form of the temporal string, temporalType is a scalar type from a finite set (E(vent) | S(ay) | B(e) | D(ate) | R(ange)), inherentTime is a pair indicating (U(unspecified) | S(pecified) and P(ast) | C(urrent) | F(uture)), AssertionType conforms to AssertionType above (if applicable), and Span is a numeric range delimiting the temporal string.
Citation: Habash, Ramshaw, Temporal Parsing Manual, January, 2008
- **Word Senses:** [**WORD SENSE:** <startSpan> <endSpan> <wordSenseList = integers>], where each word sense in wordSenseList is a pointer to a definitional construct (e.g., a WN synset) for a given word or phrase indicated by the span.

3. Sample APIs for Knowledge Units

Below is an enumeration of a set of sample APIs for knowledge units.

- **Composite Events:** [**COMP EVENT:** <processName=string> <eventObjList>], where processName is a string associated with a sequence of steps in a process/plan, and each EventObj (in eventObjList) represents a step in the plan—conforming to EventObj below.
- **Condition, if-then:** [**CONDITION:** <SOA> <SOA> <dependencyValue=realNumber>], where both SOA's conform to SOA below. The second SOA must occur if the first SOA occurs, with a probability (or confidence or strength of dependency) specified by dependencyValue.

- **Confidence, truth, probability:** [CONFIDENCE: <value = realNumber> <scope> <attributedTo>], where value is the probability/confidence associated with the SOA to which the confidence applies (indicated by scope), and attributedTo is an indication of the person associated with the confidence (e.g., a PersObj associated with *speaker*).

Citation: Nirenburg,McShane, Annotating Modality, March 19, 2008

- **Deontic/Obligation:** [DEONTIC: <value=realNumber> <scope> <attributedTo>], where value is a real number indicating the degree of obligation associated with the SOA to which the modality applies (indicated by scope) and attributedTo is an indication of the person associated with the obligation (e.g., a PersObj associated with *speaker*).

Citation: Nirenburg,McShane, Annotating Modality, March 19, 2008

- **Epistemic, committed belief, opinion:** [EPISTEMIC: <value = realNumber> <beliefStatusValue = realNumber> <scope> <attributedTo>], where value is a real number indicating the degree of belief (vs. opinion) associated with the SOA to which the modality applies (indicated by scope), beliefStatusValue is an additional value corresponding to the degree of belief, and Attributed-to is an indication of the person associated with the belief/opinion (e.g., a PersObj associated with *speaker*).

Citation: Nirenburg,McShane, Annotating Modality, March 19, 2008

Citation: Diab, Rambow, Annotating Committed Belief, March 25, 2008

- **Epiteuctic:** [EPITEUCTIC: <value=realNumber> <scope> <attributedTo>], where value is a real number indicating the degree of success w.r.t. completion of an event or change of state, scope indicates this SOA to which the modality applies, and attributedTo is an indication of the person associated with the belief/opinion (e.g., a PersObj associated with *speaker*).

Citation: Nirenburg,McShane, Annotating Modality, March 19, 2008

- **Evaluative, attitude, importance, salience:** [EVALUATIVE: <value=realNumber> <scope> <attributedTo>], where value is a real number indicating the degree of attitude/importance/salience associated with the SOA to which the modality applies (indicated by scope), and attributedTo is an indication of the person associated with the attitude/importance/salience (e.g., a PersObj associated with *speaker*).

Citation: Nirenburg,McShane, Annotating Modality, March 19, 2008

- **Event or activity or action:** [EVENT OBJ: <eventType=kb-ptr> <TimeObj> <LocObj> <persObjList>], where EventType is a scalar type from a finite set yet to be defined (e.g., GO), TimeObj and LocObj are defined below, persObjList is a list of PersObjs (defined below).

- **Event-to-event relationship:** [EVENT EVENT REL: <EventObj> EventObj> <relnType = superevent | subevent | causal | precursor | consequence | support>], where relnType is a scalar type from a finite set. EventObj is defined above.

Citation: Davis, Levin, Mitamura, CMU Annotating Entity Relation, March 24 2008

- **Intent, motivation:** [INTENT: valueVolitive=realNumber> <valueIntentional=realNumber> <scope> <attributedTo>]

Citation: Nirenburg,McShane, Annotating Modality, March 19, 2008

- Volitive: <Value> <Scope> <Attributed-to>, where value is a real number indicating the degree of volition associated with the SOA to which the modality applies (indicated by scope), and attributedTo is an indication of the person associated with the volition (e.g., a PersObj associated with *speaker*).
- Intentional: <Value> <Scope> <Attributed-to>, where value is a real number indicating the degree of intent associated with the SOA to which the modality applies (indicated by scope), and attributedTo is an indication of the person associated with the intent (e.g., a PersObj associated with *speaker*).
- **Location:** [LOC OBJ: <lat> <long> <alt> <accuracy> <heading> <velocity> <TimeObj> <AddrObj>], where AddrObj is defined above. Different standards may be applicable for latitude, longitude, altitude, etc. A timestamp is necessary because a location may be temporally dependent.
- **Organization:** [ORG OBJ: <orgNameObj> <orgAttrObj>], where OrgNameObj is a structured object containing strings for organization name, acronym, etc., LocObj is defined above, and OrgAttrObj is a set of identifying objects such as AddrObj, LocObj, etc.
- **Other attributes:** [OTHER ATTR: <size=integer> <color=red | blue | green | yellow |...>], where attributes (such as size and color) are those that are applicable to non-person objects.
- **Other entity relations:** [OTHER ENT REL: <EntityObj> <EntityObj> <relnType=part-whole | ownership-artifact | oppose | support | contradict | refute ...>], where rel_type is a scalar type from a finite set, e.g., organization membership, part-whole, ownership of artifact, etc. EntityObj is a generic form of any of the objects above: PersObj, EventObj, OrgObj, LocObj. (Note: If both entities are PersObj or both are EventObj, two relationships above apply instead.)
- **Other objects:** [OTHER OBJ: <obj=facilityObj | politicalObj|...>], where obj refers to entities that are not person, times, locations, organizations, or events.

- **Permission:** [PERMISSION: <value=realNumber> <scope> <attributedTo>], where value is a real number indicating the degree of permission associated with the SOA to which the modality applies (indicated by scope) and attributedTo is an indication of the person associated with the permission (e.g., a PersObj associated with *speaker*).

Citation: Nirenburg,McShane, Annotating Modality, March 19, 2008

- **Person:** [PERS OBJ: <PersNameObj> <AddrObj> <PersAttrList>], where PersNameObj is a structured object containing strings for given, surname, middle, alias, nickname, clan name, ...; AddrObj is a structured object containing strings for city, state, country, province, zip, continent, etc.; and PersAttrList is a set of PersAttr objects (defined below).

- **Personal attributes:** [PERS ATTR: <ADDR = addrObj> <POB = LOC OBJ> <DOB = TIME OBJ> <ID = integer> <gender=M|F> <height=integer> <weight=integer> <eye = brown | blue | green...> <hair=brown|blonde|red|...>], where LocObj is place of birth, TimeObj is date of birth, height is measured in centimeters, weight/mass is measured in grams, eye and hair color are scalar types from a finite set (e.g., “blonde”, “hazel”, etc.), and gender is a scalar from a finite set.
 - **Person-to-person relationship:** [PERS PERS REL: <PersObj> <PersObj> <relnType = sibling | parent | offspring | coworker | neighbor | collaborator | colleague | friend | enemy | subordinate | enemy | friend>], where rel_type is a scalar type from a finite set, e.g., sibling, coworker, neighbor, collaborator. PersObj is defined above.
 - **Philosophy, religion, doctrine:** [PHILOSOPHY: <CompEvent> <Epiteuctic>], where <CompEvent> is a sequence of events (situation) leading to a desired state of affairs (potentially modified by <Epiteuctic>).
 - **Potential action/inaction/capability:** [POTENTIAL: <value=realNumber> <scope> <attributedTo>], where value is a real number indicating the degree of potential associated with the SOA to which the modality applies (indicated by Scope) and attributedTo is an indication of the person associated with the potential (e.g., a PersObj associated with *speaker*).
- Citation: Nirenburg,McShane, Annotating Modality, March 19, 2008*
- **Quality Assessment:** [QUALITY: <scope> <closenessToGoal=realNumber>], where closenessToGoal is a realNumber value that specifies the closeness of a situation to a desired situation (as determined, potentially, from comparatives, assertion type, and quantity) and scope refers to the SOA to which a quality is assigned.
 - **Role in event:** [ROLE OBJ: <roleType = Agent | Theme | Experiencer | Aim | Source | Goal | Exception | Patient | Recipient | Beneficiary | Victim | Offender | Location | Time | Cause | Instrument | Manner...> <EventObj>], where EventObj is defined above, and roleType is a scalar type from a finite set (e.g., primary participant, beneficiary, victim, offender, etc.)
 - **Status or state of affairs or change of state:** [SOA: <eventStatusValue=realNumber> <eventObjList> <TimeLine> <Epistemic> <Epiteuctic> <Evaluative>], where eventStatusValue is a value corresponding to whether an event happened (or not), eventObjList is a list of event objects (e.g., a plan) contributing to the current (or a desired) state of affairs, Timeline indicates the duration associated with the event objects, Epistemic includes beliefs associated with the event objects, Epiteuctic is indicative of whether the event objects have been completed, and Evaluative is indicative of attitudes about the event objects. (More may be added at a later date.)
- Citation: Davis, Levin, Mitamura, CMU Event Coref Guidelines March 9 2008*
- **Time Stamp:** [TIME OBJ: <val> <mod> <anchor_val> <set> <anchor_dur>], using Timex2 notation, where val is the normalization of expressions of calendrical/clock times,

geologic times, BCE times, and durations; mod is the normalization of certain modifiers; anchor_val is the normalization of reference calendar/ clock time; set designates set-denoting expressions; anchor_dir is the normalization of directionality.

Citation: Timex2 QuickGuide, November 2003

- **Timeline:** [TIMELINE: <TimeObj> <TimeObj> <duration> <iteration> <ordering = <|> | o | oi | d | di | s | si | m | mi | =...>], where <duration> specifies the time difference between TimeObj2 and TimeObj1, iteration is a pointer to the portion of the timeline that repeats (if any), and ordering specifies the relation between TimeObj1 and TimeObj2 in terms of Allen's relations, <, >, o, oi, d, di, s, si, m, mi, =, etc.

4. Example

One example is given below of linguistic annotations and knowledge units, with the following caveats:

1. These are not exhaustive and not even necessarily correct. The point is not to have a linguistic or philosophical debate (e.g., what is ARGM or what is a normalized time). Rather, the examples below are simply a response to a request to provide an illustration of the *form* of annotations and knowledge units. Experts in each area can fill in the right content later. (See citations in the bibliography).
2. Even the form is probably wrong and up for further discussion, elaboration, modification, etc. This is just a starting point.
3. The focus below is on annotations provided by the team members on TTO3. There are many people outside this team whose annotations and knowledge formalisms should be added (per the listings above).

PART I: LINGUISTIC ANNOTATIONS

Ex: *John demanded that Bill put in the order for the purchase to be undertaken by the end of the month.*

```
[PRED1: <predType=DEMAND > <startSpan=5> <endSpan=12> <argList=ARG1,
ARG2, ARG3>]
[ARG1: <argType=ARG0> <startSpan=0> <endSpan=3>]
[ENT1: <normalizedName=John> <entityType= PER> <startSpan=0> <endSpan=3>]
[THEM ROLE1: <Pred=PRED1> <predOrEntity=ARG1> <roleType= Agent >
<startSpan=0> <endSpan=3>]
[ARG2: <argType=ARG1> <startSpan=19> <endSpan=22>]
[ENT2: <normalizedName=Bill> <entityType= PER> <startSpan=19> <endSpan=22>]
[THEM ROLE2: <Pred=PRED1> <predOrEntity=ARG2> <roleType= Theme >
<startSpan=19> <endSpan=22>]
[ARG3: <argType=ARG2> <startSpan=24> <endSpan=49>]
[THEM ROLE3: <Pred=PRED1> <predOrEntity=ARG3> <roleType= Proposition>
<startSpan=24> <endSpan=39>]
```

[ARG4: <argType=ARGM> <startSpan=51> <endSpan=END>]
[THEM ROLE4: <Pred=PRED1> <predOrEntity=ARG4> <roleType= Aim>
<startSpan=51> <endSpan=END>]
[DIALOG ACT1: <daType = RequestAction> <startSpan=5> <endSpan=35>]
[MODALITY1: <modalityType = Obligative> <startSpan=5> <endSpan=12>]
[COMMITTED BELIEF1: <predOrEntity=PRED1> <status=CB>]
[TIME1: <normalizedTime=[]> <temporalType = S> <inherentTime = S, P>
<assertionType=null><startSpan=5> <endSpan=12>]
[TIME2: <normalizedTime=[]> <temporalType = E > <inherentTime = U, F>
<assertionType=null><startSpan=24> <endSpan=26>]
[TIME3: <normalizedTime=[]> <temporalType = E> <inherentTime = U, F>
<assertionType=null><startSpan=64> <endSpan=73>]
[TIME4: <normalizedTime=[by March 31 2004]> <temporalType = D> <inherentTime
= S, F> <assertionType=null><startSpan=93> <endSpan=97>]
[EVENT STATUS: <Pred1> <status = happened >]

PART II: KNOWLEDGE UNITS

Ex: John demanded that Bill put in the order for the purchase to be undertaken by the end of the month.

[PERS OBJ1: <PersNameObj1> <AddrObj1> <PersAttrList1>]
[PERS OBJ2: <PersNameObj2> <AddrObj2> <PersAttrList2>]
[EVENT OBJ1: <eventType=kb-ptr-DEMAND> <TimeObj1> <LocObj1>
<persObjList1>]
[EVENT OBJ2: <eventType=kb-ptr-PURCHASE> <TimeObj2> <LocObj2>
<persObjList2>]
[PERS PERS REL1: <PersObj1> <PersObj2> <relnType = subordinate >]
[DEONTIC1: <value=.9> <scope=EVENT OBJ1> <attributedTo=PERS OBJ1>]
[PERS ATTR1: <ADDR = addrObj1> <POB = LOC OBJ1> <DOB = TIME OBJ1>
<ID = 101> <gender=M> <height=183> <weight=440000> <eye = green> <hair=red>]
[PERS ATTR2: <ADDR = addrObj2> <POB = LOC OBJ2> <DOB = TIME OBJ2>
<ID = 102> <gender=M> <height=179> <weight=420000> <eye = brown>
<hair=blonde>]

5. References (Note: References 1-8 below can be found at the following website:
<http://intranet.umiacs.umd.edu/conferences/sapm05/Annotation-Utility.html>)

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Appendix A: Matrix of Linguistic Annotations and Knowledge Units

Applet Viewer: `bonnieGridDisplay.LinguisticKnowledgeAPIApplet.class`

	ComposEv...	Condition	Confidence	Deontic	Epistemic	Epieuetic	Evaluative	Event	EventEvent...	Intent	Location	Organization	OtherAttr	OtherEntRel	OtherObj	Permission
Argument	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aspect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assert Type	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attr Struct	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commit Be...	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Commun ...	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compare	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Coref Com...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coref Event	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Coref Simp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dialog Act	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Dialog Fun...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dialog Link	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disc Rein	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Entity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Event Status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lexical Rel...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Modality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Morph Class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pred	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rer Type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rhet Dev	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sent Struct	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soc Reg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temp Con...	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Them Role	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Word Sense	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Applet started.

Applet.class										
Applet	Person	PersAttr	PersPars	Philosophy	Potential	Quality	Role	StateOfAffairs	Time	Timeline
Argument	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aspect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Assert Type	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Attr Struct	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commit Be...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commun ...	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Compare	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coref Com...	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coref Event	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Coref Simp	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dialog Act	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dialog Fun...	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dialog Link	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Disc Rein	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Entity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Event Status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lexical Rel...	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Modality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Morph Class	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pred	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ref Type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Rhet Dev	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sent Struct	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soc Reg	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temp Con...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Them Role	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Word Sense	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Applet starte