UBY – A Large-Scale Unified Lexical-Semantic Resource Based on LMF

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http://www.ukp.tu-darmstadt.de/uby/

UBY in a Nutshell

Developing a large-scale unified lexical-semantic resource (LSR) in a standardized format for NLP

Motivation:

- *Problem*: Limited resource coverage in NLP
  - *Solution*: Integration of LSRs
- *Problem*: Incompatible formats of (integrated) LSRs
  - *Solution*: Standards for modeling LSRs

Vision: *One-stop resource*

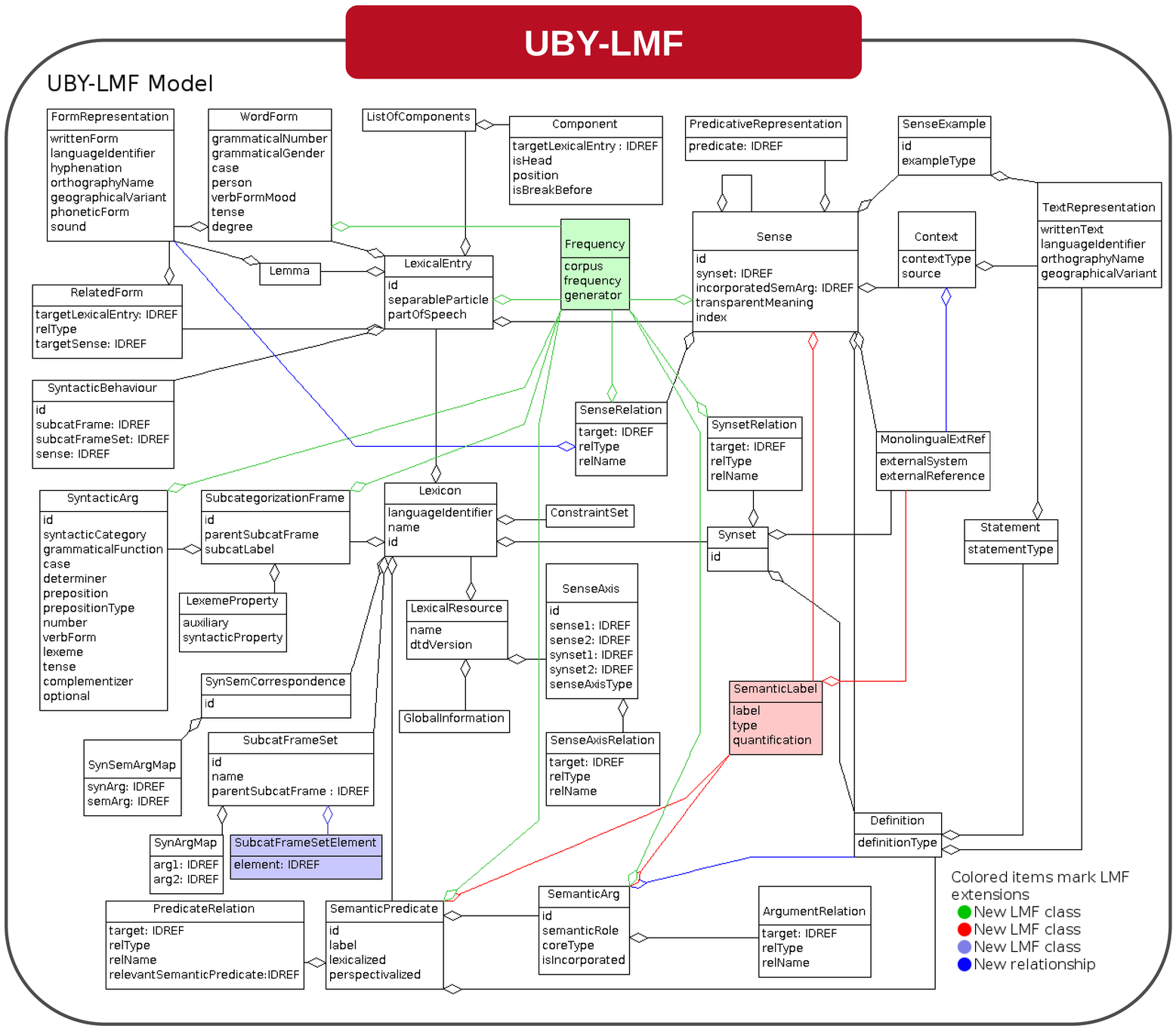
Contributions:

1. **UBY-LMF**: Lexicon Model
   - ISO Standard Lexical Markup Framework (LMF)
   - Expert-built and collaboratively created LSRs
   - Fine-grained modeling of information types
2. **UBY**
   - 9 LSRs in English and German
   - 9 pairwise sense alignments between LSRs
3. **UBY-API**:
   - **Uniform access** to LSRs in UBY via JAVA API

Applications:

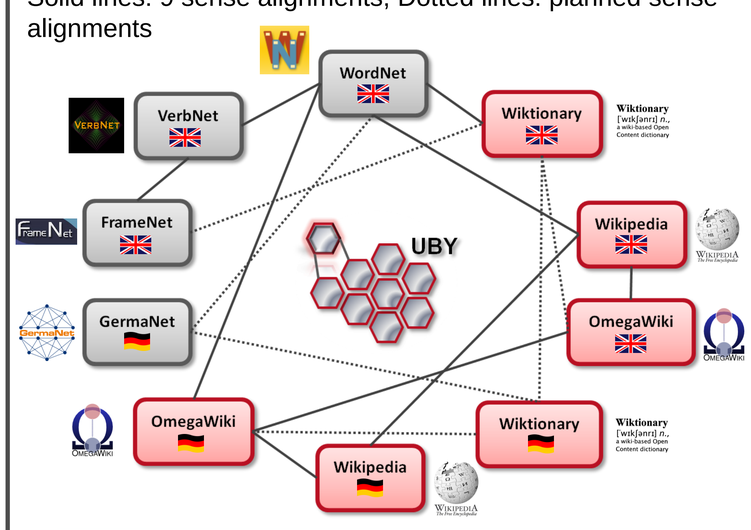
Word Sense Disambiguation,
Information Extraction,
Machine Translation,
Question Answering,…

UBY-LMF



UBY

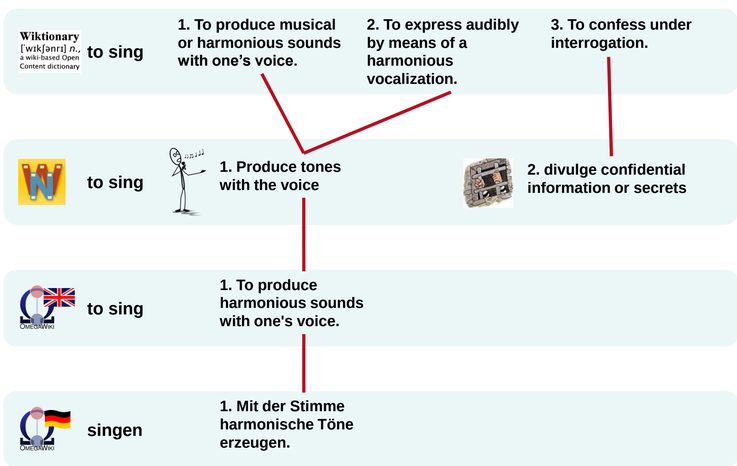
10 UBY Lexicons
Solid lines: 9 sense alignments; Dotted lines: planned sense alignments



UBY Lexicon	Lexical Entry	Sense	Sense Relation
FrameNet 1.5	9,704	11,942	-
GermaNet 6.0	83,091	93,407	329,213
OmegaWiki-DE	30,967	34,691	60,054
OmegaWiki-EN	51,715	57,921	85,952
Wikipedia-DE	790,430	838,428	571,286
Wikipedia-EN	2,712,117	2,921,455	3,364,083
Wiktionary-DE	85,575	72,752	434,358
Wiktionary-EN	335,749	421,848	716,595
WordNet 3.0	156,584	206,978	8,559
VerbNet	3,962	31,891	-
UBY	**4,259,894**	**4,691,313**	**5,570,100**

Sense Alignments

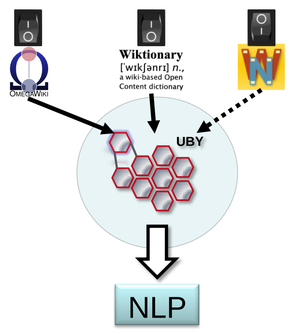
Enable **semantic operability** between resources in UBY:



- Senses linked by **SenseAxis** class
  - Currently 758 435 SenseAxis instances
- **Existing alignments**
  - Created by experts, users, or automatically
- **Automatic alignments**
  - Created by **Aligment Framework**:
    - Cross-lingual alignment (OmegaWiki-DE – WordNet)
    - Based on semantic similarity (+ machine translation)
- **Planned alignments**
  - OmegaWiki-EN – Wiktionary,…

Using UBY

UBY-API
- JAVA with Hibernate
- NLP application:
  - Easy *swapping* of resources
  - Easy *combination* of resources



Open licenses for data and software:
- UBY-API, LSR to UBY conversion routines: http://code.google.com/p/uby/
- UBY-LMF DTD, UBY release 1.0 (MySQL database dump): www.ukp.tu-darmstadt.de/uby/

See also

UBY-LMF
Judith Eckle-Kohler, Iryna Gurevych, Silvana Hartmann, Michael Matuschek, and Christian M. Meyer: **UBY-LMF – A Uniform Model for Standardizing Heterogeneous Lexical-Semantic Resources in ISO-LMF**, in: Proceedings of the 8th International Conference on Language Resources and Evaluation (LREC), (to appear), May 2012. Istanbul, Turkey.

Subcat-LMF
Judith Eckle-Kohler and Iryna Gurevych: **Subcat-LMF – Fleshing out a standardized format for subcategorization frame interoperability**, in: Proceedings of the 13th Conference of the European Chapter of the Association for Computational Linguistics (EACL), (to appear), April 2012. Avignon, France.

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