Towards connecting scholarly editions to corpora in the LiLa (Linking Latin) Knowledge Base of linguistic resources

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Conference | Wuppertal, Germany | 17 December 2019

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Develops computational **methods** and **formalisms** to answer linguistics questions.

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Natural Language Processing

Solves **engineering** problems arising from the analysis of natural language text.

(adapted from Eisner, 2016)

Automatic language processing requires linguistic resources and NLP tools

Dictionary collection of words and phrases with information about them

lexicon dictionary/list of words, typically for computational purposes

thesaurus words grouped together according to similarity of meaning

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Latin is the **most resourced** historical language

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- Increases productivity
- Improves efficiency
- More effective knowledge organisation

Linked Data: Semantic Web technology

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A solution

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- Allows us to build systems that can reason across the web and answer complex questions

Linked Data
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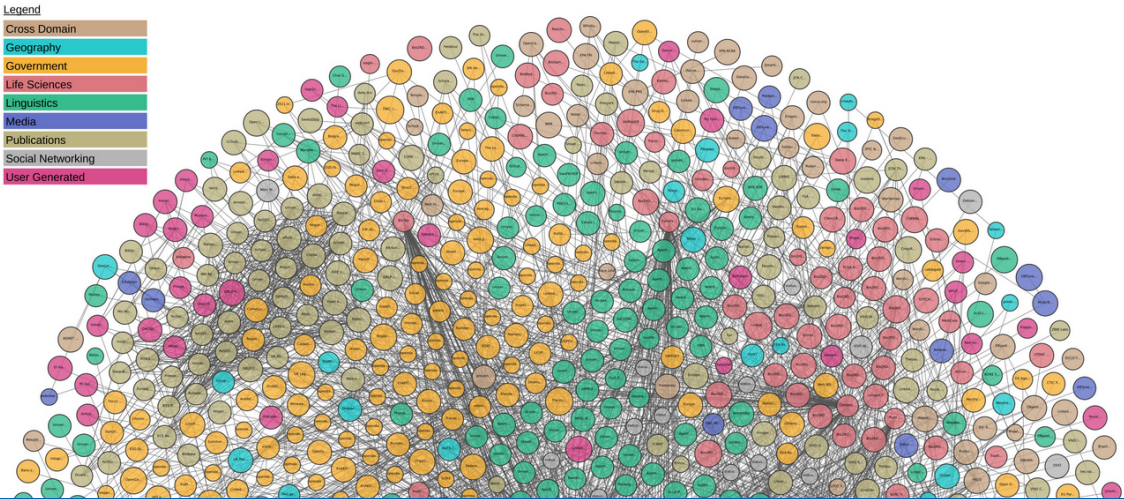
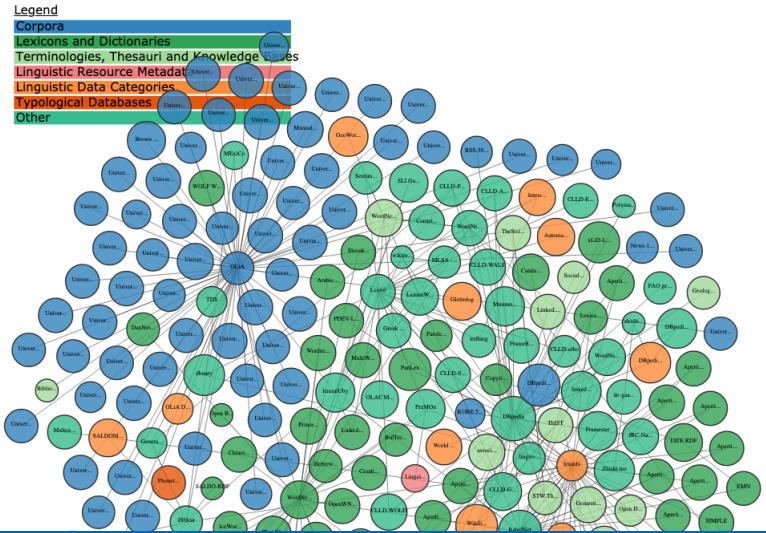
- Relationships are described by **ontologies** or vocabularies of knowledge representation

Linked Data
Many domains



Linguistic Linked Data

Linguistics



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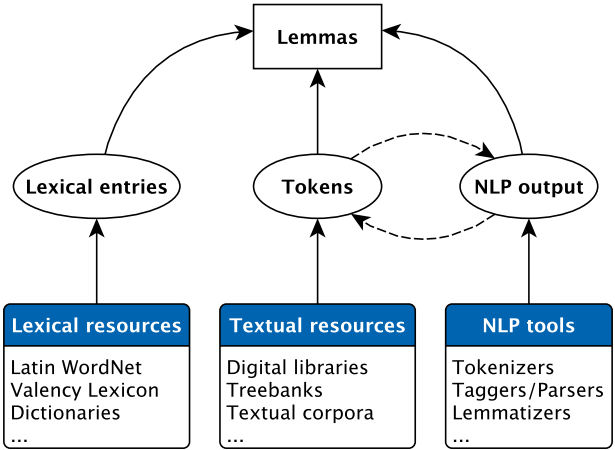
- **Funding**: ERC Consolidator Grant, 2M EUR
- **Duration**: 2018-2023
- **Team**: 9 staff + student assistants
- **Website**: `https://lila-erc.eu`

- **Objective**: Knowledge Base of Linguistic Resources & Natural Language Processing Tools
- **Method**: Linked Data paradigm (FAIR principles)
- **Purpose**: Foster resource/data interoperability

LiLa: Structure

Lemmas as connectors



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Lemma bank

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`http://www.lemlat3.eu/`

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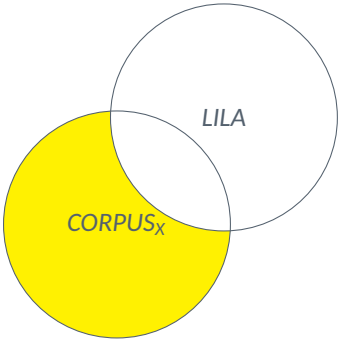

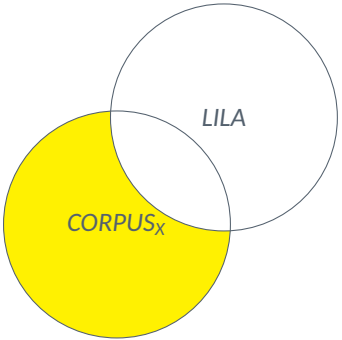

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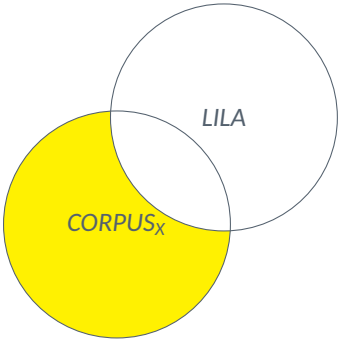

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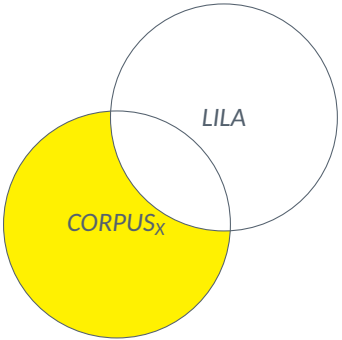

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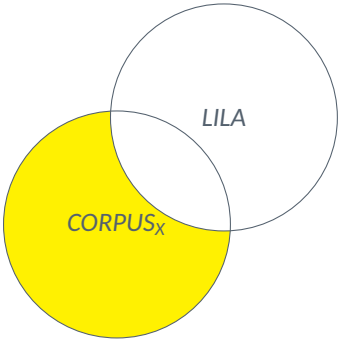

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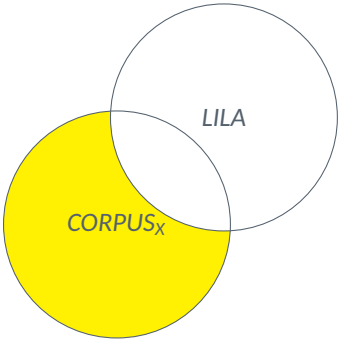

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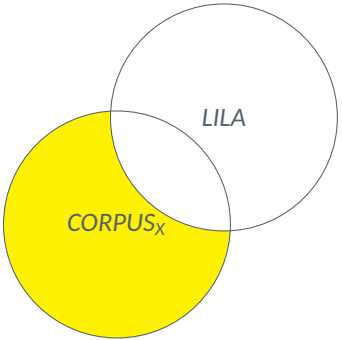

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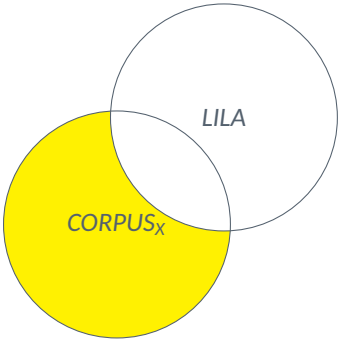

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Manual fix

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- NIF (NLP Interchange Format) and POWLA (OWL + PAULA, Potsdamer Austauschformat Linguistischer Annotationen) for corpus annotation

LiLa

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Triplestore

LiLa = database of triples =

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LiLa: Overview

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- Corpora
  - ☑ Index Thomisticus Treebank (*Summa contra Gentiles*)
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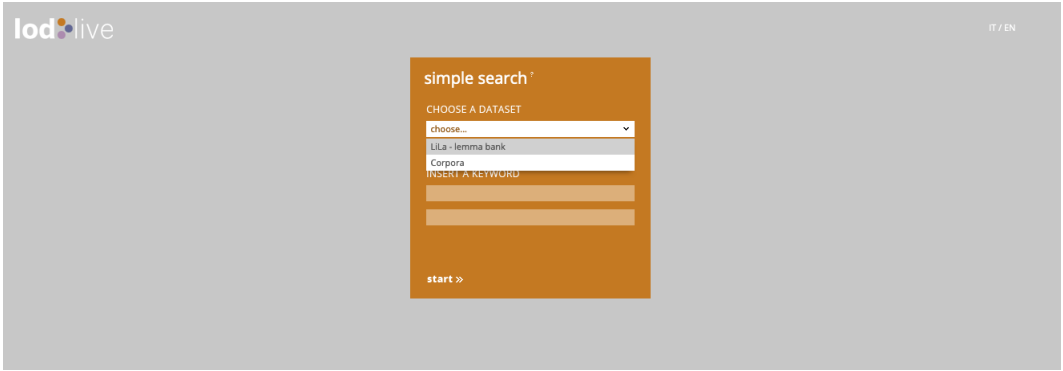
LiLa: Structure

Querying the lemma bank



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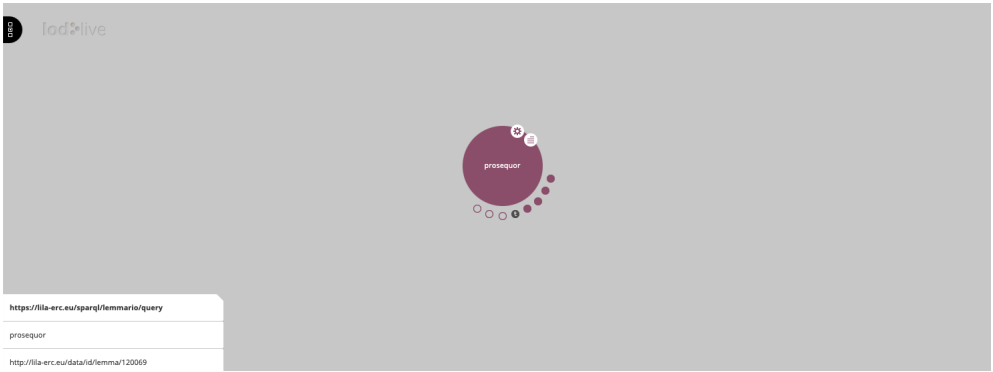
An example: LOD view of ITTB token lemma *prosequor*



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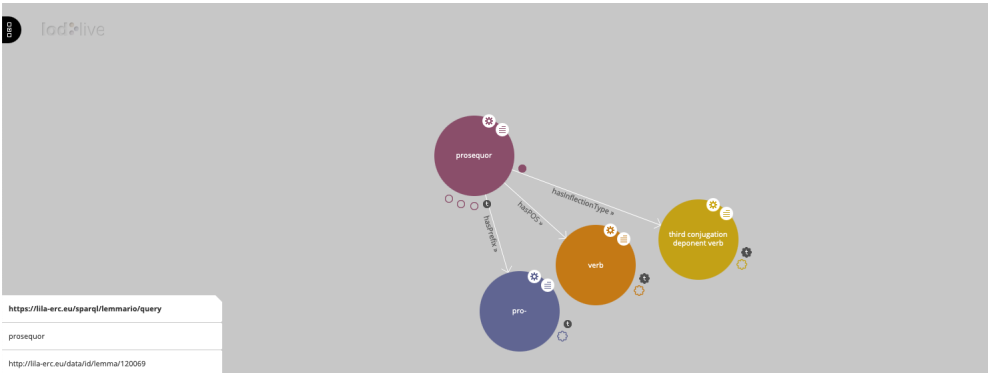

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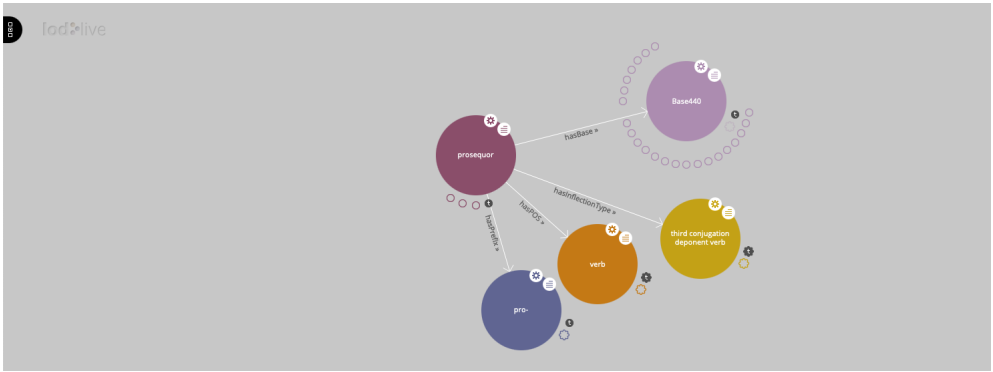

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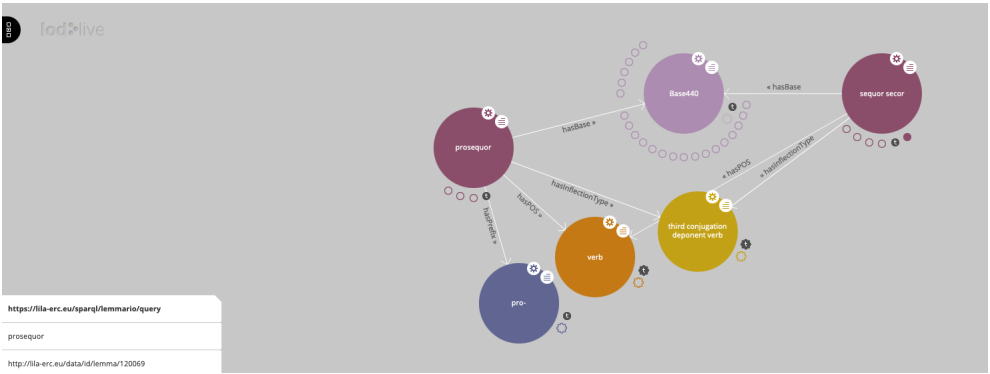

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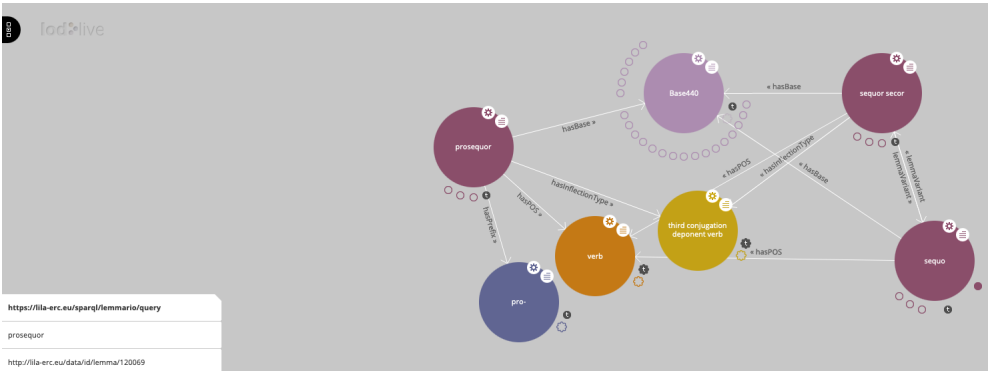

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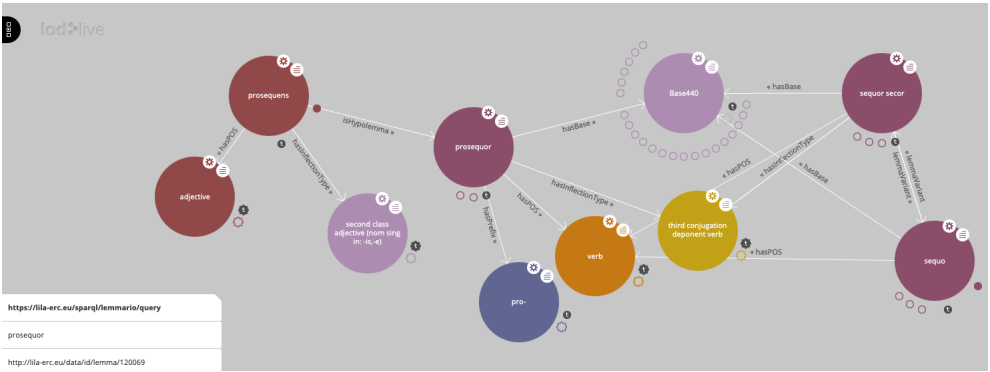

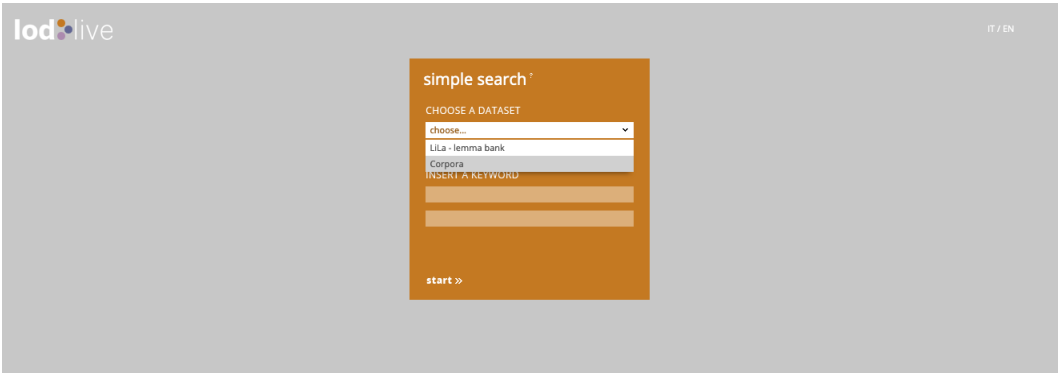
lodlive
IT / EN
simple search
CHOOSE A DATASET
choose...
LiLa - lemma bank
Corpora
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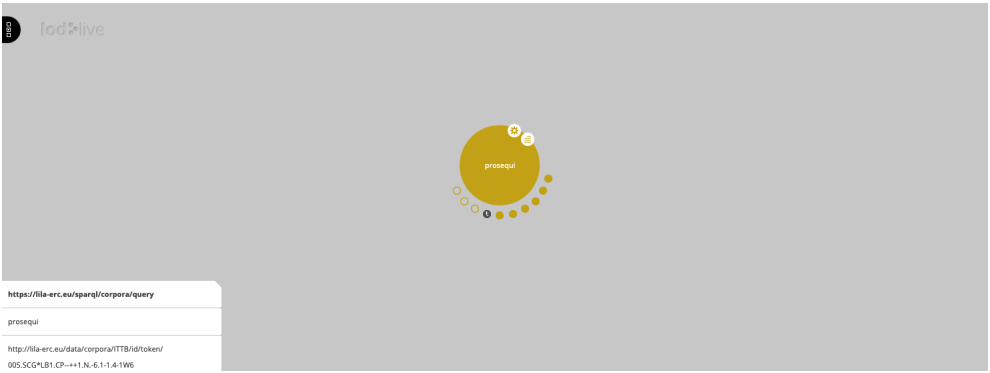

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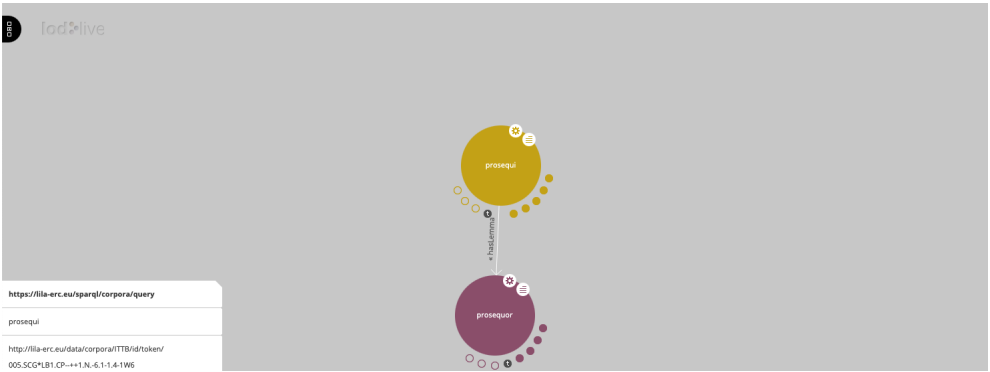

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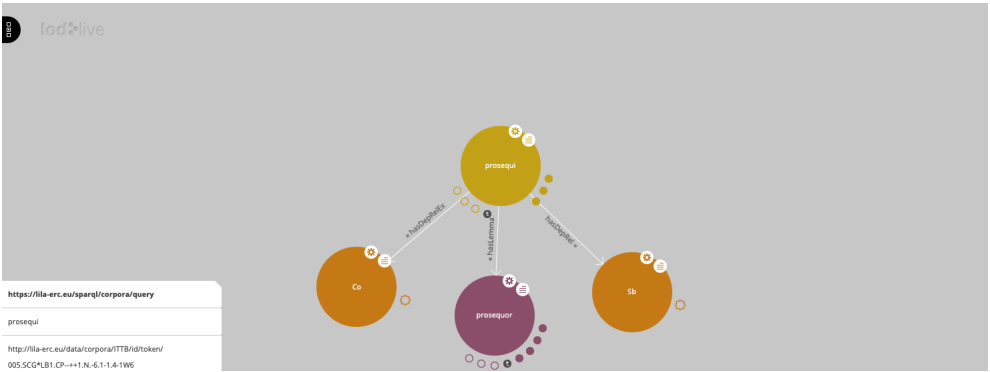

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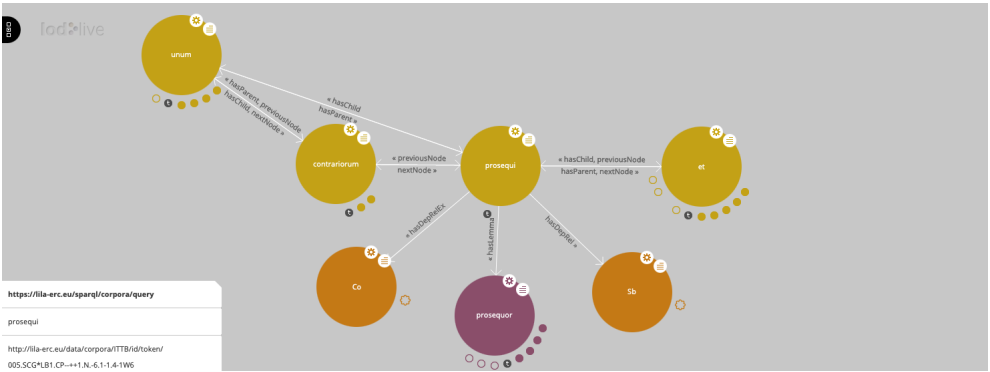

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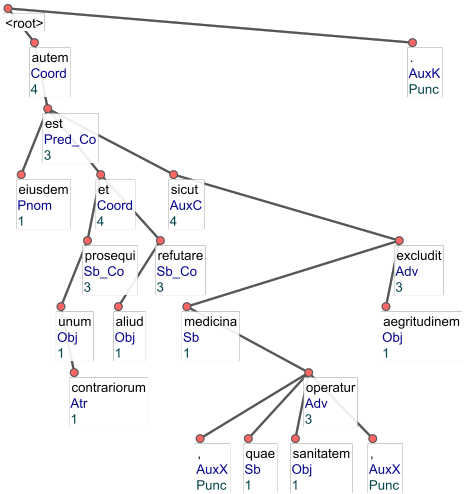
eiusdem autem est ***unum contrariorum prosequi et*** *aliud refutare sicut medicina , quae sanitatem operatur , aegritudinem excludit .* (ITTB, 1.1.6)

Now it belongs to the same thing ***to pursue one contrary and*** *to remove the other: thus medicine, which effects health, removes sickness.* (Trans. Laurence Shapcote)



https://lila-erc.eu/lodlive/

LiLa reflects the annotation granularity of the resources it connects

No data enrichment or further analysis is performed

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- Online!

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> *"[…] As of yet only a relatively small number of born-digital editions of […] Latin texts exists […]."* (Fischer, 2017)

Of these, only a handful provide (some) data in Linked Data format.

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  5. **Palaeographic,** e.g. abbreviations, ligatures, glyphs, allographs, etc. (`<app>`)

Linked Data support:

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- ☑ **Bibliographic + Textual**
  - FABiO (FRBR-aligned Bibliographic Ontology)
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Scholarly Edition
Information layers

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- ☐ **Palaeographic**
  - Peter Stokes: DigiPal project
  - Paolo Monella: VeDPH seminar, 4th December 2019

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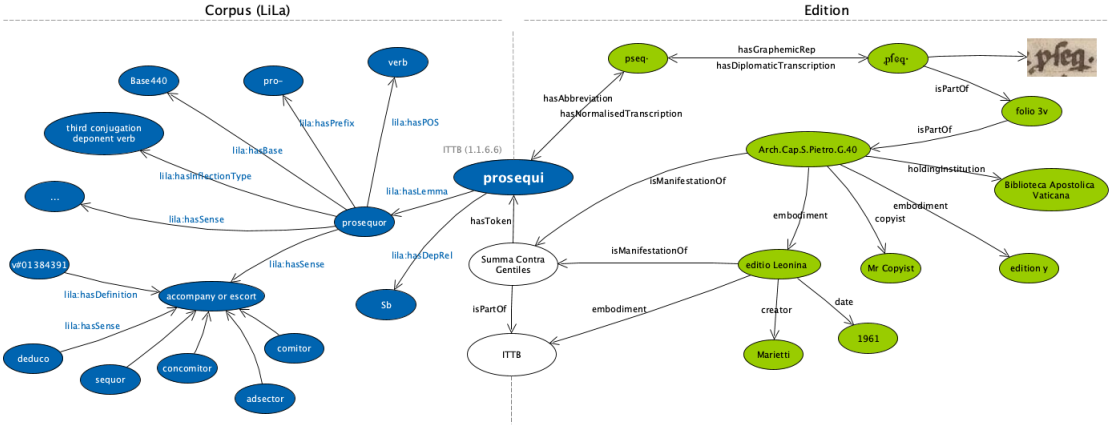
Initiatives:

- Workshop *Scholarly Digital Editions, Graph Data-Models and Semantic Web Technologies* (GraphSDE, 3-4.06.2019)

Scholarly editions

Hypothetical (and brutally simplistic) Corpus + Edition Linked Data scenario



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Conclusion

Scholarly Editions and Corpora: Mutual benefits

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Linguistic corpora:

- provide new forms of access to editions
- provide the bigger picture, i.e. large and diachronic linguistic context

Scholarly editions:

- provide new forms of access to corpora
- provide connections to cultural heritage objects
- provide philological layer of annotation (textual criticism)

Thanks!
Get in touch

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@ERC_LiLa

https://github.com/CIRCSE

https://lila-erc.eu

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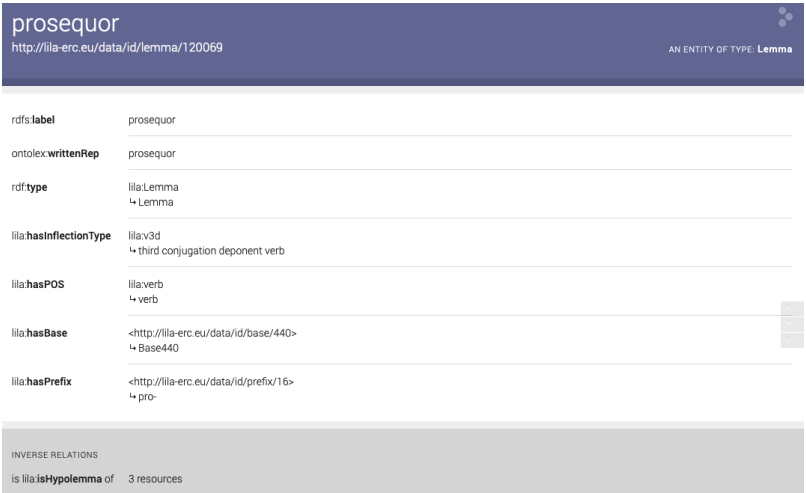
LiLa: Structure

An example: LOD view of LEMLAT lemma *prosequor*



prosequor

http://lila-erc.eu/data/id/lemma/120069

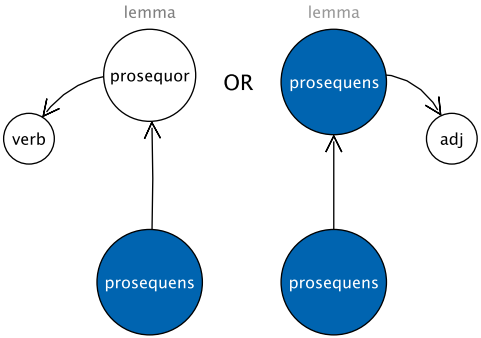
AN ENTITY OF TYPE: **Lemma**

rdfs:**label**	prosequor
ontolex:**writtenRep**	prosequor
rdf:**type**	lila:Lemma ↳ Lemma
lila:**hasInflectionType**	lila:v3d ↳ third conjugation deponent verb
lila:**hasPOS**	lila:verb ↳ verb
lila:**hasBase**	<http://lila-erc.eu/data/id/base/440> ↳ Base440
lila:**hasPrefix**	<http://lila-erc.eu/data/id/prefix/16> ↳ pro-

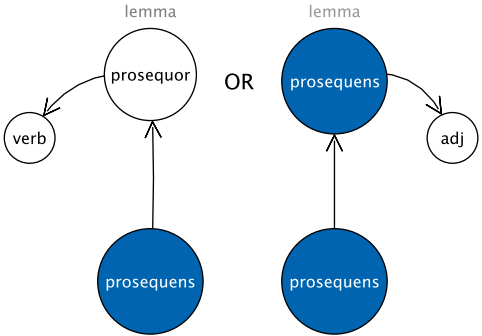
INVERSE RELATIONS

is lila:**isHypolemma** of 3 resources

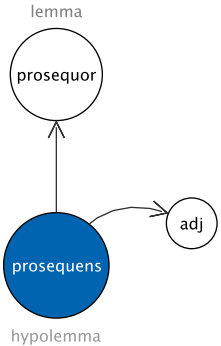
Ambiguity


lemma
prosequor
verb
prosequens
OR
lemma
prosequens
adj
prosequens

Ambiguity



Solution



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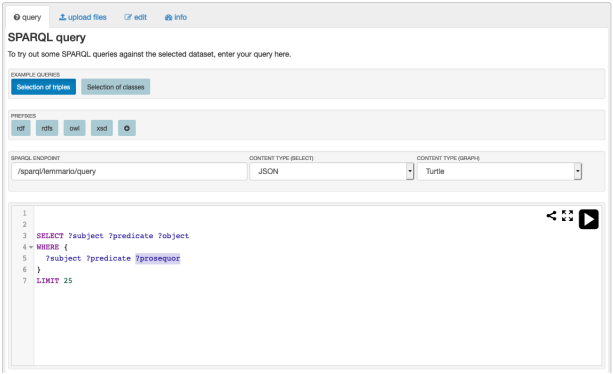
SPARQL endpoint with graphical interface to query against the LiLa triplestore.



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EvaLatin

- Evaluation campaign designed following a long tradition in NLP (MUC, ACE, SemEval, CoNLL…)
- Shared tasks, shared training and test data, shared evaluation metrics
- 3 tasks:
  1. PoS tagging
  2. Lemmatisation
- 3 sub-tasks for each task:
  1. Basic
  2. Cross-Genre
  3. Cross-Time