



UNIVERSITÀ
CATTOLICA
del Sacro Cuore



An Overview of the LiLa Knowledge Base

Motivation, Architecture, Services, and Resources

Marco Passarotti

LiLa Closing Workshop
Università Cattolica del Sacro Cuore, Milan
25th-26th May 2023



This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme - Grant Agreement No. 769994.

Motivation

Why LiLa

Architecture

The overall structure of LiLa

Services

How to query and populate LiLa

Resources

What data you can find in LiLa now

Motivation

Why LiLa

Architecture

The overall structure of LiLa

Services

How to query and populate LiLa

Resources

What data you can find in LiLa now

We have built and collected (for Latin and other languages):

We have built and collected (for Latin and other languages):

- ▶ Textual Resources

We have built and collected (for Latin and other languages):

- ▶ Textual Resources
- ▶ Lexical Resources

We have built and collected (for Latin and other languages):

- ▶ Textual Resources
- ▶ Lexical Resources
- ▶ NLP Tools

We have built and collected (for Latin and other languages):

- ▶ Textual Resources
- ▶ Lexical Resources
- ▶ NLP Tools

Scattered and unconnected

ERC Consolidator Grant 2018-2023

A collection of multifarious, interoperable linguistic resources represented with the same vocabulary for knowledge description (by using common data categories and ontologies)

Interlinking as a Form of Interaction

The Linked Data Principles

...just to be FAIR



- ▶ Use URIs for things (e.g. an entry in a lexicon, a token in a corpus)

The Linked Data Principles

...just to be FAIR



- ▶ Use URIs for things (e.g. an entry in a lexicon, a token in a corpus)
- ▶ Use HTTP URIs to allow people (and machines) to look up things

The Linked Data Principles

...just to be FAIR



- ▶ Use URIs for things (e.g. an entry in a lexicon, a token in a corpus)
- ▶ Use HTTP URIs to allow people (and machines) to look up things
- ▶ Use web standards to represent/query (meta)data, such as RDF and SPARQL

- ▶ Use URIs for things (e.g. an entry in a lexicon, a token in a corpus)
- ▶ Use HTTP URIs to allow people (and machines) to look up things
- ▶ Use web standards to represent/query (meta)data, such as RDF and SPARQL
- ▶ Include links to other URIs

Benefits of Applying LD to Linguistic Resources

Chiarcos et al. (2013)



Benefits of Applying LD to Linguistic Resources

Chiarcos et al. (2013)



- ▶ Representation and Modelling: RDF is a very versatile data model to represent stand-off annotations, dependency parses etc.

Benefits of Applying LD to Linguistic Resources

Chiarcos et al. (2013)



- ▶ Representation and Modelling: RDF is a very versatile data model to represent stand-off annotations, dependency parses etc.
- ▶ Structural/Syntactic Interoperability: data formats and communication protocols (HTTP, URIs, RDF) to ensure data exchange. The systems involved can process the exchanged information, but there is no guarantee that the interpretation is the same

Benefits of Applying LD to Linguistic Resources

Chiarcos et al. (2013)



- ▶ Representation and Modelling: RDF is a very versatile data model to represent stand-off annotations, dependency parses etc.
- ▶ Structural/Syntactic Interoperability: data formats and communication protocols (HTTP, URIs, RDF) to ensure data exchange. The systems involved can process the exchanged information, but there is no guarantee that the interpretation is the same
- ▶ Conceptual Interoperability: when two systems have the ability to automatically interpret exchanged information meaningfully, through common ontologies and re-usable vocabularies: resources are unambiguously linked. What is sent is the same as what is understood

Benefits of Applying LD to Linguistic Resources

Chiarcos et al. (2013)



- ▶ Representation and Modelling: RDF is a very versatile data model to represent stand-off annotations, dependency parses etc.
- ▶ Structural/Syntactic Interoperability: data formats and communication protocols (HTTP, URIs, RDF) to ensure data exchange. The systems involved can process the exchanged information, but there is no guarantee that the interpretation is the same
- ▶ Conceptual Interoperability: when two systems have the ability to automatically interpret exchanged information meaningfully, through common ontologies and re-usable vocabularies: resources are unambiguously linked. What is sent is the same as what is understood
- ▶ Federation: to combine information from physically separated repositories

- ▶ Representation and Modelling: RDF is a very versatile data model to represent stand-off annotations, dependency parses etc.
- ▶ Structural/Syntactic Interoperability: data formats and communication protocols (HTTP, URIs, RDF) to ensure data exchange. The systems involved can process the exchanged information, but there is no guarantee that the interpretation is the same
- ▶ Conceptual Interoperability: when two systems have the ability to automatically interpret exchanged information meaningfully, through common ontologies and re-usable vocabularies: resources are unambiguously linked. What is sent is the same as what is understood
- ▶ Federation: to combine information from physically separated repositories
- ▶ Dynamicity: to provide access to the most recent version of a resource

- ▶ Representation and Modelling: RDF is a very versatile data model to represent stand-off annotations, dependency parses etc.
- ▶ Structural/Syntactic Interoperability: data formats and communication protocols (HTTP, URIs, RDF) to ensure data exchange. The systems involved can process the exchanged information, but there is no guarantee that the interpretation is the same
- ▶ Conceptual Interoperability: when two systems have the ability to automatically interpret exchanged information meaningfully, through common ontologies and re-usable vocabularies: resources are unambiguously linked. What is sent is the same as what is understood
- ▶ Federation: to combine information from physically separated repositories
- ▶ Dynamicity: to provide access to the most recent version of a resource
- ▶ Ecosystem: maintained by a large and active community with common tools and practices

Motivation

Why LiLa

Architecture

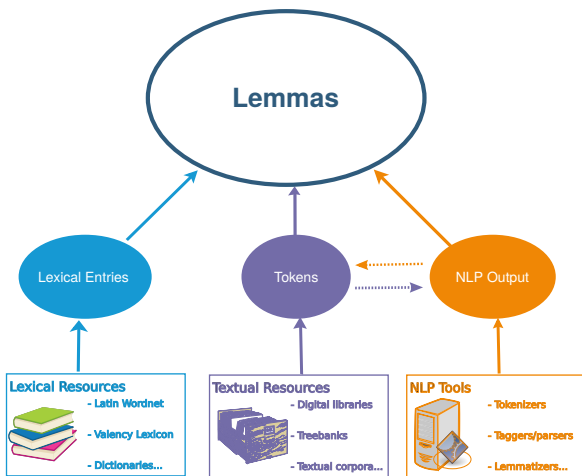
The overall structure of LiLa

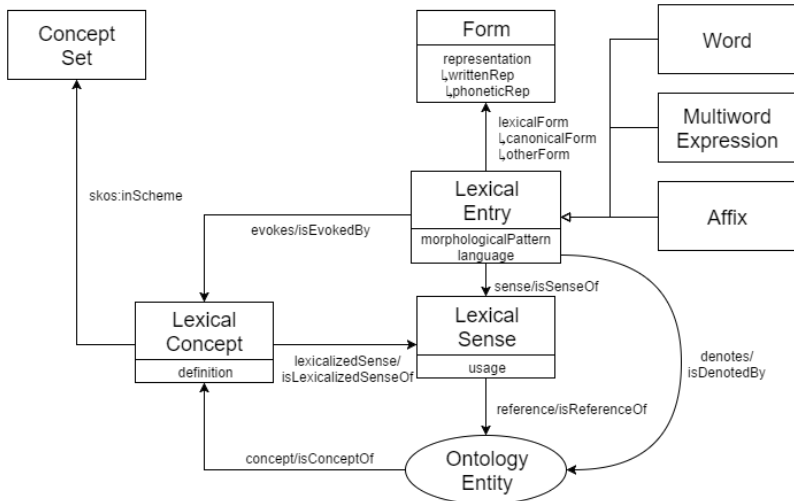
Services

How to query and populate LiLa

Resources

What data you can find in LiLa now





Motivation

Why LiLa

Architecture

The overall structure of LiLa

Services

How to query and populate LiLa

Resources

What data you can find in LiLa now

Lemma Bank Query Interface

<https://lila-erc.eu/query/>

LiLa Search Platform

<http://lila-erc.eu:8080/lila-lisp/>

SPARQL Access Point

<https://lila-erc.eu/sparql/>

TextLinker

`http://lila-erc.eu:8080/LiLaTextLinker/`

Motivation

Why LiLa

Architecture

The overall structure of LiLa

Services

How to query and populate LiLa

Resources

What data you can find in LiLa now

Resources connected so far

<https://lila-erc.eu/data-page/>

- ▶ **Canonical Forms** in the Lemma Bank: approx. 215K
- ▶ **Lexical Entries** in Lexical Resources: approx. 145K
- ▶ **Tokens** in Textual Resources (158 works): approx. 3,5M
- ▶ **Triples**: approx. 70M

Enjoy the LiLa Workshop!

Thank you



LiLa: Linking Latin

Università Cattolica del Sacro Cuore
CIRCSE Research Centre



info@lila-erc.eu



<https://github.com/CIRCSE>



<https://lila-erc.eu>



@ERC_LiLa



Largo Gemelli 1, 20123 Milan, Italy



This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme - Grant Agreement No. 769994.