

Session 2: Terminological Modelling

Elena Montiel-Ponsoda

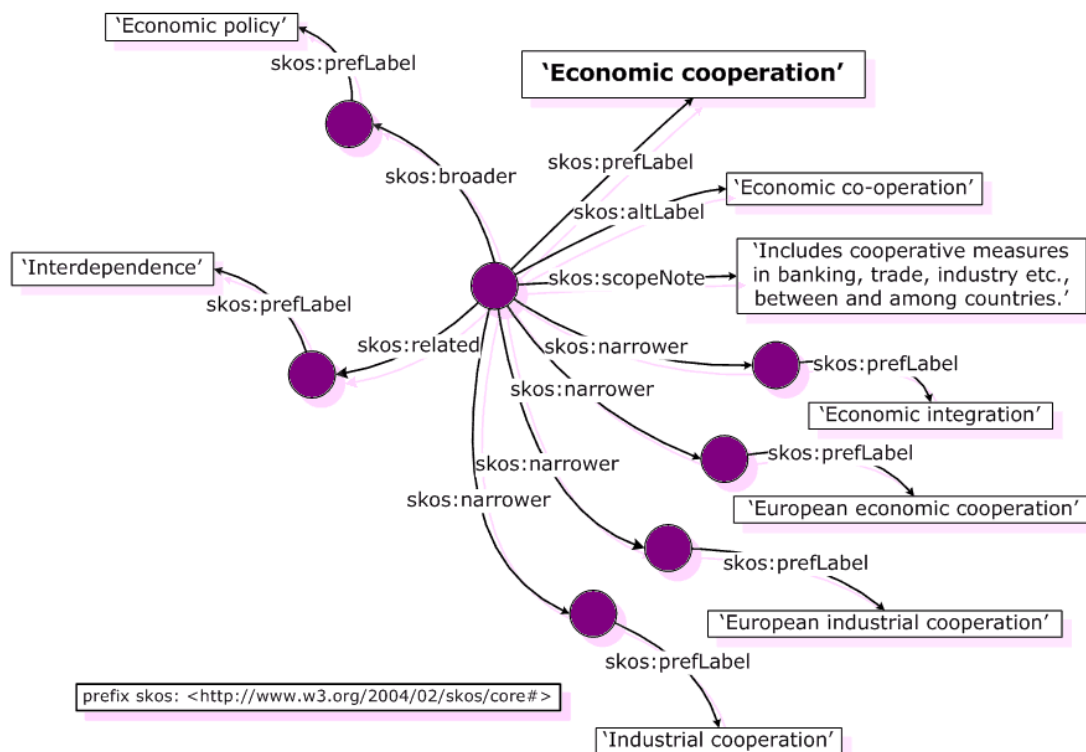
Ontology Engineering Group, Universidad Politécnica de Madrid



Monnet is supported
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1. **SKOS & SKOS-XL**: representing terminological information in the Semantic Web
 - Is this enough? What is the evolution?
2. **LIR – Linguistic Information Repository**: representing terminological information **relative** to an ontology
 - Limitations
3. ***lemon core***: representing **rich linguistic descriptions** (lexical, terminological, etc.) **relative** to ontologies and linked data
 - Extensibility by modules

- SKOS—Simple Knowledge Organization System— model for expressing the basic structure and content of concept schemes such as **thesauri**, **classification schemes**, **subject heading lists**, **taxonomies**, **folksonomies**, and other similar types of controlled vocabulary¹.



(From <http://www.mkbergman.com/date/2007/05/>)

RDF(S), OWL

ifrs:FinancialAssets $\xrightarrow{\text{rdfs:label}}$ “financial assets”@en

SKOS

ifrs:FinancialAssets $\xrightarrow{\text{skos:prefLabel}}$ “financial assets”@en

$\uparrow$
rdfs:SubPropertyOf

SKOS labels: prefLabel, altLabel & hiddenLabel.

5

Agrovoc/agrovoc_skos_200605.rdf - Eclipse Platform

File Project Model Scripts Inference Resource Window Help

http://www.fao.org/aos/agrovoc#c_2108

skos:broader

dactyla

ia

nt

idae

Antilope

Bovinae

◆ Banteng

◆ Bison

◆ Bovin

◆ Boeuf

◆ Bovin de boucherie

◆ Bovin laitier

◆ Vache laitière

◆ Génisse

◆ Taureau

◆ Vache

◆ Veau

◆ Buffle africain

◆ Buffle domestique

◆ Gaur

◆ Yack

7.6...

oc

*agrovoc_skos_200605.rdf

Resource Form

Name: http://www.fao.org/aos/agrovoc#c_2108 Ok

Annotations

skos:altLabel

S Ganado lechero {@es}

skos:changeNote

<@2c48d672:123de745217:-639f>

skos:prefLabel

S Bovin laitier {@fr}

S Dairy cattle {@en}

S Gado leiteiro {@pt}

S Ganado de leche {@es}

S mliekový dobytok {@sk}

S ماشية الألبان {@ar}

S โคขุน {@th}

S 乳牛 {@zh}

S 乳用牛 {@ja}

Incoming References

← skos:broader

◆ Vache laitière

← skos:narrower

◆ Bovin

← skos:related

◆ Lait

Other Properties

type

skos:Concept

skos:broadMatch

skos:broader

◆ Bovin

skos:broaderTransitive

skos:closeMatch

skos:exactMatch

skos:mappingRelation

skos:narrowMatch

skos:narrower

◆ Vache laitière

skos:narrowerTransitive

skos:related

◆ Lait

skos:relatedMatch

skos:semanticRelation

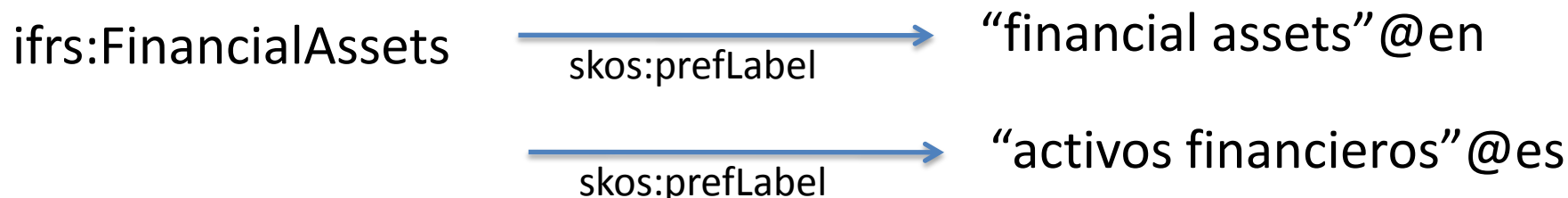
skos:topConceptOf

Properties

- skos:hasTopConcept
- skos:inScheme
- skos:member
- skos:memberList
- skos:semanticRelation
 - skos:broaderTransitive
 - skos:broader
 - skos:mappingRelation
 - skos:narrowerTransitive
 - skos:related
- skos:notation
- comment
- label
- seeAlso
- skos:note
- versionInfo

- SKOS enables a simple form of **multilingual labeling**.

```
ex:asset rdf:type skos:Concept;  
skos:prefLabel "financial assets"@en;  
skos:prefLabel "activos financieros"@es.
```



How can we create **explicit links** between labels?

Say that one is *translation* of the other, *acronym*, etc.?

SKOS-XL

ifrs:FinancialAssets



skosxl:prefLabel

ex:FinancialAssetsLabel

rdf:type

skosxl:Label

class

skosxl:literalForm

"financial assets"@en

SKOS-XL

ifrs:FinancialAssets

skosxl:prefLabel

skosxl:Label

rdf:type

ex:FinancialAssetsLabel1

skosxl:literalForm

“financial assets”@en

skosxl:labelRelation

rdfs:subPropertyOf

ex:isTranslationOf

ex:isTranslationOf

“activos financieros”@es

skosxl:literalForm

ex:FinancialAssetsLabel2

rdf:type

skosxl:Label

skosxl:prefLabel

What is the evolution?

SKOS-XXXXXXXXL ???

LIR

Linguistic Information Repository

OWL ontology

Ontology Element: class,
object property,
datatype property,
instance...

<owl:Class rdf:about="Asset">

lir:hasLexicalEntry

C0013

lir:belongsToLanguage

"EN"

lir:hasPoS

"noun"

lir:hasLexicalization

C00131

rdfs:label

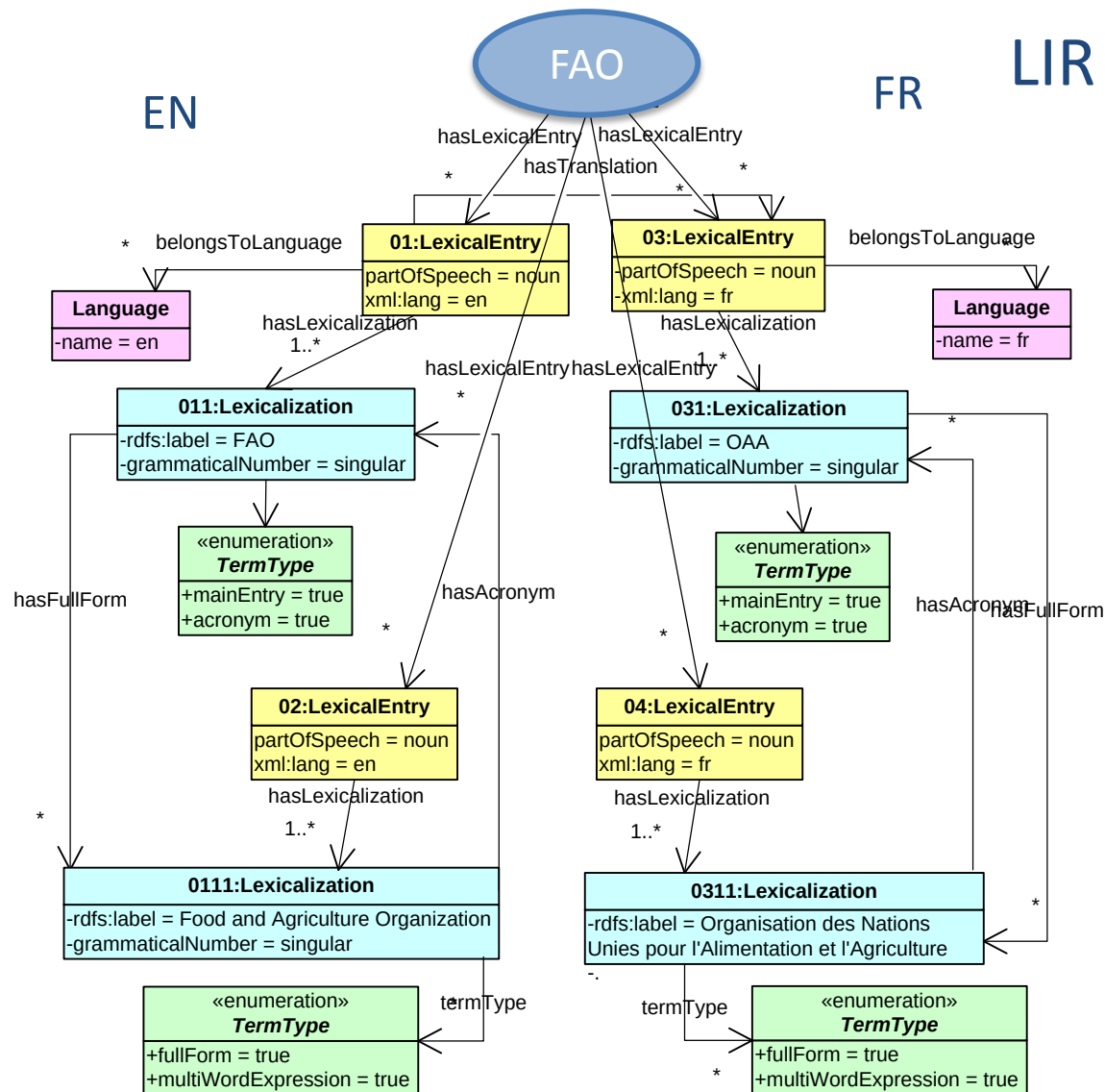
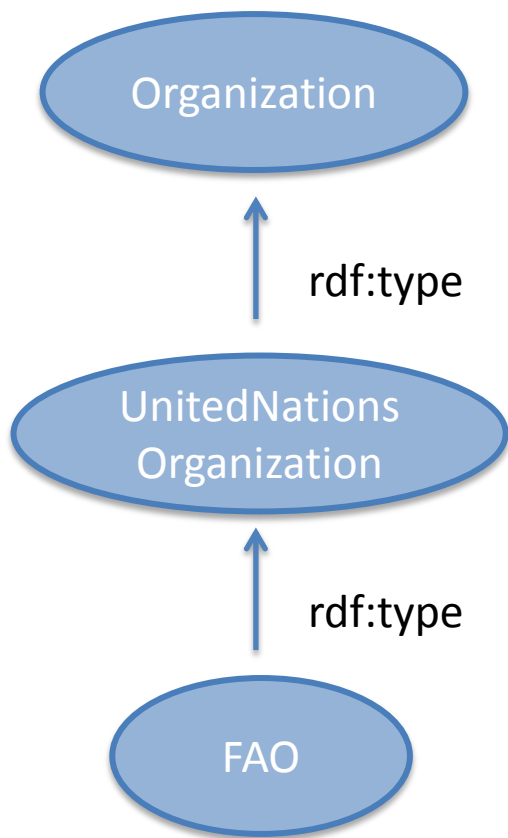
"asset"

lir:hasNumber

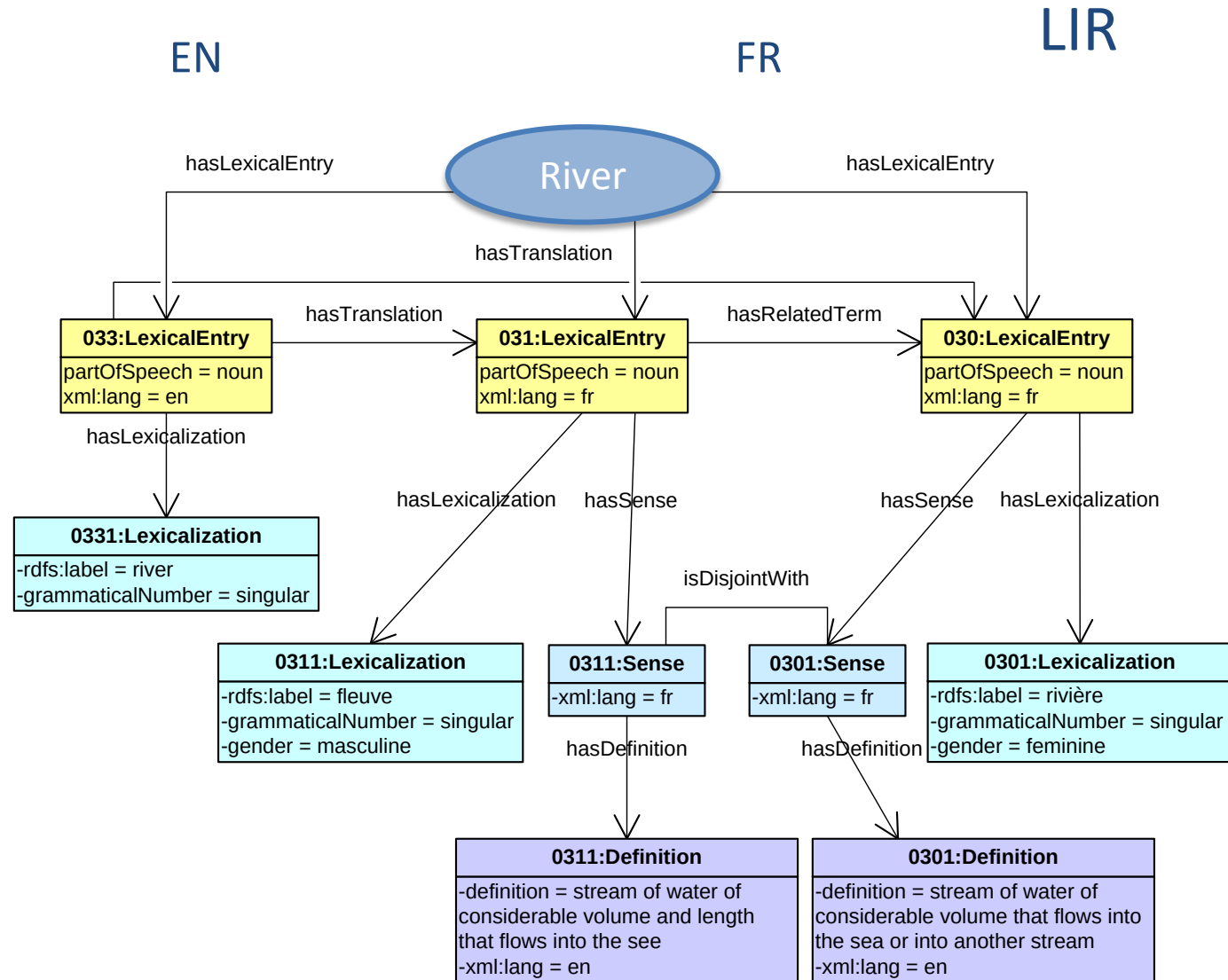
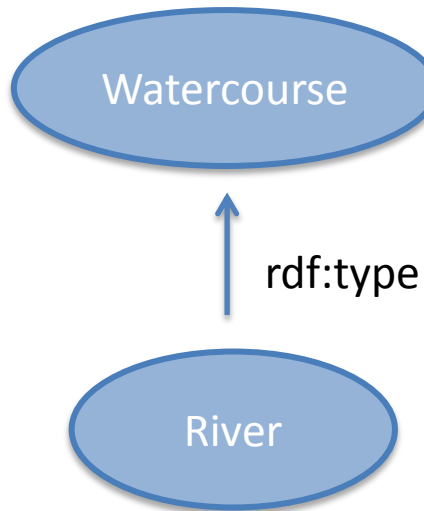
"singular"



OWL ontology



OWL ontology

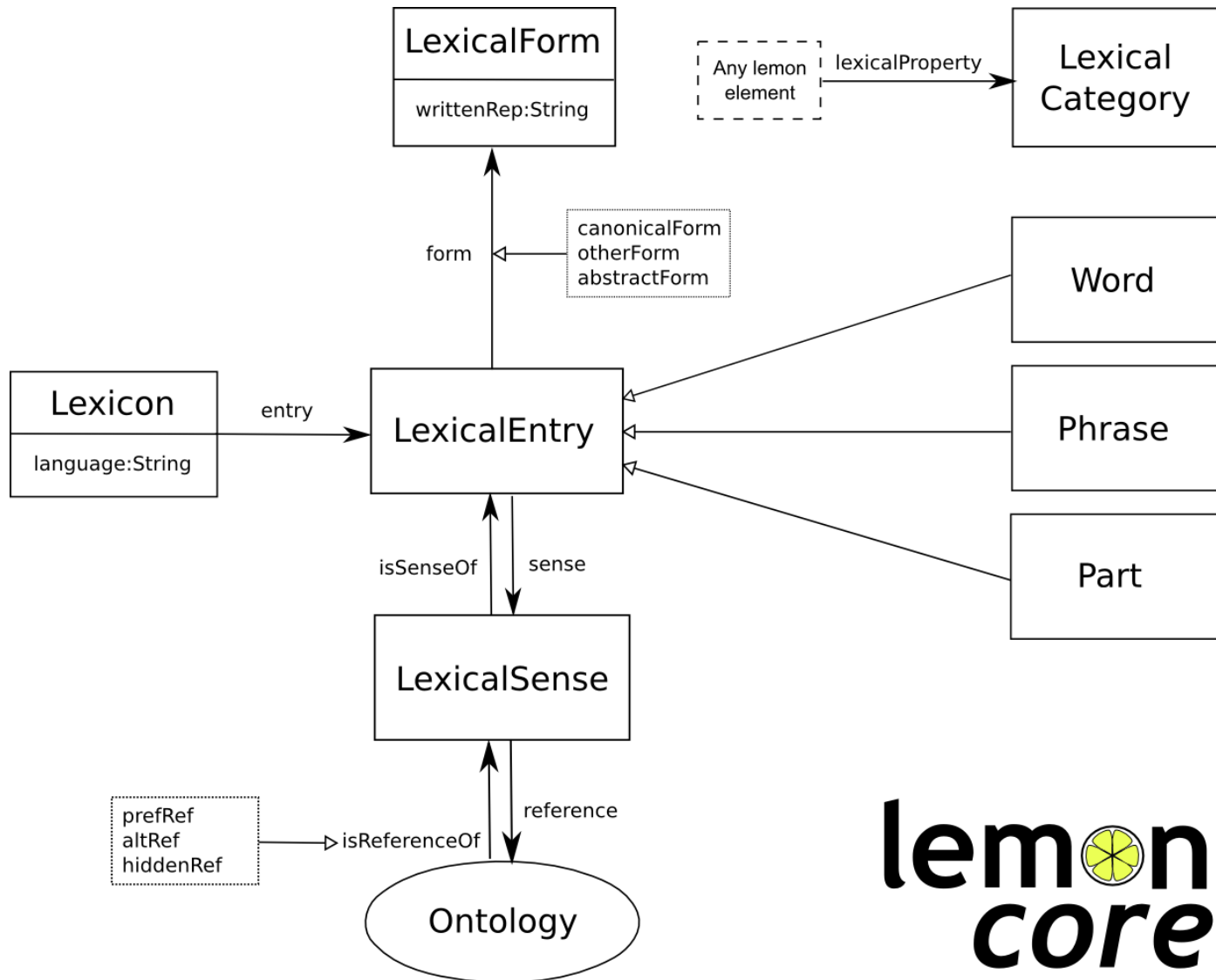


- Fixed set of categories
- Biased towards terminological description
- No relation between senses and ontology entities
- Lack of categories for representing the morphological decomposition of terms
- Lack of categories for defining the syntactic decomposition of terms

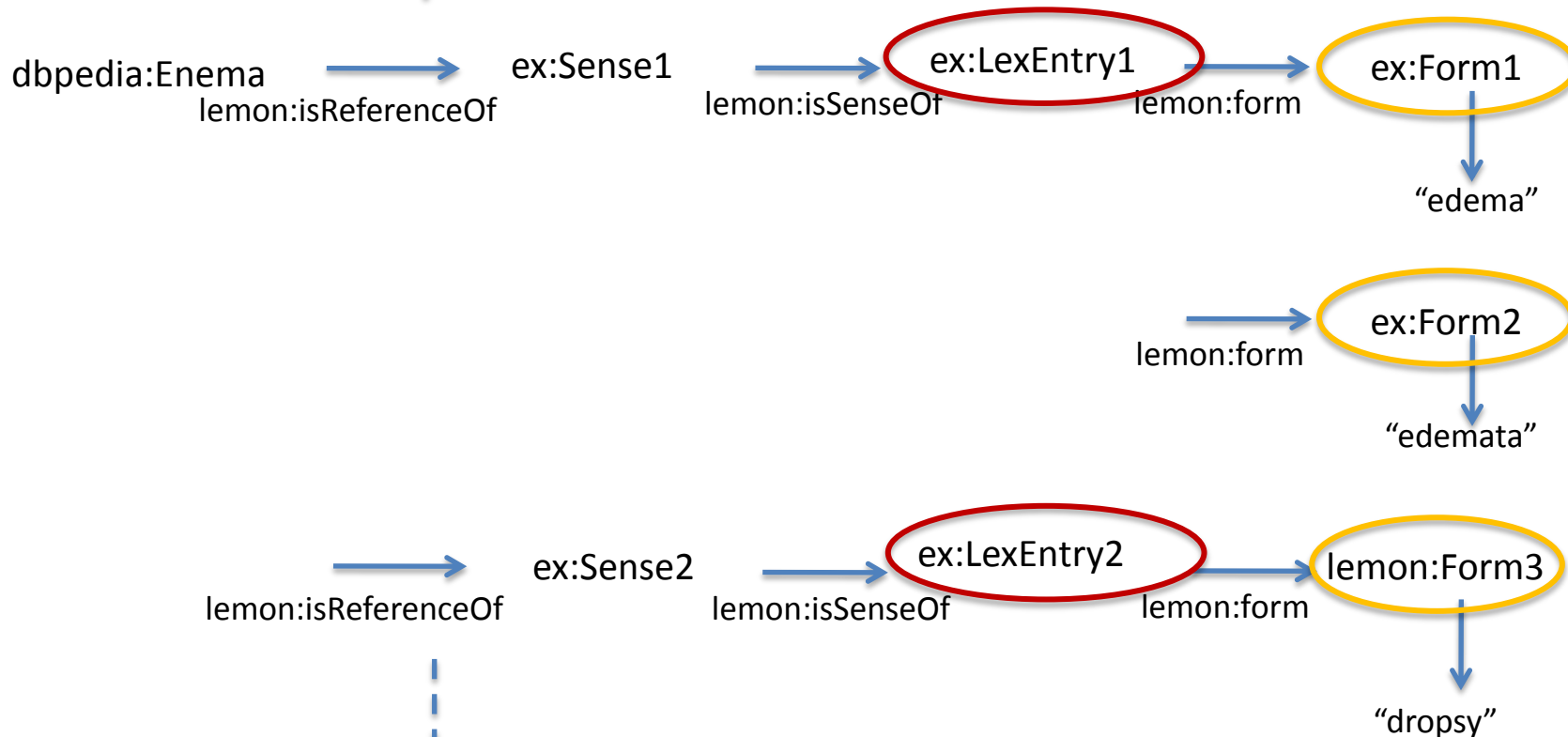
lemon

lemon, RDF-based lexicon model for ontologies

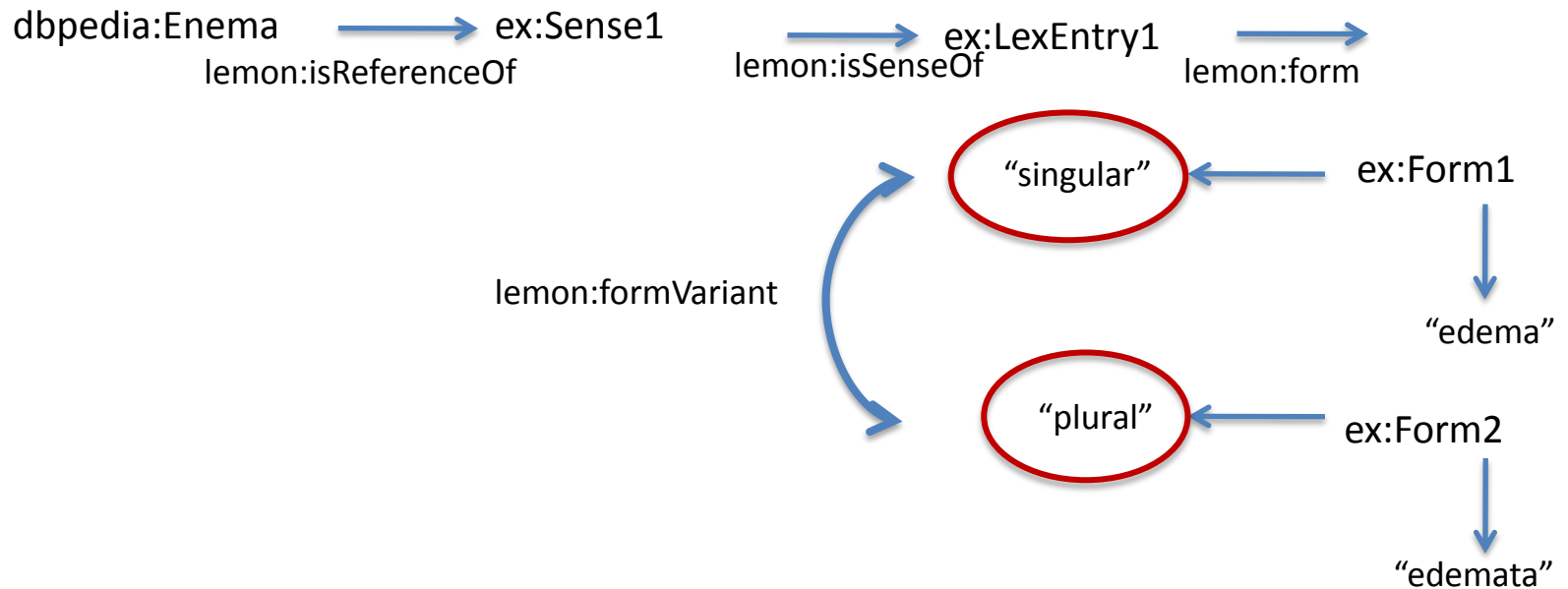
- Main features:
 - Semantics by reference
 - Rich multilingual lexical and terminological description of ontology elements
 - Concise (i.e., trade off between complexity and expressivity)
 - Descriptive not prescriptive (i.e., uses data categories)
 - Modular and extensible



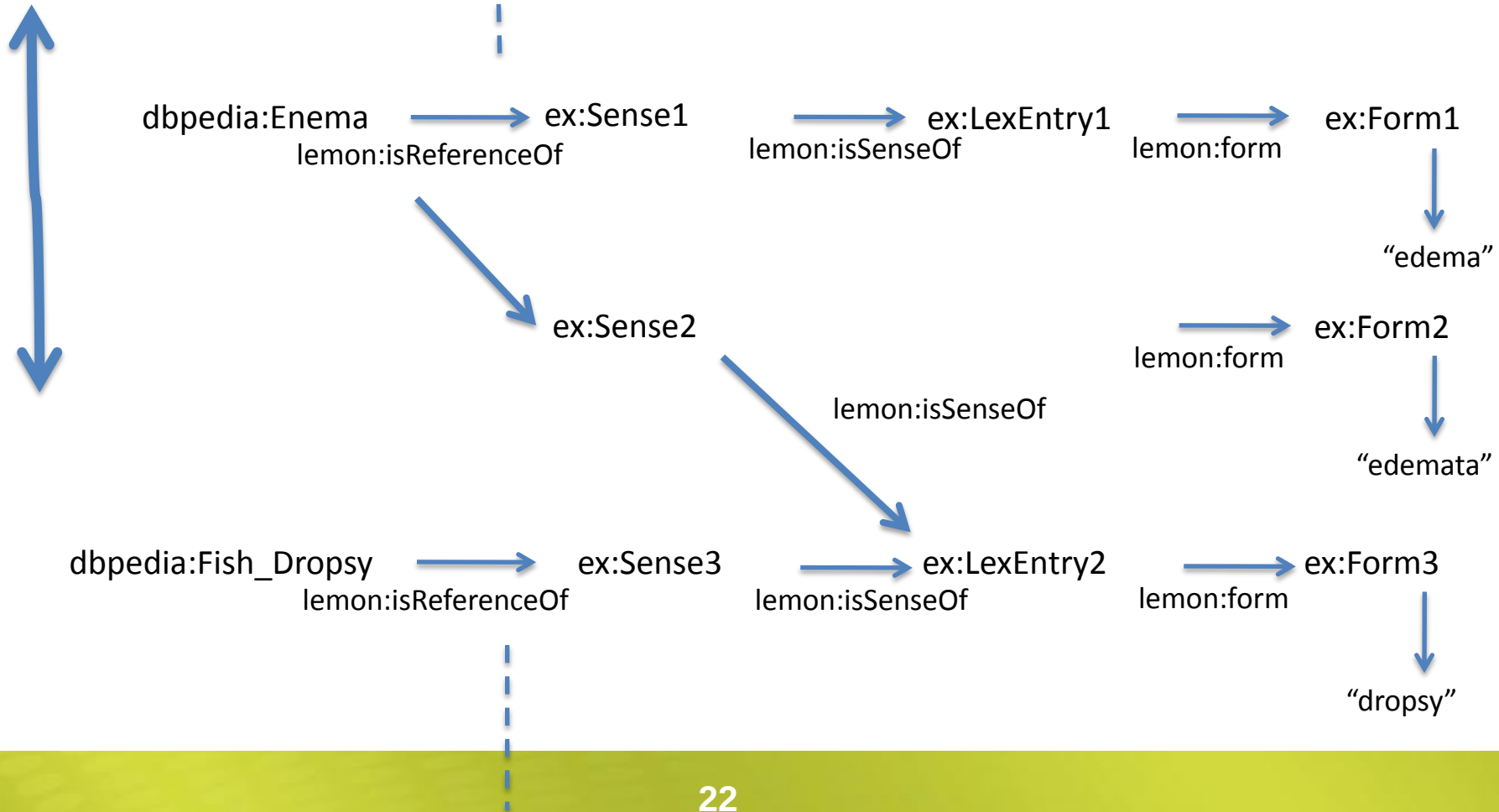
Ontology

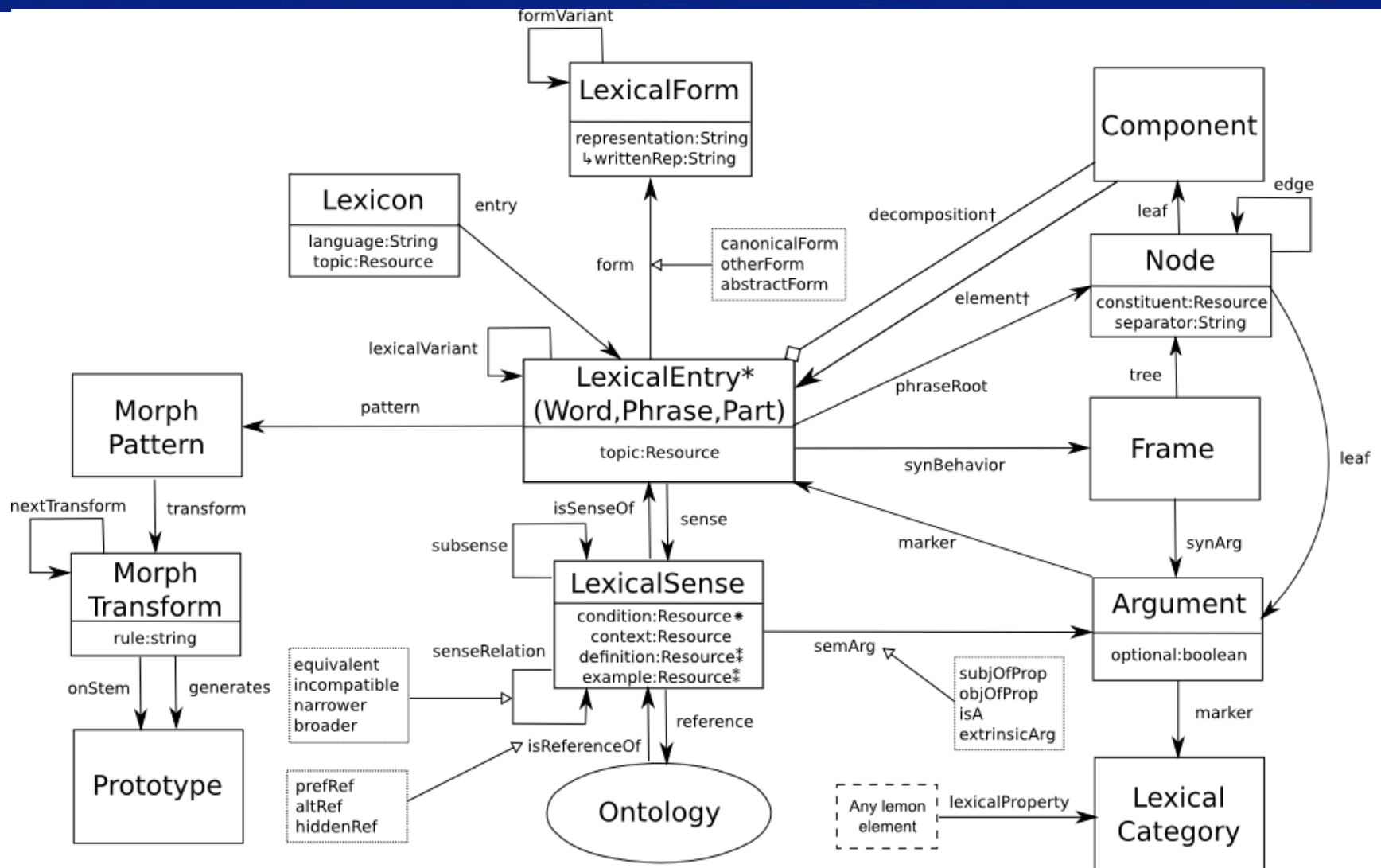
lemon

Ontology

lemon

Ontology

lemon



* LexicalEntry has three subclasses: Word, Phrase, Part
 * definition and example are stated as nodes with a value
 * condition has subproperties propertyDomain and propertyRange
 † decomposition and element may also be used with Frames and Arguments resp.

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