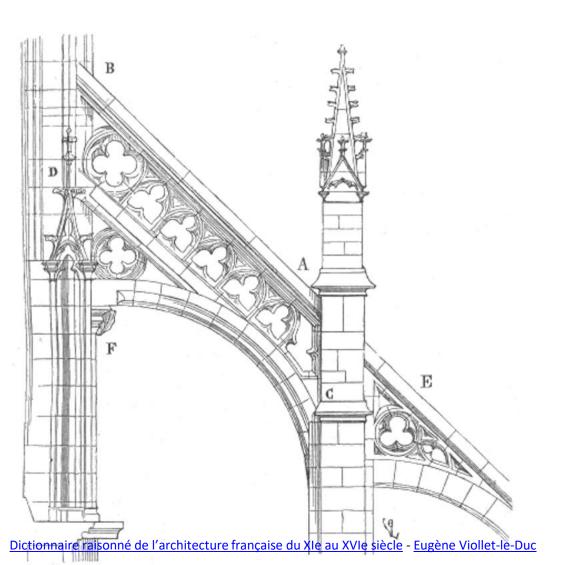


# **OntoTerminology Editor**

http://ontoterminology.com/ May 2020



#### **Prof. Christophe Roche**

<u>Condillac Research Group</u> – LISTIC Lab. University Savoie Mont-Blanc (France)

KETRC Research Centre
University of Liaocheng (China)

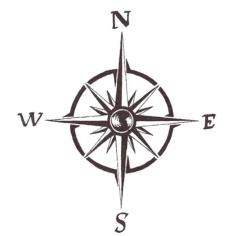
http://christophe-roche.fr/



# **OntoTerminology Editor**

# Contents

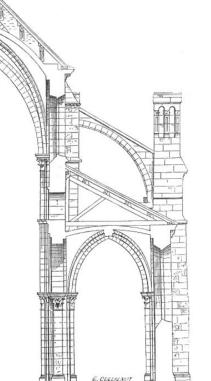
- 1) Theoretical Foundations
  - 1) Conceptual Dimension
  - 2) Linguistic Dimension
- 2) Environment
- 3) Term-guided Methodology
- 4) <u>Export</u>
- 5) Ontoterminology & W3C

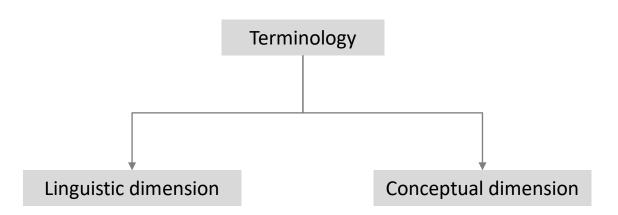




#### (1) Theoretical Foundations

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export
- An ontoterminology is a terminology whose conceptual system is a formal ontology
- A term is a verbal designation of a concept
- A concept is a unique combination of essential characteristics
- A concept is a set of essential characteristics enough stable to be named in a given natural language







#### (1) Theoretical Foundations

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

#### Conceptual dimension

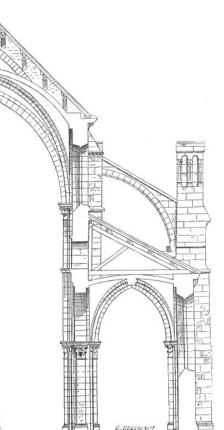
A concept is defined as a unique combination of essential characteristics

```
<Seat for one person> ::= <Seat> + /one person/
<Seat with feet> ::= <Seat> + /with feet/
<Seat with back> ::= <Seat> + /with back/
etc.
```

 Essential characteristics are structured into axes of analysis and are exclusive each other

```
Back = { /with back/ /without back/ }
Feet = { /with feet/ /without feet/}
etc.
```

Multiple hierarchy => multiple inheritance



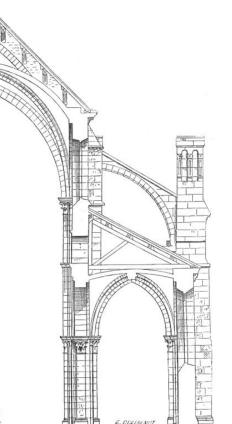


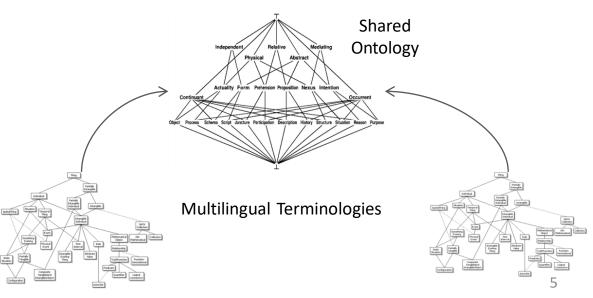
## (1) Theoretical Foundations

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

#### Linguistic dimension

- Multi-lingual terminology
- Linguistic diversity
- Ontology shared by different terminologies
- Aristotelian definition in natural language (genus and specific difference) based on the formal definition







## (2) Environment

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

#### Opening a session





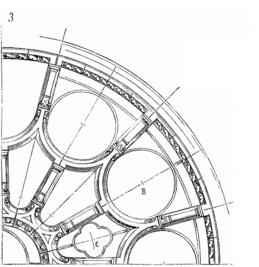
Tedi

\*\*\*\*

Cancel

Username

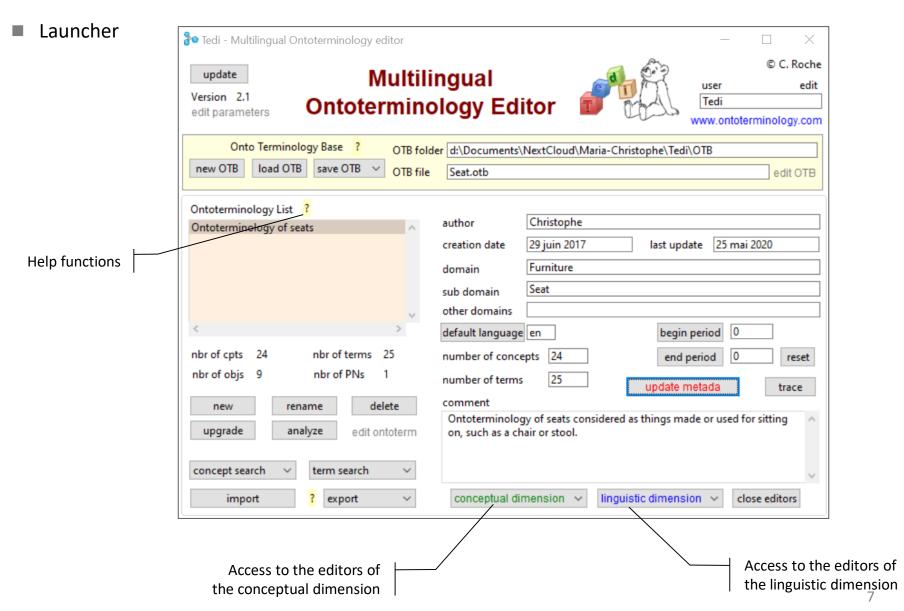
Password





## (2) Environment

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export





# (2) Environment

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

 A set of dedicated editors accessible from the Tedi Launcher

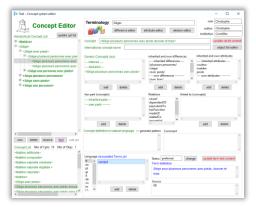
# Proper names editor



#### **Term editor**



#### **Concept editor**



#### **Object editor**

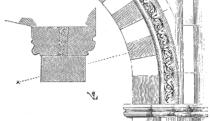


#### **Term Editor**



# Proper names editor

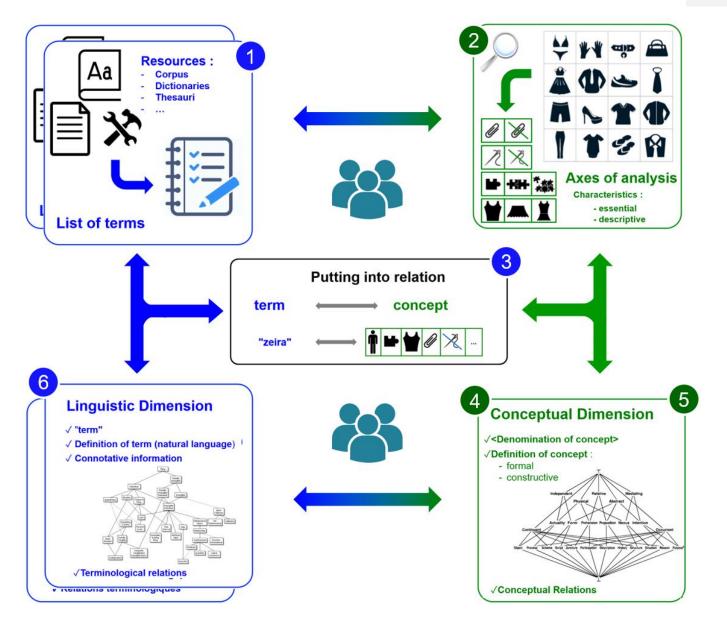




11



- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

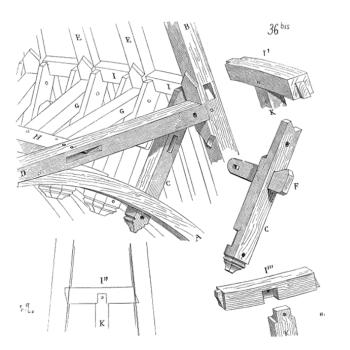




- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export
- Experts are guided by Tedi which proposes only valid information at each step



- 1: Enter the terms to be defined
- 2: Identify the axes of analysis and their essential characteristics

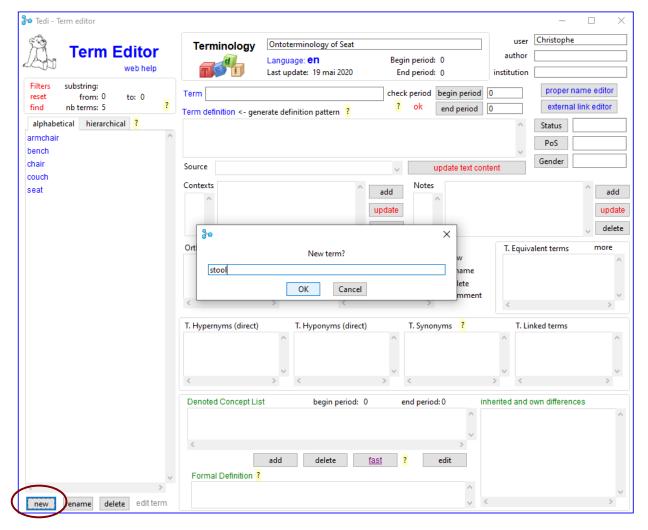


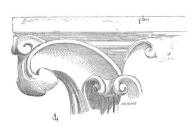
- 3: Select the set of characteristics denoted by the term
- **4**: Create the concept if it does not exist
- 5: Update the concept system if necessary
- **6**: Complete the linguistic dimension



- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

1 Enter the terms to be defined

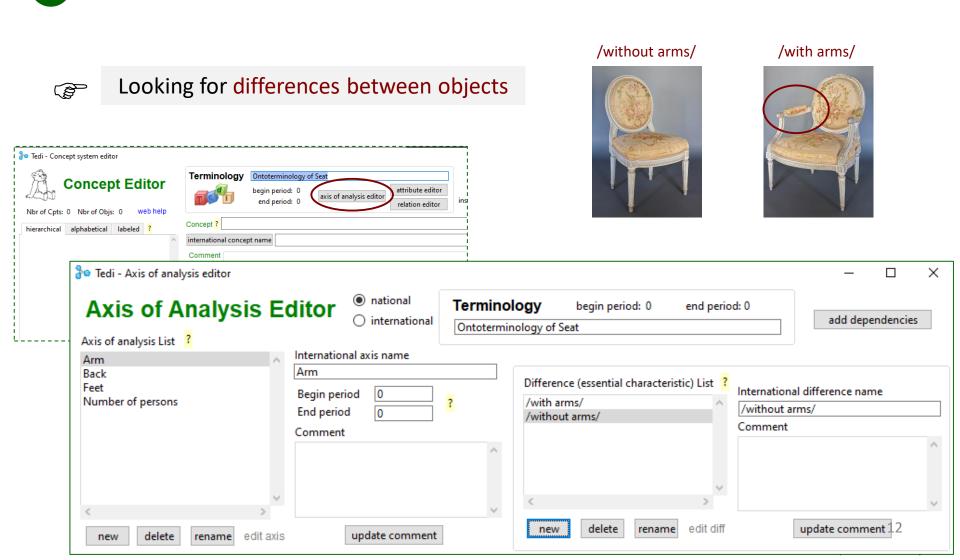






- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

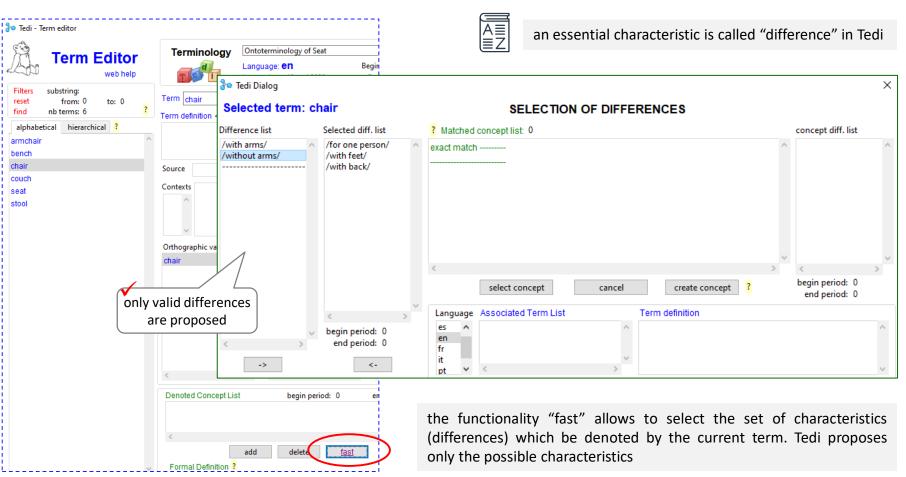
2 Identify the Axes of Analysis and their essential characteristics





- ) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

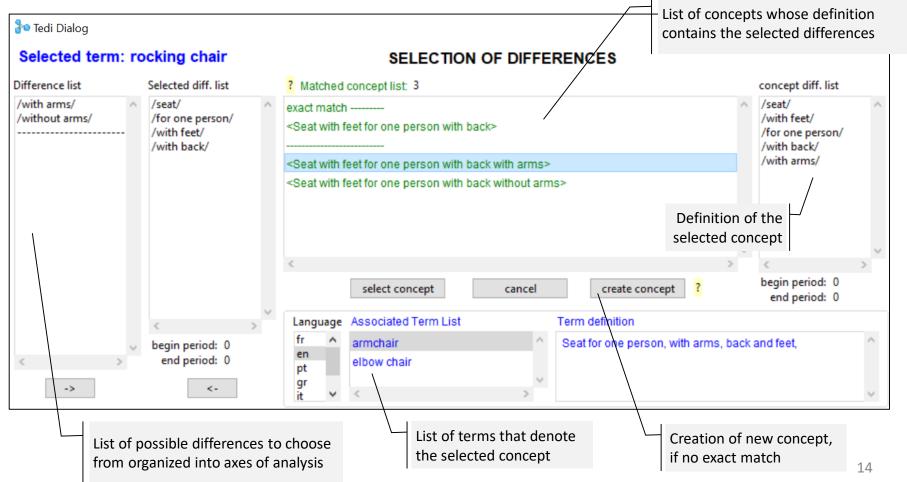
3 Select the set of characteristics denoted by a term





- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

- Connecting Terms and Concepts
  - Terms are known to experts
  - A term denotes a set of essential characteristics stable enough to have a name in a given natural language

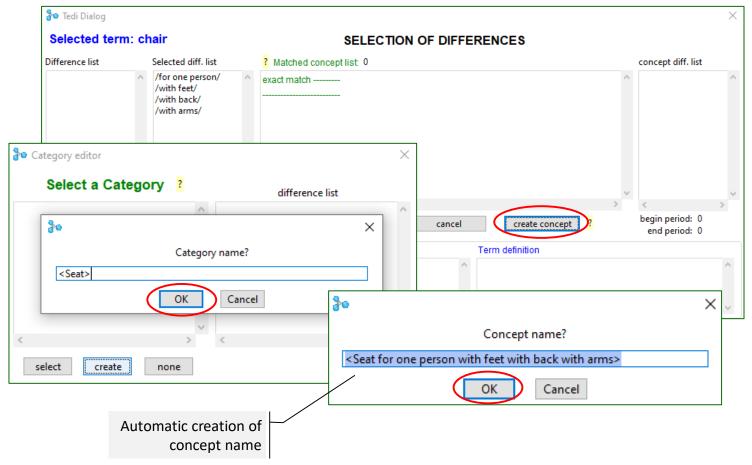




- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

# 4 Create the concept if it does not exist

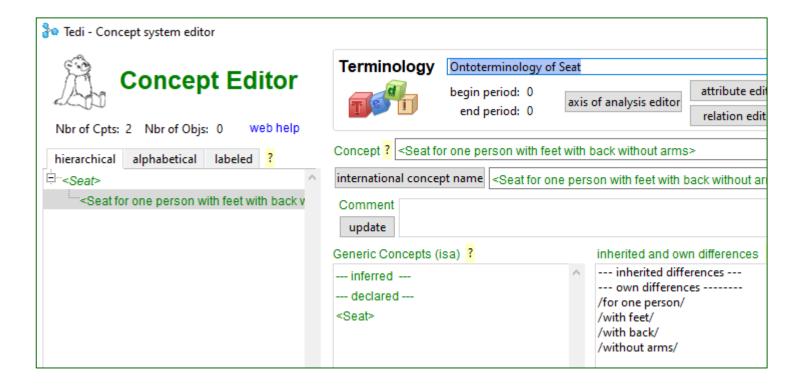
Each concept belongs to a category. Create it if it does not exist.

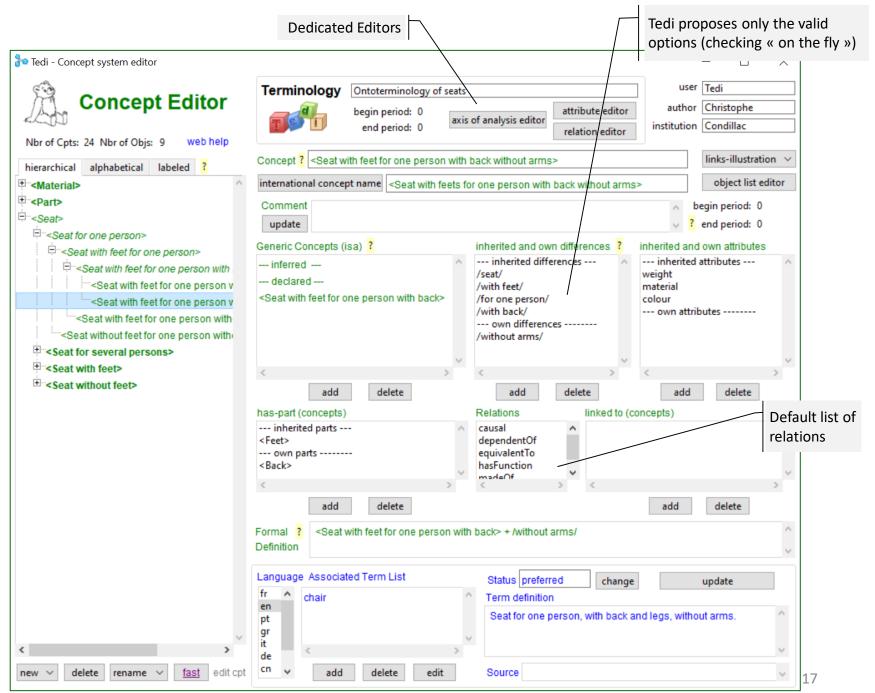




- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

5 Update the concept system is necessary

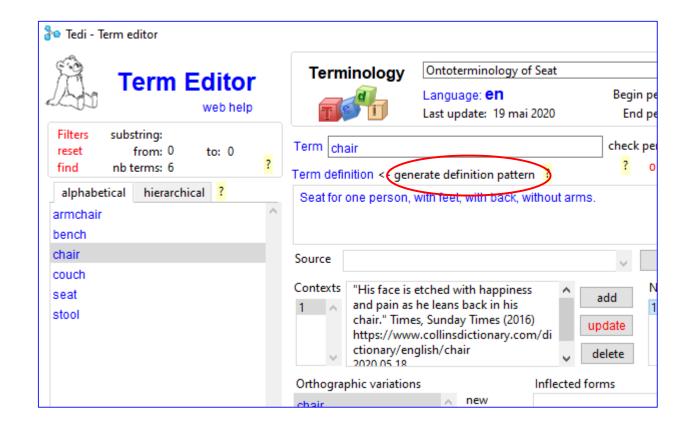


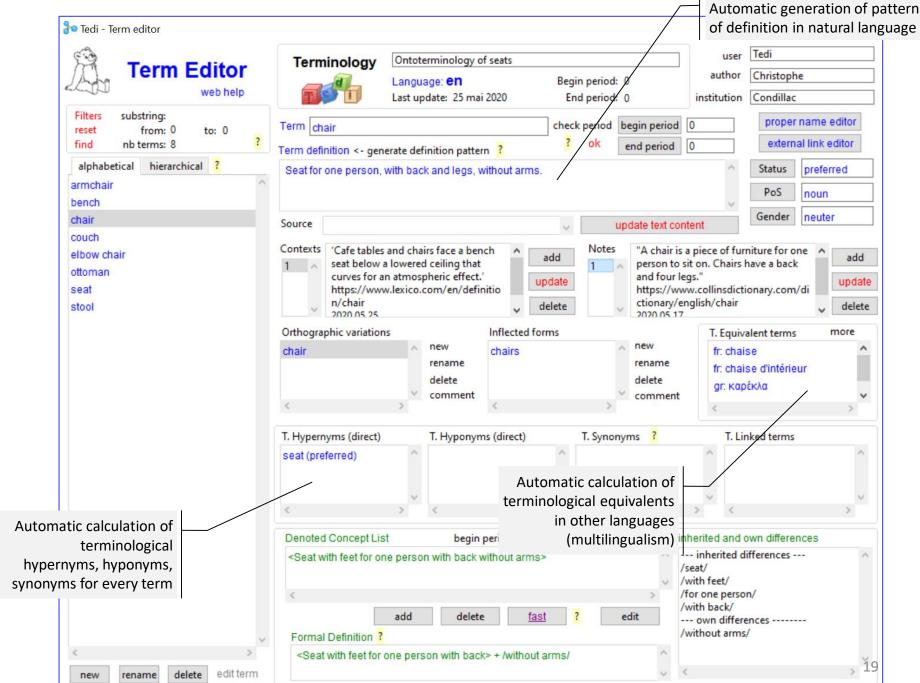




- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

6 Complete the linguistic dimension as necessary

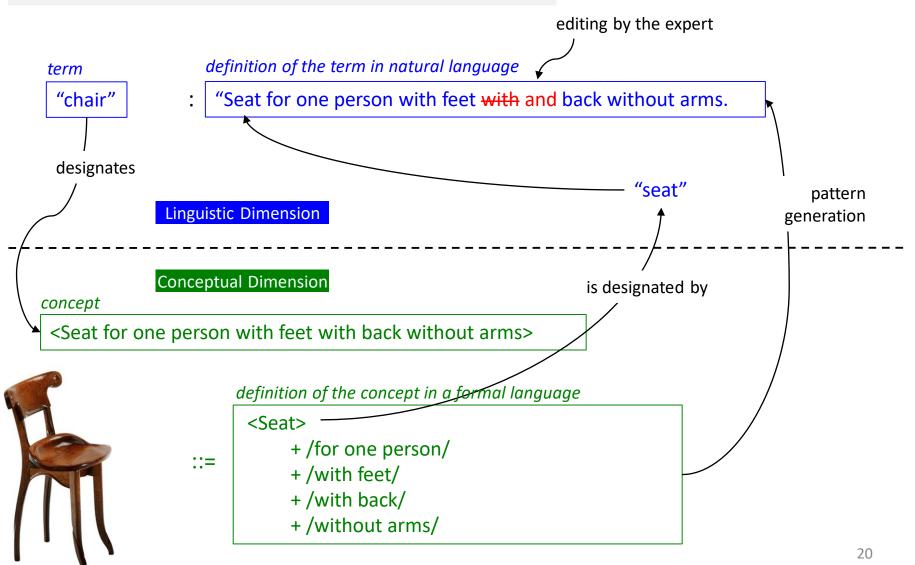






- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

#### Generation of definition pattern in natural language





# (4) Export: HTML

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

#### Tedi Onto-Dictionary on "Ontoterminology of seats" (en)

Date: 25 mai 2020 - Time: 13:01:27 - Version: 2.1 - www.ontoterminology.com/tedi

search:
armchair
bench
chair
couch
elbow chair
ottoman
seat
stool

#### chair

**Definition**: Seat for one person, with back and legs, without arms.

Status: preferred Context(s):

1) 'Cafe tables and chairs face a bench seat below a lowered ceiling that curves for an atmospheric effect.' https://www.lexico.com/en/definition/chair

2020 05 25

Note(s):

1) "A chair is a piece of furniture for one person to sit on. Chairs have a back and four legs." https://www.collinsdictionary.com/dictionary/english/chair 2020 05 17

#### Equivalent(s):

- fr: chaise (preferred)
- fr: chaise d'intérieur (alternative)
- gr: καρέκλα (preferred)

**Concept**: <Seat with feet for one person with back without arms>

essential characteristic(s): /seat/, /with feet/, /for one person/, /with back/, /without arms/,

a kind of: <Seat with feet for one person with back>,

linked to: <Back>, <Feet>,

rdfs:seeAlso: https://fr.wikipedia.org/wiki/Chaise

skos:exactMatch: http://vocab.getty.edu/page/aat/300037772

Web reference: Le grand salon de l'Impératrice au château de Fontainebleau du temps de l'impératrice Eugénie

Illustration: Chaises estampillées Georges Jacob, grand cabinet du Dauphin, château de Versailles.

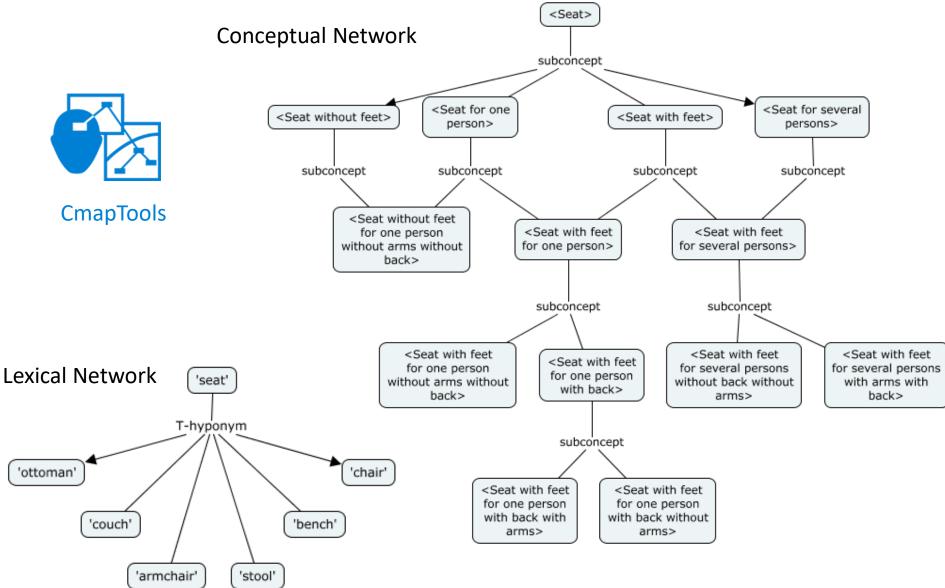


Objects of this type: 2



## (4) Export: CSV

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export





<?xml version="1.0" encoding="utf-8"?>

## (4) Export: RDF

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export





```
<!-- Ontoterminology: Ontoterminology of seats -->
<!-- Author: Christophe -->
<!-- Creation date of ontoterminology: 29 juin 2017 -->
<!-- Export date: 25 mai 2020 time: 13:02:51 -->
<!-- Generated by Tedi version: 2.1 - http://christophe-roche.fr/tedi -->
<rdf:RDF xmlns="http://www.ontologia.fr/OTB/Seat#"
        xml:base="http://www.ontologia.fr/OTB/Seat"
        xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
        xmlns:owl="http://www.w3.org/2002/07/owl#"
        xmlns:skos="http://www.w3.org/2004/02/skos/core#"
                                                                                                                                                                                          -----
        xmlns:foaf="http://xmlns.com/foaf/0.1/"
                                                                                                                                                                                                                Core Vocabularies for RDF Export
       xmlns:dc="http://purl.org/dc/elements/1.1/"
                                                                                                                                                                                          _____
        xmlns:xml="http://www.w3.org/XML/1998/namespace"
        xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
                                                                                                                                                                                          Concepts:
        xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
                                                                                                                                                                                                                                  - owl:DatatypeProperty

    owl:Class

        xmlns:vs="http://www.w3.org/2003/06/sw-vocab-status/ns#"
                                                                                                                                                                                          - owl:NamedIndividual
        xmlns:vann="http://purl.org/vocab/vann/">

    owl:ObjectProperty

    owl:Ontology

        <owl:Ontology rdf:about="http://www.ontologia.fr/OTB/Seat.rdf">
                <dc:title>Ontoterminology of seats</dc:title>
                                                                                                                                                                                          Object Properties:
                <dc:description>Ontoterminology of seats considered as things made or used for sitt
                on, such as a chair or stool.</dc:description>

    foaf:depiction

                                                                                                                                                                                                                                  - owl:sameAs
                <dc:issued rdf:datatype="http://www.w3.org/2001/XMLSchema#date">2017-6-29</dc:issue</pre>
                                                                                                                                                                                           - rdf:type
                                                                                                                                                                                                                                  - rdfs:comment
                <dc:modified rdf:datatype="http://www.w3.org/2001/XMLSchema#date">2020-5-25</dc:modified rdf:datatype="http://www.w3.org/2001/XMLSchema#date">2020-5-25</dc/modified rdf:datatype="http://www.w3.org/2001/XMLSchema#date">1000-5-25</dc/modified rdf:datatype="http://www.w3.org/2001/XMLSchema#date">1000-5-25</dd/modified rdf:datatype="http://www.w3.org/2001/XMLSchema#date"

    rdfs:label

                                                                                                                                                                                                                                  - rdfs:seeAlso
                <dc:creator>Christophe Roche</dc:creator>

    rdfs:subClassOf

                                                                                                                                                                                                                                  - skos:altLabel
                <dc:publisher>Condillac</dc:publisher>
                                                                                                                                                                                          - skos:broader

    skos:broadMatch

        </owl:Ontology>

    skos:closeMatch

    skos:definition

    skos:exactMatch

                                                                                                                                                                                                                                  - skos:narrowMatch
        <!-- Object Properties: -->
                                                                                                                                                                                          - skos:note
                                                                                                                                                                                                                                  - skos:prefLabel

    skos:related

    skos:relatedMatch

        <owl:ObjectProperty rdf:about="#hasPart">

    skos:scopeNote

                <owl:inverseOf rdf:resource="#partOf"/>
                <rdfs:domain rdf:resource="http://www.w3.org/2002/07/owl#Thing"/>
                <rdfs:range rdf:resource="http://www.w3.org/2002/07/owl#Thing"/>
        </owl:ObjectProperty>
```



#### (4) Export: RDF

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

#### Concept

```
<owl:Class rdf:about="#Seat with feet for one person with back without arms">
       <skos:prefLabel xml:lang="fr">chaise</skos:prefLabel>
       <skos:definition xml:lang="fr">Siège avec dossier, pour une personne, avec pieds, sans bras.
       <skos:note xml:lang="fr">Siège à dossier et généralement sans bras. Source : TLFi 31052017</skos:note>
       <skos:example xml:lang="fr">"Les cafés à l'entour avaient depuis longtemps couché sur leurs tables de marbre leurs
       chaises tendrement rabotées par des derrières peu soucieux de voyages. QUENEAU, Pierrot mon ami, 1942, p. 199." Source
        : TLFi 31052017</skos:example>
       <skos:altLabel xml:lang="fr">chaise d'intérieur</skos:altLabel>
       <skos:definition xml:lang="fr">Siège avec dossier, pour une personne, avec pieds, sans bras.
       <skos:prefLabel xml:lang="en">chair</skos:prefLabel>
       <skos:definition xml:lang="en">Seat for one person, with back and legs, without arms.
       <skos:note xml:lang="en">"A chair is a piece of furniture for one person to sit on. Chairs have a back and four legs."
https:www.collinsdictionary.comdictionaryenglishchair
2020 05 17</skos:note>
       <skos:example xml:lang="en">'Cafe tables and chairs face a bench seat below a lowered ceiling that curves for an
       atmospheric effect.'
https:www.lexico.comendefinitionchair
2020 05 25</skos:example>
       <skos:prefLabel xml:lang="gr">καρέκλα</skos:prefLabel>
       <skos:definition xml:lang="gr">Κάθισμα για ένα άτομο, χωρίς μπράτσα, με πλάτη και πόδια. </skos:definition>
       <skos:broader rdf:resource="#Seat with feet for one person with back"/>
       <rdfs:subClassOf rdf:resource="#Seat with feet for one person with back"/>
       <rdfs:subClassOf rdf:resource="#without arms"/>
       <rdfs:subClassOf>
           <owl:Restriction>
               <owl:onProperty rdf:resource="hasPart"/>
               <owl:someValuesFrom rdf:resource="#Back"/>
           </owl:Restriction>
       </rdfs:subClassOf>
       <foaf:depiction rdf:resource="https://upload.wikimedia.org/wikipedia/commons/thumb/e/e0/Ch%C3%A2teau de Versailles%2C a
       ppartement du Dauphin%2C grand cabinet du Dauphin%2C chaises.jpg/800px-Ch%C3%A2teau de Versailles%2C appartement du Dau
       phin%2C grand cabinet du Dauphin%2C chaises.jpg"/>
       <skos:exactMatch rdf:resource="http://vocab.getty.edu/page/aat/300037772"/>
       <rdfs:seeAlso rdf:resource="https://fr.wikipedia.org/wiki/Chaise"/>
    </owl:Class>
```

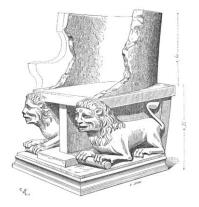


## (4) Export: RDF

- 1) Theoretical Foundations
- 2) Environment
- 3) Methodology
- 4) Export

#### **Individual**







# [ (5) Ontoterminology and W3C



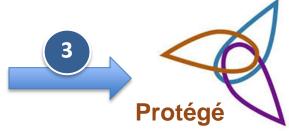


#### http://ontologia.fr/OTB/seat.rdf

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Ontoterminology: Ontoterminology of seats -->
<!-- Author: Christophe -->
<!-- Creation date of ontoterminology: 29 juin 2017 -->
<!-- Export date: 25 mai 2020 time: 13:02:51 -->
<!-- Generated by Tedi version: 2.1 - http://christophe-roche.fr/tedi -->
<rdf:RDF xmlns="http://www.ontologia.fr/OTB/Seat#"
    xml:base="http://www.ontologia.fr/OTB/Seat"
    xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
    xmlns:owl="http://www.w3.org/2002/07/owl#"
    xmlns:skos="http://www.w3.org/2004/02/skos/core#"
    xmlns:foaf="http://xmlns.com/foaf/0.1/"
    xmlns:dc="http://purl.org/dc/elements/1.1/"
    xmlns:xml="http://www.w3.org/XML/1998/namespace"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
    xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
    xmlns:vs="http://www.w3.org/2003/06/sw-vocab-status/ns#"
    xmlns:vann="http://purl.org/vocab/vann/">
    <owl:Ontology rdf:about="http://www.ontologia.fr/OTB/Seat.rdf">
        <dc:title>Ontoterminology of seats</dc:title>
        <dc:description>Ontoterminology of seats considered as things made or used for sitting
        on, such as a chair or stool.</dc:description>
       <dc:issued rdf:datatype="http://www.w3.org/2001/XMLSchema#date">2017-6-29</dc:issued>
        <dc:modified rdf:datatype="http://www.w3.org/2001/XMLSchema#date">2020-5-25</dc:modified>
        <dc:creator>Christophe Roche</dc:creator>
        <dc:publisher>Condillac</dc:publisher>
    </owl:Ontology>
    <!-- Object Properties: -->
    <owl:ObjectProperty rdf:about="#hasPart">
        <owl:inverseOf rdf:resource="#partOf"/>
        <rdfs:domain rdf:resource="http://www.w3.org/2002/07/owl#Thing"/>
        <rdfs:range rdf:resource="http://www.w3.org/2002/07/owl#Thing"/>
    </owl:ObjectProperty>
```









PREFIX rdf: <a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#">http://www.w3.org/1999/02/22-rdf-syntax-ns#</a>>
PREFIX skos: <a href="http://www.w3.org/2004/02/skos/core#">http://www.w3.org/2004/02/skos/core#>

**SELECT ?name ?definition** 

1 FROM <a href="http://ontologia.fr/OTB/seat.rdf">http://ontologia.fr/OTB/seat.rdf</a>

1 or 2

#### https://data.bnf.fr/current/sparql.html

#### Editeur SPARQL de data.bnf.fr

Graphe par défaut (IRI)

http://ontologia.fr/OTB/seat.rdf

#### Requête

```
PREFIX rdf: <a href="mailto:rdf">rdf:</a>: <a href="mailto:rdf">rdf:</a href="mailto:rdf">rdf:</a href="mailto:rdf">rdf:</a>: <a href="mailto:rdf">rdf:</a>: <a href="mailto:rdf">rdf:</a href="mailto:rdf">rdf:</a>: <a href="mailto:rdf">rdf:</a hre
                          PREFIX skos: <a href="http://www.w3.org/2004/02/skos/core">http://www.w3.org/2004/02/skos/core">
                          SELECT ?name ?definition
                          FROM <a href="http://ontologia.fr/OTB/krater.rdf">http://ontologia.fr/OTB/krater.rdf</a>
                 * WHERE {
                                                     ?concept rdf:type owl:Class.
                                                     ?concept skos:prefLabel ?name.
10
                                                     ?concept skos:definition ?definition.
11
                                                    FILTER (lang(?name) = 'en')
12
                                                     FILTER (lang(?definition) = 'en')
13
14
15
                          ORDER BY ?name
                          LIMIT 100
```



Retrieve remote RDF data for all missing source graphs



name	definition		
"armchair"@en	"Seat for one person, with arms, back and feet, "@en		
"bench"@en	"Seat without back or arms, for more than one persons, with feet, "@en		
"chair"@en	"Seat for one person, with back and legs, without arms."@en		
"couch"@en	"Seat formore than one people, with arms, back and feet. "@en		
	"Seat without back or armrsets, for one person, without feet, which usually serves as foot rest or box, with the seat part hinged onto the lower part."@en		
"seat"@en	"Piece of furniture designed for seating on."@en		
"stool"@en	"Seat for one person, with feet, wihout arm and back. "@en		



```
PREFIX rdf: <a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#">http://www.w3.org/1999/02/22-rdf-syntax-ns#</a>
PREFIX skos: <a href="http://www.w3.org/2004/02/skos/core#">http://www.w3.org/2004/02/skos/core#>
PREFIX foaf: <a href="http://xmlns.com/foaf/0.1/">http://xmlns.com/foaf/0.1/>
SELECT ?label ?type ?img
WHERE {
        ?object rdf:type owl:NamedIndividual.
        ?object skos:prefLabel ?label.
        ?object rdf:type ?concept.
        ?concept skos:prefLabel ?type.
        ?object foaf:depiction ?img.
        FILTER (lang(?type)='en')
ORDER BY ?label
LIMIT 100
```

#### https://data.bnf.fr/current/sparql.html

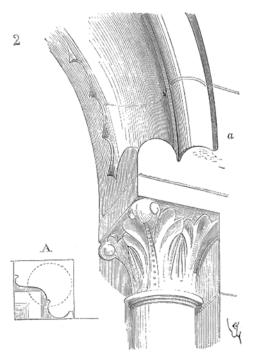
```
Graphe par défaut (IRI)
 http://ontologia.fr/OTB/seat.rdf
```

#### Requête

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
    PREFIX skos: <a href="http://www.w3.org/2004/02/skos/core#">http://www.w3.org/2004/02/skos/core#>
    PREFIX foaf: <http://xmlns.com/foaf/0.1/>
    SELECT ?label ?type ?img
 7 ▼ WHERE {
         ?object rdf:type owl:NamedIndividual.
         ?object skos:prefLabel ?label.
         ?object rdf:type ?concept.
         ?concept skos:prefLabel ?type.
11
         ?object foaf:depiction ?img.
12
13
         FILTER (lang(?type)='en')
14
    ORDER BY ?label
    T.TMTT 100
```



label	type	img
"Canapé GMT 21269"	"couch"@en	https://journals.openedition.org/crcv/docannexe/image/13475/img-3-small480.jpg
"Canapé T 504 C"	"couch"@en	https://journals.openedition.org/crcv/docannexe/image/13475/img-10-small480.jpg
"Chaise F 263"	"chair"@en	https://journals.openedition.org/crcv/docannexe/image/13475/img-6-small580.jpg
"Chaise T 507 C"	"chair"@en	https://journals.openedition.org/crcv/docannexe/image/13475/img-13-small480.jpg
"Fauteuil F 914 C"	"armchair"@en	https://journals.openedition.org/crcv/docannexe/image/13475/img-5.jpg
"Fauteuil T 505 C"	"armchair"@en	https://journals.openedition.org/crcv/docannexe/image/13475/img-11.jpg
"Fauteuil T 506 C"	"armchair"@en	https://journals.openedition.org/crcv/docannexe/image/13475/img-12.jpg
"Tabouret GMT 1414/6"	"stool"@en	https://journals.openedition.org/crcv/docannexe/image/13475/img-9-small480.jpg
"Tabouret S 574"	"stool"@en	https://journals.openedition.org/crcv/docannexe/image/13475/img-7-small580.jpg







#### **Selected References**

#### Mind the Gap: Ontology Authoring for Humanists

C. Roche M. Papadopoulou. 1st International Workshop for Digital Humanities and their Social Analysis (WODHSA)- Episode V: The Styrian Autumn of Ontology, September 23-25, a Workshop hosted by Joint Ontology Workshops, Medical University of Graz (Austria), September 23-25, 2019

#### **Building ontology-based dictionaries for Greek material culture terms**

M. Papadopoulou & C. Roche. 1st International Workshop on Open Data and Ontologies for Cultural Heritage. Rome, Italy, June 3, 2019

# Twinning Classics and A.I.: Building the new generation of ontology-based lexicographical tools and resources for Humanists on the Semantic Web

M. Papadopoulou, C. Roche. In S. Krauwer, D. Fišer (eds.) – Twin Talks at DHN 2018 – Understanding Collaboration in Digital Humanities. Open access, University of Copenhagen, 5th March 2019

#### Ontologization of Terminology. A worked example from the domain of ancient Greek dress

M. Papadopoulou, C. Roche. AIDAinformazioni Journal, number 1-2/2018, volume XXXVI

#### Ontological definition - abstract

C.Roche. Handbook of Terminology, Volume 1, John Benjamins Publishing, 2015, pp.128-152

#### Ontoterminology: How to unify terminology and ontology into a single paradigm

C.Roche. LREC 2012, Eighth international conference on Language Resources and Evaluation, Istanbul (Turkey), 21-27 May 2012, pp. 2626-2630

# **Any Comments or Remarks?**

send an email to: <a href="mailto:roche@univ-savoie.fr">roche@univ-savoie.fr</a>

