

## Búscar vocabularios en LOV

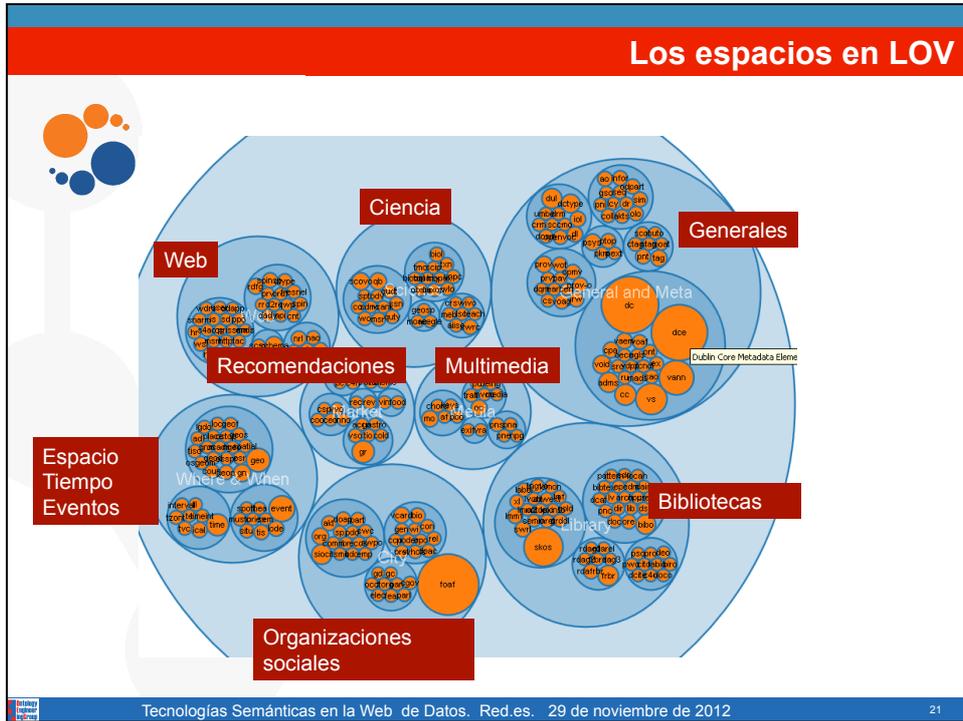
<http://labs.mondeca.com/dataset/lov/>

### Linked Open Vocabularies (LOV)

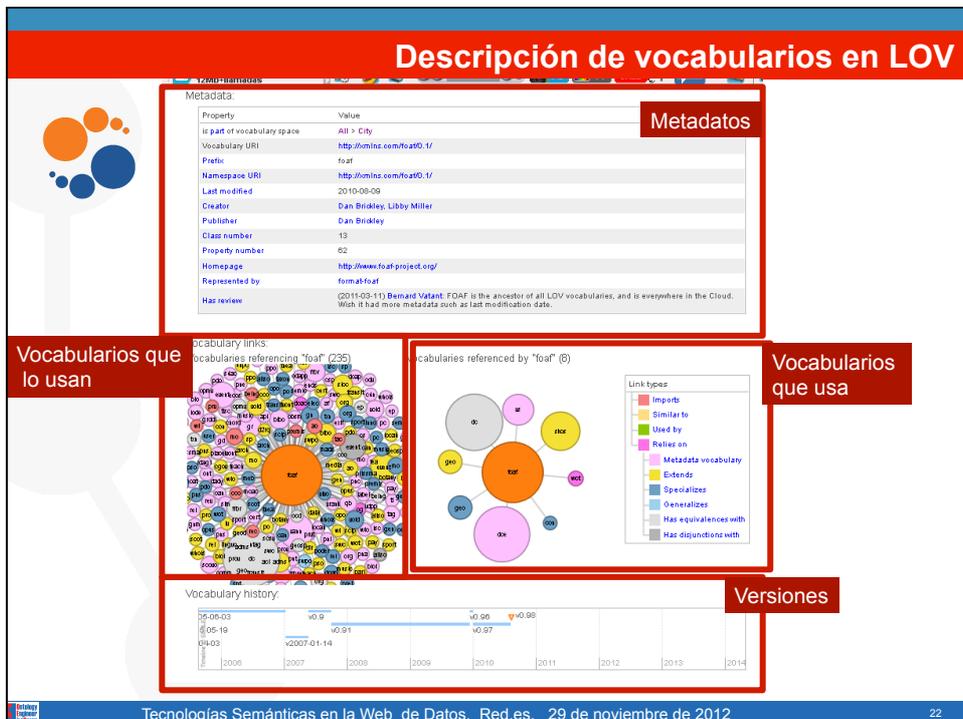
- Ecosistema de vocabularios utilizados en datos abiertos enlazados (RDFS or OWL ontologies)
  - 300 vocabularios descritos con metadatos
  - Clasificados en espacios (vocabulary spaces)
  - Enlazados usando VOAF
  - Servicios
    - Consulta
    - Búsqueda
    - Métricas

Page number: 20

## Los espacios en LOV

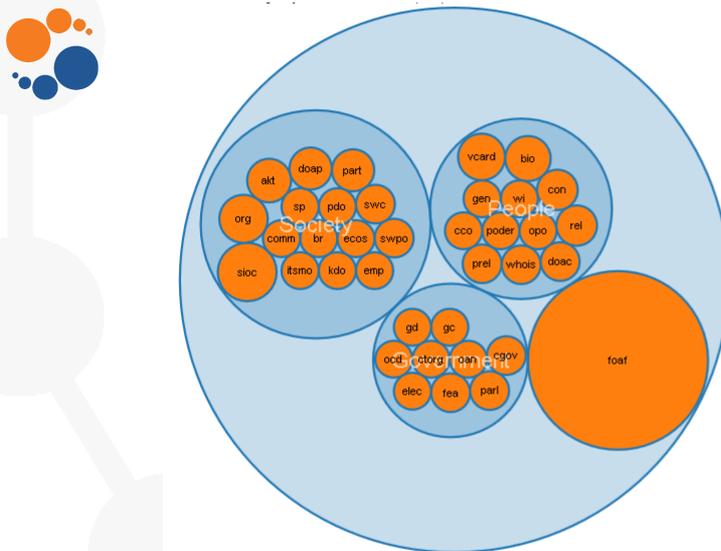


## Descripción de vocabularios en LOV



1. Introducción
2. Tipos de vocabularios
3. Proceso de Construcción
4. Ejemplos de Vocabularios
  - **Personas y Organizaciones: FOAF, vCard, ORG**
  - Documentos: DC, BIBO
  - Geo: puntos, curvas y polígonos
  - Estadísticas: Data Cube
  - Bibliotecas: FRBR
  - Otros vocabularios: sensores, provenance, VOID
5. Ejemplos de Redes de vocabularios en aplicaciones de datos enlazados
  - Instituto Geográfico Nacional

## Vocabularios de Personas y Organizaciones



## FOAF– Friend Of A Friend



- Vocabulario RDF para describir:
  - Personas
  - Grupos
  - Documentos

FOAF - Friend of a Friend vocabulary



Metadata:

| Property                    | Value  |
|-----------------------------|--|
| is part of vocabulary space | All > City   |
| Vocabulary URI              | <a href="http://xmlns.com/foaf0.1/">http://xmlns.com/foaf0.1/</a>  |
| Prefix                      | foaf   |
| Namespace URI               | <a href="http://xmlns.com/foaf0.1/">http://xmlns.com/foaf0.1/</a>  |
| Last modified               | 2010-08-09   |
| Creator                     | Dan Brickley, Libby Miller   |
| Publisher                   | Dan Brickley   |
| Class number                | 13   |
| Property number             | 62   |
| Homepage                    | <a href="http://www.foaf-project.org/">http://www.foaf-project.org/</a>  |
| Represented by              | <a href="http://format.foaf">format.foaf</a>   |
| Has review                  | [2011-03-11] Bernard Volant: FOAF is the ancestor of all LOV vocabularies, and is everywhere in the Cloud. Wish it had more metadata such as last modification date. |



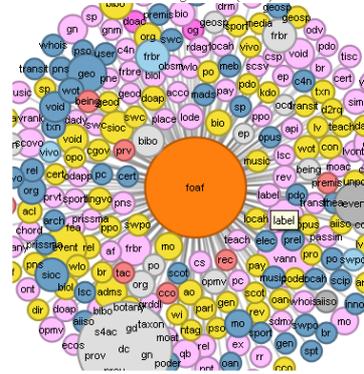
<http://www.foaf-project.org/>

## FOAF – relación con otros vocabularios

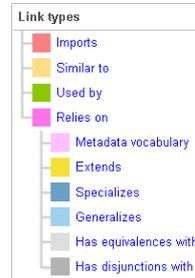
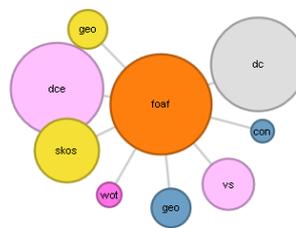


Vocabulary links:

Vocabularies referencing "foaf" (235)



Vocabularies referenced by "foaf" (8)

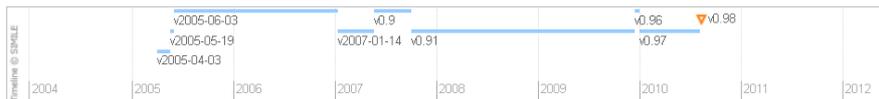


Vocabulary history:

## FOAF - Evolución



Vocabulary history:



The LOV dataset is licensed under Creative Commons [CC BY 3.0](#). It is developed in the framework of the [DataLift](#) project and supported by the [Open Knowledge Foundation \(OKFN\)](#).  
If you have any remark, suggestion or question, please [contact editors](#).

## FOAF - El vocabulario



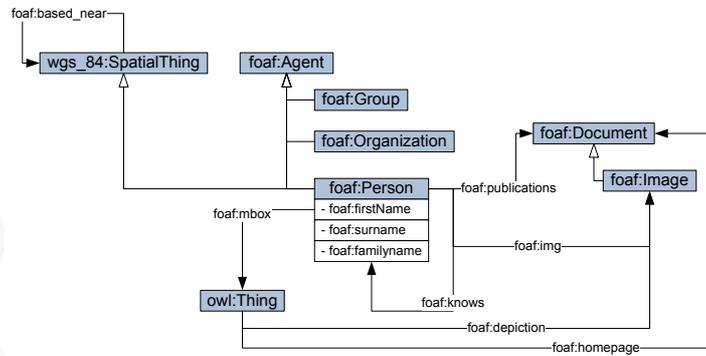
### FOAF Core

- [Agent](#)
- [Person](#)
- [name](#)
- [title](#)
- [img](#)
- [depiction \(depicts\)](#)
- [familyName](#)
- [givenName](#)
- [knows](#)
- [based\\_near](#)
- [age](#)
- [made \(maker\)](#)
- [primaryTopic \(primaryTopicOf\)](#)
- [Project](#)
- [Organization](#)
- [Group](#)
- [member](#)
- [Document](#)
- [Image](#)

### Social Web

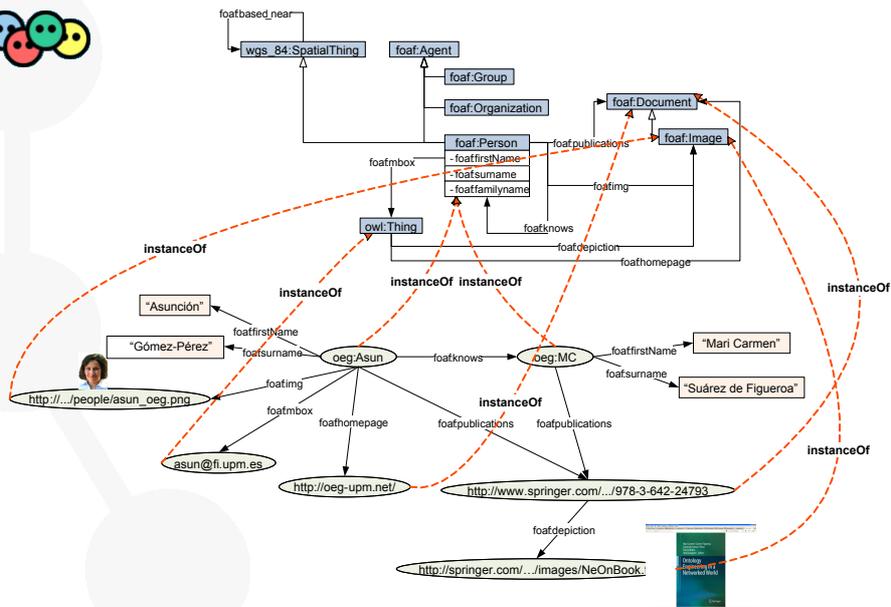
- [nick](#)
- [mbox](#)
- [homepage](#)
- [weblog](#)
- [openid](#)
- [jabberID](#)
- [mbox\\_sha1sum](#)
- [interest](#)
- [topic\\_interest](#)
- [topic \(page\)](#)
- [workplaceHomepage](#)
- [workInfoHomepage](#)
- [schoolHomepage](#)
- [publications](#)
- [currentProject](#)
- [pastProject](#)
- [account](#)
- [OnlineAccount](#)
- [accountName](#)
- [accountServiceHomepage](#)
- [PersonalProfileDocument](#)
- [tipjar](#)
- [sha1](#)
- [thumbnail](#)
- [logo](#)

## FOAF - Una parte del modelo



Extracto del modelo de FOAF

## FOAF- modelo e instancias



## RDF de ejemplo instanciación de Foaf

```
<foaf:Person rdf:about="http://www.oeg-upm.es/resource/Asun">
  <rdfs:label xml:lang="es">Asun</rdfs:label>
  <foaf:firstName>Asunción</foaf:firstName>
  <foaf:surname>Gómez-Pérez</foaf:surname>
  <foaf:mbox rdf:resource="asun@fi.upm.es"/>
  <foaf:homepage rdf:resource="http://www.oeg-upm.net"/>
</foaf:Person>
```

XML

Turtle

```
### http://www.oeg-upm.es/resource/Asun
<http://www.oeg-upm.es/resource/Asun> rdf:type owl:NamedIndividual ,
  <http://xmlns.com/foaf/0.1/Person> ;
  rdfs:label "Asun"@es ;
  <http://xmlns.com/foaf/0.1/firstName> "Asunción" ;
  <http://xmlns.com/foaf/0.1/surname> "Gómez-Pérez" ;
  <http://xmlns.com/foaf/0.1/mbox> <asun@fi.upm.es> ;
  <http://xmlns.com/foaf/0.1/homepage> <http://www.oeg-upm.net/> ;
```

## V-Card– Tarjetas de presentación

- vCard automates the exchange of personal and organization information typically found on a traditional business card.
- RDF Classes:
  - Vcard
  - Name
  - Address
  - Organisation,
  - Location
  - Label
  - Tel
  - Email.

VCARD - An Ontology for vCards

| Property                    | Value   |
|-----------------------------|---|
| is part of vocabulary space | All > City > People   |
| Vocabulary URI              | <a href="http://www.w3.org/2005/vcard#">http://www.w3.org/2005/vcard#</a>                     |
| Prefix                      | vcard   |
| Namespace URI               | <a href="http://www.w3.org/2005/vcard#">http://www.w3.org/2005/vcard#</a>                     |
| Description                 | This ontology models and represents vCards in RDF using current best practices @en            |
| Last modified               | 2010-01-20  |
| Creator                     | <a href="#">Brian Coyle, Mary Ralph, Norman Walsh, Renato Lavella</a>                         |
| Publisher                   | W3C   |
| Class number                | 28  |
| Property number             | 42  |
| Homepage                    | <a href="http://www.w3.org/Submission/vcard-rdf/">http://www.w3.org/Submission/vcard-rdf/</a> |
| Represented by              | <a href="#">vcard.rdf</a>   |

Vocabulary links:  
 Vocabularies referencing "vcard" (6)      Vocabularies referenced by "vcard" (1)

Vocabulary history:

| Year | Count |
|------|-------|
| 2006 | 0     |
| 2007 | 0     |
| 2008 | 0     |
| 2009 | 0     |
| 2010 | 1     |
| 2011 | 0     |
| 2012 | 0     |
| 2013 | 0     |
| 2014 | 0     |

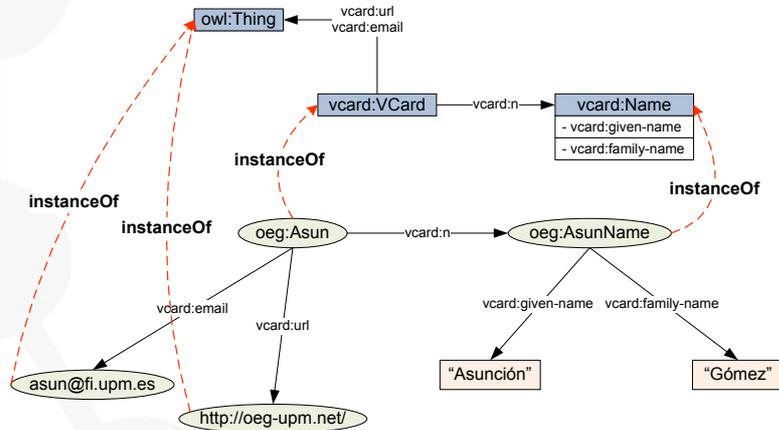
Link types:

- Implies
- Similar to
- Used by
- Relies on
- Metadata vocabulary
- Extends
- Specializes
- Generalizes
- Has equivalents with
- Has disjunctions with



<http://www.w3.org/Submission/vcard-rdf/>

## Ejemplo instanciación Vcard



## RDF de ejemplo instanciación de VCard

```
<ns:VCard rdf:about="http://www.oeg-upm.es/resource/Asun">
  <rdfs:label xml:lang="es">Asun</rdfs:label>
  <ns:url rdf:resource="http://oeg-upm.net/" />
  <ns:n rdf:resource="http://www.oeg-upm.es/resource/AsunName"/>
  <ns:email rdf:resource="asun@fi.upm.es"/>
</ns:VCard>
```

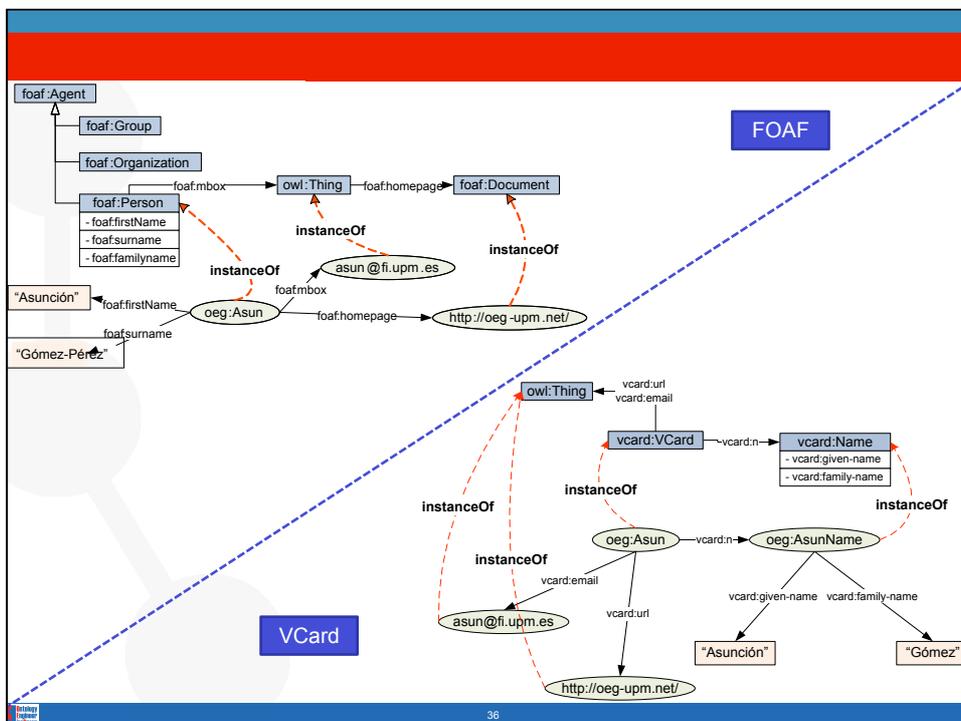
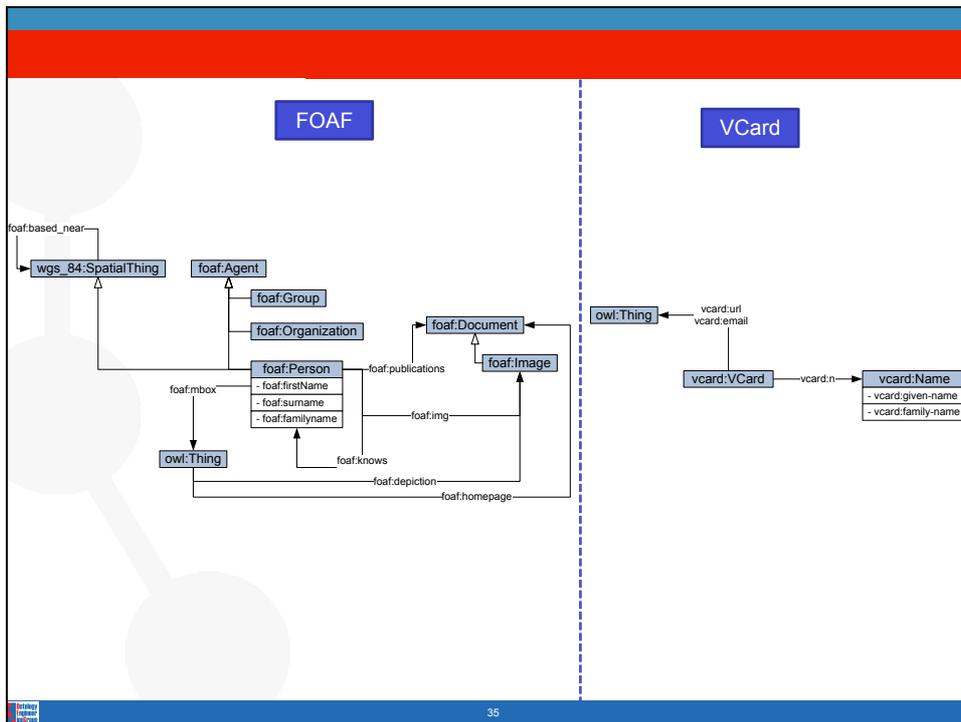
```
<ns:Name rdf:about="http://www.oeg-upm.es/resource/AsunName">
  <ns:family-name>Gómez</ns:family-name>
  <ns:given-name>Asunción</ns:given-name>
</ns:Name>
```

XML

Turtle

```
### http://www.oeg-upm.es/resource/Asun
resource:Asun rdf:type owl:NamedIndividual ,
  ns:VCard ;
  rdfs:label "Asun"@es ;
  ns:url <http://oeg-upm.net/> ;
  ns:n resource:AsunName ;
  ns:email resource:asun@fi.upm.es .

### http://www.oeg-upm.es/resource/AsunName
resource:AsunName rdf:type owl:NamedIndividual ,
  ns:Name ;
  rdfs:label "AsunName"@es ;
  ns:family-name "Gómez" ;
  ns:given-name "Asunción" .
```



## ORG: Una ontología de organizaciones (W3C)

W3C Working Draft



An organization ontology

W3C Working Draft 23 October 2012

This version: <http://www.w3.org/TR/2012/WD-vocab-org-20121023/>

Latest published version: <http://www.w3.org/TR/vocab-org/>

Latest editor's draft: <https://w3c.github.io/vocab-org/>

Previous version: <http://www.w3.org/TR/2012/WD-vocab-org-20120405/>

Editor: Dave Reynolds, [Epimorphix Ltd.](mailto:reynoldsd@epimorphix.com)

Copyright © 2012 W3C® (MIT, ERCIM, Keio). All Rights Reserved. W3C [W3C](http://www.w3.org/2002/2/rdf-syntax-ns#type) [W3C](http://www.w3.org/2002/2/rdf-syntax-ns#type)

### Abstract

This document describes a core ontology for organizational structure classification of organizations and roles, as well as addresses to sup

### Status of This Document

This section describes the status of this document at the time of its publication. The status of this document is "Working Draft".

This ontology was originally developed and published outside of W3C.

This document was published by the [W3C](http://www.w3.org/2002/2/rdf-syntax-ns#type) as a Working Draft. Publication as a Working Draft does not imply endorsement by the W3C as other than work in progress.

• ORG es una ontología para representar datos de organizaciones.

#### • Estructura de la organización

- Noción
- Sub-organizaciones y unidades
- Fin

#### • Estructura de reporte

- Miembros
- Roles,
- Relaciones entre miembros

#### • Ubicación

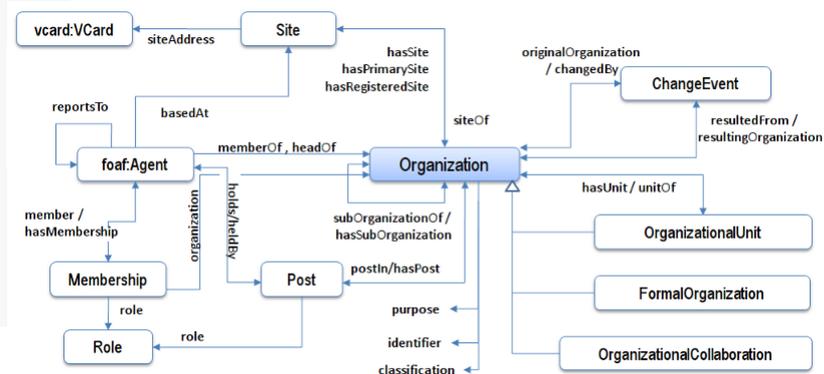
- Edificios, direcciones, etc.

#### • Historia (fusiones, cambios de nombre)



<http://www.w3.org/TR/vocab-org/>

## ORG: Una ontología para organizaciones



<http://www.w3.org/TR/vocab-org/>

## ORG: Metadatos



ORG - Core organization ontology



### Metadata:

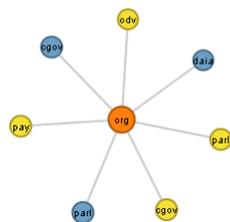
| Property                    | Value   |
|-----------------------------|---|
| is part of vocabulary space | All > City > Society  |
| Vocabulary URI              | <a href="http://www.w3.org/ns/org#">http://www.w3.org/ns/org#</a>   |
| Prefix                      | org   |
| Namespace URI               | <a href="http://www.w3.org/ns/org#">http://www.w3.org/ns/org#</a>   |
| Description                 | Vocabulary for describing organizational structures, specializable to a broad variety of types of organization. @en   |
| Date issued                 | 2010-05-28  |
| Last modified               | 2012-10-06  |
| Language                    | English, French   |
| Creator                     | Dave Reynolds, Dominique Guardiola  |
| Publisher                   | W3C   |
| Class number                | 9   |
| Property number             | 35  |
| Homepage                    | <a href="http://www.w3.org/TR/vocab-org/">http://www.w3.org/TR/vocab-org/</a>   |
| Represented by              | format-org  |
| Has review                  | (2012-10-02) <b>Bernard Vatant</b> : Currently a W3C Working Draft as defined by <a href="http://www.w3.org/TR/vocab-org/">http://www.w3.org/TR/vocab-org/</a> . Version 0.4 is a transcription of <a href="http://www.epimorphics.com/public/vocabulary/org.html">http://www.epimorphics.com/public/vocabulary/org.html</a> into W3C style. Version 0.5 is an editor's draft. Versions 0.1 to 0.3 retrieved from <a href="http://www.epimorphics.com/public/vocabulary/">http://www.epimorphics.com/public/vocabulary/</a> |

## ORG: Relación con otros vocabularios

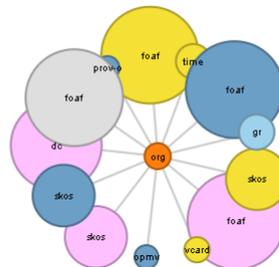


### Vocabulary links:

Vocabularies referencing "org" (7)



Vocabularies referenced by "org" (13)



| Link types            |
|-----------------------|
| Imports               |
| Similar to            |
| Used by               |
| Relies on             |
| Metadata vocabulary   |
| Extends               |
| Specializes           |
| Generalizes           |
| Has equivalences with |
| Has disjunctions with |



### Vocabulary history:

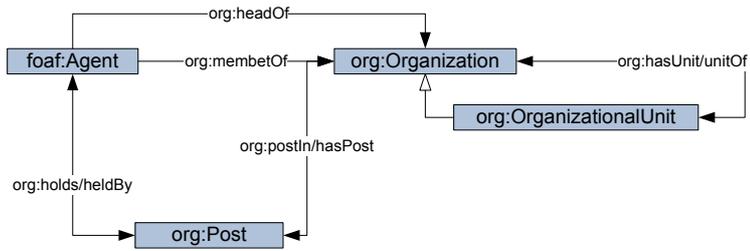


**Classes:** | [ChangeEvent](#) | [FormalOrganization](#) | [Membership](#) | [OrganizationalCollaboration](#) | [OrganizationalUnit](#) | [Organization](#) | [Post](#) | [Role](#) | [Site](#) |

**Properties:** | [basedAt](#) | [changedBy](#) | [classification](#) | [hasMember](#) | [hasMembership](#) | [hasPost](#) | [memberDuring](#) | [memberOf](#) | [member](#) | [organization](#) | [originalOrganization](#) | [postIn](#) | [purpose](#) | [transitiveSubOrganizationOf](#) | [unitOf](#) |

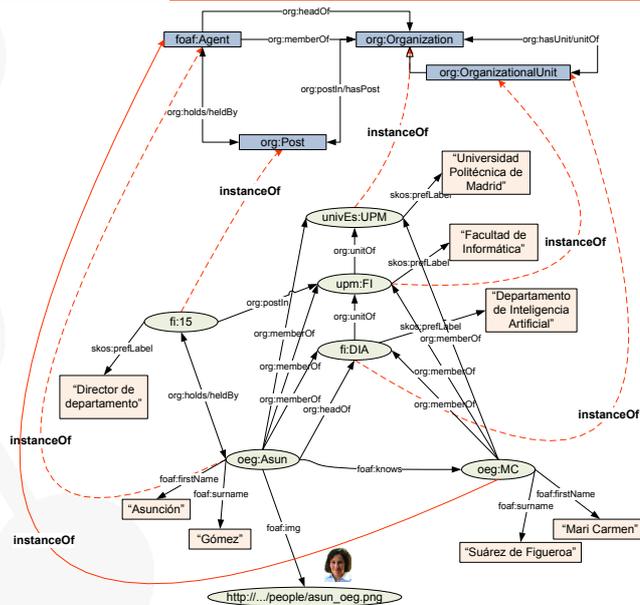
| [hasPrimarySite](#) | [hasRegisteredSite](#) | [hasSite](#) | [hasSubOrganization](#) | [hasUnit](#) | [headOf](#) | [heldBy](#) | [holds](#) | [identifier](#) | [linkedTo](#) | [location](#) | [remuneration](#) | [reportsTo](#) | [resultedFrom](#) | [resultingOrganization](#) | [role](#) | [roleProperty](#) | [siteAddress](#) | [siteOf](#) | [subOrganizationOf](#) |

## ORG - Una parte del modelo



Extracto del modelo de ORG

## ORG: modelo e instancias



## ORG: modelo e instancias – Sintaxis Turtle

```
### http://www.w3.org/ns/org#i5
fi:i5 rdf:type owl:NamedIndividual ,
      org:Post ;
      skos:prefLabel "Director de departamento" ;
      org:postIn fi:DIA .

### http://www.oeg-upm.es/resource/asun
oeg:asun rdf:type owl:NamedIndividual ,
          foaf:Agent ;
          org:holds fi:i5 ;
          org:memberOf fi:DIA ;
          org:headOf fi:DIA ;
          org:memberOf upm:FI ,
            univEs:UPM .

### http://www.fi.upm.es/resource/DIA
fi:DIA rdf:type owl:NamedIndividual ,
          org:OrganizationalUnit ;
          org:unitOf upm:fi
          skos:prefLabel "Departamento de Inteligencia Artificial" .

### http://www.upm.es/resource/FI
upm:FI rdf:type owl:NamedIndividual ,
        org:OrganizationalUnit ;
        org:unitOf univEs:UPM
        skos:prefLabel "Facultad de Informática" .

### http://www.universidadesespaolas.es/resource/UPM
univEs:UPM rdf:type owl:NamedIndividual ,
            org:Organization ;
            skos:prefLabel "Universidad Politécnica de Madrid" .

### http://www.oeg-upm.es/resource/MC
oeg:MC rdf:type owl:NamedIndividual ,
         foaf:Agent ;
         org:memberOf fi:DIA ,
           upm:FI ,
           univEs:UPM .
```

## ORG: modelo e instancias – Sintaxis RDF/XML

```
<!-- http://www.w3.org/ns/org#i5 -->
<Post rdf:about="http://www.w3.org/ns/org#i5">
  <rdf:type rdf:resource="owl:NamedIndividual"/>
  <skos:prefLabel>Director de departamento</skos:prefLabel>
  <postIn rdf:resource="http://www.fi.upm.es/resource/DIA"/>
</Post>

<!-- http://www.oeg-upm.es/resource/asun -->
<foaf:Agent rdf:about="http://www.oeg-upm.es/resource/asun">
  <rdf:type rdf:resource="owl:NamedIndividual"/>
  <holds rdf:resource="http://www.w3.org/ns/org#i5"/>
  <memberOf rdf:resource="http://www.fi.upm.es/resource/DIA"/>
  <headOf rdf:resource="http://www.fi.upm.es/resource/DIA"/>
  <memberOf rdf:resource="http://www.upm.es/resource/FI"/>
  <memberOf rdf:resource="http://www.universidadesespaolas.es/resource/UPM"/>
</foaf:Agent>

<!-- http://www.fi.upm.es/resource/DIA -->
<OrganizationalUnit rdf:about="http://www.fi.upm.es/resource/DIA">
  <rdf:type rdf:resource="owl:NamedIndividual"/>
  <skos:prefLabel>Departamento de Inteligencia Artificial</skos:prefLabel>
  <unitOf rdf:resource="http://www.upm.es/resource/FI"/>
</OrganizationalUnit>

<!-- http://www.upm.es/resource/FI -->
<OrganizationalUnit rdf:about="http://www.upm.es/resource/FI">
  <rdf:type rdf:resource="owl:NamedIndividual"/>
  <skos:prefLabel>Facultad de Informática</skos:prefLabel>
  <unitOf rdf:resource="http://www.universidadesespaolas.es/resource/UPM"/>
</OrganizationalUnit>

<!-- http://www.oeg-upm.es/resource/MC -->
<foaf:Agent rdf:about="http://www.oeg-upm.es/resource/MC">
  <rdf:type rdf:resource="owl:NamedIndividual"/>
  <memberOf rdf:resource="http://www.fi.upm.es/resource/DIA"/>
  <memberOf rdf:resource="http://www.upm.es/resource/FI"/>
  <memberOf rdf:resource="http://www.universidadesespaolas.es/resource/UPM"/>
</foaf:Agent>

<!-- http://www.universidadesespaolas.es/resource/UPM -->
<Organization rdf:about="http://www.universidadesespaolas.es/resource/UPM">
  <rdf:type rdf:resource="owl:NamedIndividual"/>
  <skos:prefLabel>Universidad Politécnica de Madrid</skos:prefLabel>
</Organization>
```

1. Introducción
2. Tipos de vocabularios
3. Proceso de Construcción
4. Ejemplos de Vocabularios
  - Personas y Organizaciones: FOAF, vCard, ORG
  - **Documentos: DC, BIBO**
  - Geo: puntos, curvas y polígonos
  - Estadísticas: Data Cube
  - Bibliotecas: FRBR
  - Otros vocabularios: sensores, provenance, VOID
5. Ejemplos de Redes de vocabularios en aplicaciones de datos enlazados
  - Instituto Geográfico Nacional

## DC: The Bibliographic Ontology



Dublin Core® Metadata Initiative

Making it easier to find information.

- **Dublin Core** es un ontología para describir recursos mediante metadatos simples y generales (*DC terms*).
- Subconjunto de 15 elementos (*DC elements*) reconocidos por IETF RFC 5013, ANSI/NISO Standard Z39.85-2007 y ISO Standard 15836:2009.
- Pensado para ser utilizado junto con otros vocabularios especializados de acuerdo a las necesidades de implementación.



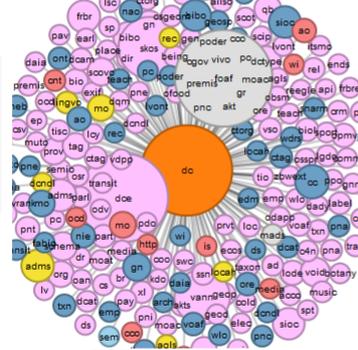
- <http://dublincore.org/documents/2012/06/14/dcmi-terms/?v=terms>

## DC: Relación con otros vocabularios

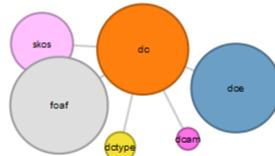


Vocabulary links:

Vocabularies referencing "dc" (205)



Vocabularies referenced by "dc" (5)



Link types

- Imports
- Similar to
- Used by
- Relies on
- Metadata vocabulary
- Extends
- Specializes
- Generalizes
- Has equivalences with
- Has disjunctions with

## DC: Evolución



Vocabulary history:

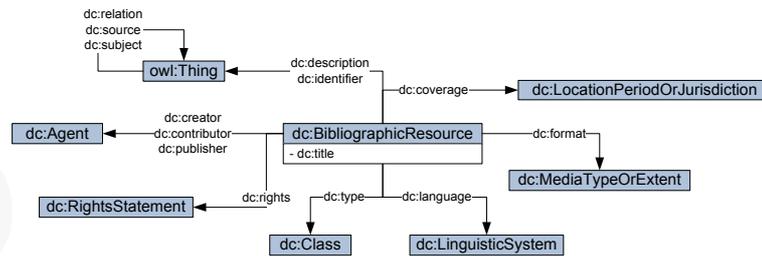


## DC: El vocabulario

### 126 Elementos

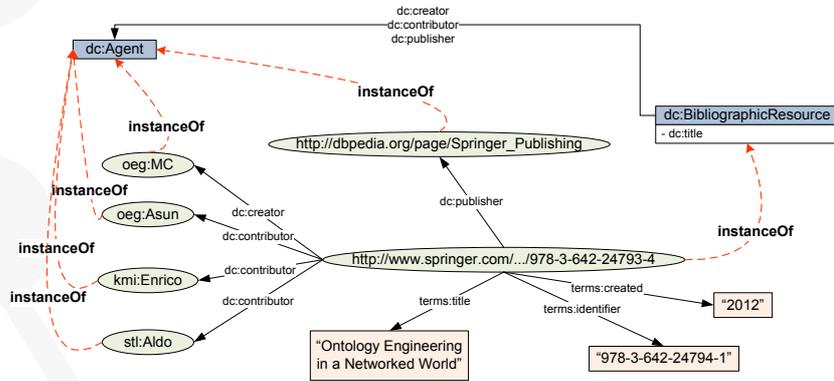
|  |  |
|--|--|
| Properties in the /terms/ namespace        | <a href="#">abstract</a> , <a href="#">accessRights</a> , <a href="#">accrualMethod</a> , <a href="#">accrualPeriodicity</a> , <a href="#">accrualPolicy</a> , <a href="#">alternative</a> , <a href="#">audience</a> , <a href="#">available</a> , <a href="#">bibliographicCitation</a> , <a href="#">conformsTo</a> , <a href="#">contributor</a> , <a href="#">coverage</a> , <a href="#">created</a> , <a href="#">creator</a> , <a href="#">date</a> , <a href="#">dateAccepted</a> , <a href="#">dateCopyrighted</a> , <a href="#">dateSubmitted</a> , <a href="#">description</a> , <a href="#">educationLevel</a> , <a href="#">extent</a> , <a href="#">format</a> , <a href="#">hasFormat</a> , <a href="#">hasPart</a> , <a href="#">hasVersion</a> , <a href="#">identifier</a> , <a href="#">instructionalMethod</a> , <a href="#">isFormatOf</a> , <a href="#">isPartOf</a> , <a href="#">isReferencedBy</a> , <a href="#">isReplacedBy</a> , <a href="#">isRequiredBy</a> , <a href="#">issued</a> , <a href="#">isVersionOf</a> , <a href="#">language</a> , <a href="#">license</a> , <a href="#">mediator</a> , <a href="#">medium</a> , <a href="#">modified</a> , <a href="#">provenance</a> , <a href="#">publisher</a> , <a href="#">references</a> , <a href="#">relation</a> , <a href="#">replaces</a> , <a href="#">requires</a> , <a href="#">rights</a> , <a href="#">rightsHolder</a> , <a href="#">source</a> , <a href="#">spatial</a> , <a href="#">subject</a> , <a href="#">tableOfContents</a> , <a href="#">temporal</a> , <a href="#">title</a> , <a href="#">type</a> , <a href="#">valid</a> |
| Properties in the /elements/1.1/ namespace | <a href="#">contributor</a> , <a href="#">coverage</a> , <a href="#">creator</a> , <a href="#">date</a> , <a href="#">description</a> , <a href="#">format</a> , <a href="#">identifier</a> , <a href="#">language</a> , <a href="#">publisher</a> , <a href="#">relation</a> , <a href="#">rights</a> , <a href="#">source</a> , <a href="#">subject</a> , <a href="#">title</a> , <a href="#">type</a>   |
| Vocabulary Encoding Schemes                | <a href="#">DCMIType</a> , <a href="#">DDC</a> , <a href="#">IMT</a> , <a href="#">LCC</a> , <a href="#">LCSH</a> , <a href="#">MESH</a> , <a href="#">NLM</a> , <a href="#">TGN</a> , <a href="#">UDC</a>   |
| Syntax Encoding Schemes                    | <a href="#">Box</a> , <a href="#">ISO3166</a> , <a href="#">ISO639-2</a> , <a href="#">ISO639-3</a> , <a href="#">Period</a> , <a href="#">Point</a> , <a href="#">RFC1766</a> , <a href="#">RFC3066</a> , <a href="#">RFC4646</a> , <a href="#">RFC5646</a> , <a href="#">URI</a> , <a href="#">W3CDTF</a>  |
| Classes                                    | <a href="#">Agent</a> , <a href="#">AgentClass</a> , <a href="#">BibliographicResource</a> , <a href="#">FileFormat</a> , <a href="#">Frequency</a> , <a href="#">Jurisdiction</a> , <a href="#">LicenseDocument</a> , <a href="#">LinguisticSystem</a> , <a href="#">Location</a> , <a href="#">LocationPeriodOrJurisdiction</a> , <a href="#">MediaType</a> , <a href="#">MediaTypeOrExtent</a> , <a href="#">MethodOfAccrual</a> , <a href="#">MethodOfInstruction</a> , <a href="#">PeriodOfTime</a> , <a href="#">PhysicalMedium</a> , <a href="#">PhysicalResource</a> , <a href="#">Policy</a> , <a href="#">ProvenanceStatement</a> , <a href="#">RightsStatement</a> , <a href="#">SizeOrDuration</a> , <a href="#">Standard</a>  |
| DCMI Type Vocabulary                       | <a href="#">Collection</a> , <a href="#">Dataset</a> , <a href="#">Event</a> , <a href="#">Image</a> , <a href="#">InteractiveResource</a> , <a href="#">MovingImage</a> , <a href="#">PhysicalObject</a> , <a href="#">Service</a> , <a href="#">Software</a> , <a href="#">Sound</a> , <a href="#">StillImage</a> , <a href="#">Text</a>   |
| Terms related to the DCMI Abstract Model   | <a href="#">memberOf</a> , <a href="#">VocabularyEncodingScheme</a>  |

## DC: Una parte del modelo



Extracto del modelo de DC

## DC: modelo e instancias



## RDF de ejemplo instanciación de Dublin Core

### XML

```
<owl:Thing rdf:about="http://www.springer.com/resource/book/978-3-642-24793-4">
  <rdf:type rdf:resource="&terms:BibliographicResource"/>
  <rdfs:label xml:lang="es">http://www.springer.com/resource/book/978-3-642-24793-4</rdfs:label>
  <terms:created rdf:datatype="&rdfs:Literal">2012</terms:created>
  <terms:identifier rdf:datatype="&rdfs:Literal">978-3-642-24794-1</terms:identifier>
  <terms:title rdf:datatype="&rdfs:Literal">Ontology Engineering in a Networked World</terms:title>
  <dc:publisher rdf:resource="http://dbpedia.org/page/Springer_Publishing"/>
  <dc:contributor rdf:resource="http://people.kmi.open.ac.uk/motta"/>
  <dc:contributor rdf:resource="http://www.istc.cnr.it/people/aldo-gangemi"/>
  <dc:contributor rdf:resource="http://www.oeg-upm.es/resource/asun"/>
  <dc:creator rdf:resource="http://www.oeg-upm.es/resource/MC"/>
</owl:Thing>
```

### Turtle

```
<http://www.springer.com/resource/book/978-3-642-24793-4> rdf:type terms:BibliographicResource ,
  terms:created "2012"^^rdfs:Literal ;
  terms:identifier "978-3-642-24794-1"^^rdfs:Literal ;
  terms:title "Ontology Engineering in a Networked World"^^rdfs:Literal ;
  dc:publisher <http://dbpedia.org/page/Springer_Publishing> ;
  dc:contributor <http://people.kmi.open.ac.uk/motta/> ,
  <http://www.istc.cnr.it/people/aldo-gangemi> ,
  <http://www.oeg-upm.es/resource/asun> ;
  dc:creator <http://www.oeg-upm.es/resource/MC> .
```

The screenshot shows the Protégé ontology editor interface. The main window displays the 'BibliographicResource' class hierarchy. The 'Class Annotations' pane on the right shows the following properties for the selected class:

- comment**: "A book, article, or other documentary resource"@en
- isDefinedBy**: "http://purl.org/dc/terms/\*anyURI"
- label**: "Bibliographic Resource"@en

The 'Object property hierarchy' pane on the left shows properties such as 'language', 'publisher', 'relation', 'rights', 'source', 'subject', 'type', 'accrualMethod', 'accrualPeriodicity', and 'audience'.



The Bibliographic Ontology

- **Bibliographic Ontology (BIBO)** para describir datos bibliográficos en la Web
- BIBO can be used as
  - Ontología de citas
  - Clasificación de documentos

BIBO - The Bibliographic Ontology



Metadata:

| Property                    | Value   |
|-----------------------------|---|
| is part of vocabulary space | All > Library > Documentation   |
| Vocabulary URI              | <a href="http://purl.org/ontology/bibo/">http://purl.org/ontology/bibo/</a>             |
| Prefix                      | bibo  |
| Namespace URI               | <a href="http://purl.org/ontology/bibo/">http://purl.org/ontology/bibo/</a>             |
| Date issued                 | 2008-06-03  |
| Last modified               | 2009-11-04  |
| Language                    | English   |
| Creator                     | Bruce D'Arcus, Frédéric Giasson   |
| Class number                | 58  |
| Property number             | 67  |
| See also                    | <a href="http://stats.lod2.eu/vocabularies/36">http://stats.lod2.eu/vocabularies/36</a> |
| Represented by              | format-bibo   |



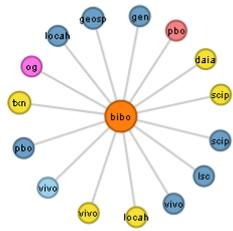
- [bibliontology.com](http://www.bibliontology.com)
- <http://purl.org/ontology/bibo/>

## BIBO: Relación con otros vocabularios

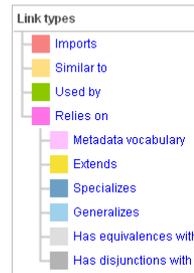
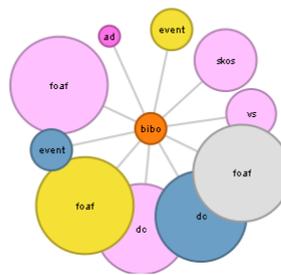


### Vocabulary links:

Vocabularies referencing "bibo" (15)



Vocabularies referenced by "bibo" (10)



## BIBO: Evolución



### Vocabulary history:

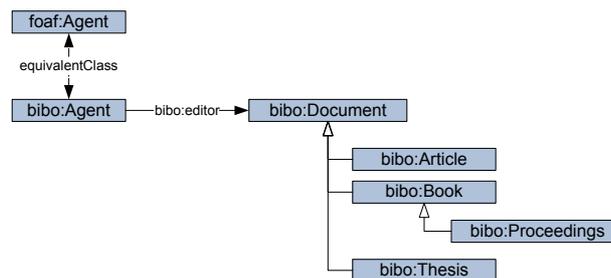


## BIBO: El vocabulario

### 189 Elementos

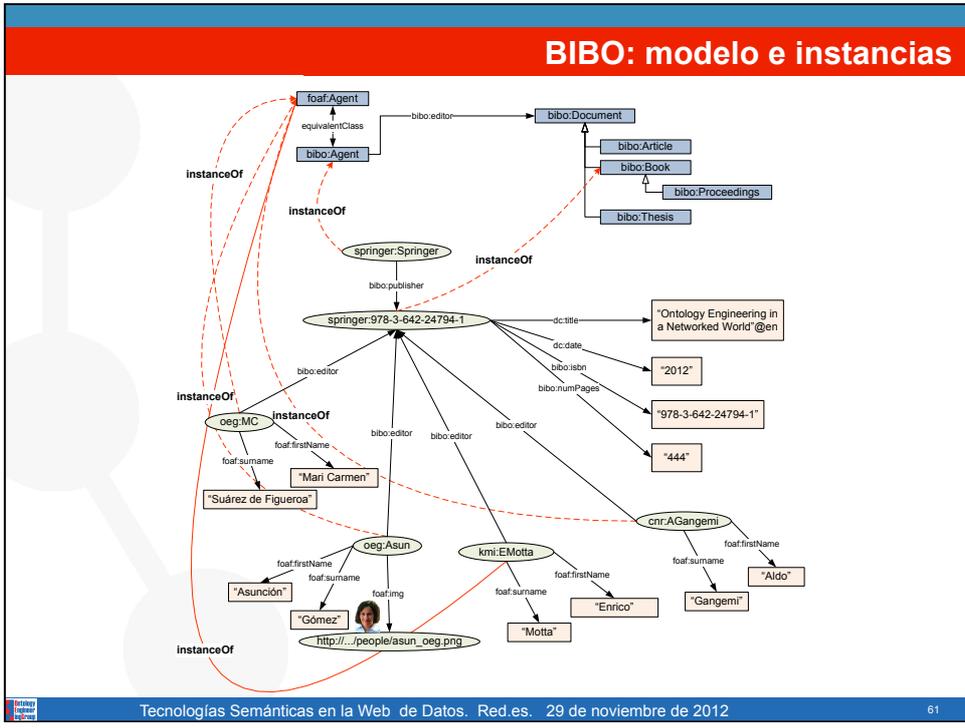
- owl:Thing
- bibo:abstract
- bibo:AcademicArticle
- bibo:affirmedBy
- bibo:annotates
- bibo:argued
- bibo:Article
- bibo:asin
- bibo:AudioDocument
- bibo:AudioVisualDocument
- bibo:authorList
- bibo:bdarcus
- bibo:Bill
- bibo:Book
- bibo:BookSection
- bibo:Brief
- bibo:chapter
- bibo:Chapter
- bibo:citedBy
- bibo:Code
- bibo:coden
- bibo:CollectedDocument
- bibo:Collection
- bibo:Conference
- bibo:content
- bibo:contributorList
- bibo:court
- bibo:CourtReporter
- bibo:degree
- bibo:degrees/ma
- bibo:degrees/ms
- bibo:degrees/phd
- bibo:director
- bibo:distributor
- bibo:Document
- bibo:DocumentPart
- bibo:DocumentStatus
- bibo:dci
- bibo:eanucc13
- bibo:EditedBook
- bibo:edition
- bibo:editor
- bibo:editorList
- bibo:eissn
- bibo:Email
- bibo:Event
- bibo:Excerpt
- bibo:fgjasson
- bibo:Film
- bibo:gtin14
- bibo:handle
- bibo:Hearing
- bibo:identifier
- bibo:Image
- bibo:Interview
- bibo:Interviewee
- bibo:interviewer
- bibo:isbn
- bibo:isbn10
- bibo:isbn13
- bibo:issn
- bibo:Issue
- bibo:issue
- bibo:issuer
- bibo:Journal
- bibo:json
- bibo:LegalCaseDocument
- bibo:LegalDecision
- bibo:LegalDocument
- bibo:Legislation
- bibo:Letter
- bibo:locator
- bibo:Magazine
- bibo:Manual
- bibo:Manuscript
- bibo:Map
- bibo:MultiVolumeBook
- bibo:Newspaper
- bibo:Note
- bibo:number
- bibo:numPages
- bibo:numVolumes
- bibo:odcnun
- bibo:organizer
- bibo:owner
- bibo:pageEnd
- bibo:pages
- bibo:pageStart
- bibo:Patent
- bibo:Performance
- bibo:performer
- bibo:Periodical
- bibo:PersonalCommunication
- bibo:PersonalCommunicationDocument
- bibo:pmid
- bibo:prefixName
- bibo:presentedAt
- bibo:presents
- bibo:Proceedings
- bibo:producer
- bibo:Quote
- bibo:recipient
- bibo:ReferenceSource
- bibo:Report
- bibo:reproducedIn
- bibo:reversedBy
- bibo:reviewOf
- bibo:section
- bibo:Series
- bibo:shortDescription
- bibo:shortTitle
- bibo:sioci
- bibo:Slide
- bibo:Slideshow
- bibo:Standard
- bibo:status
- bibo:status/accepted
- bibo:status/draft
- bibo:status/forthcoming
- bibo:status/legal
- bibo:status/nonPeerReviewed
- bibo:status/peerReviewed
- bibo:status/published
- bibo:status/rejected
- bibo:status/unpublished
- bibo:Statute
- bibo:subsequentLegalDecision
- bibo:suffixName
- bibo:Thesis
- bibo:ThesisDegree
- bibo:transcriptOf
- bibo:translationOf
- bibo:translator
- bibo:ups
- bibo:uri
- bibo:volume
- bibo:Webpage
- bibo:Website
- bibo:Workshop
- dcterms:Agent
- dcterms:contributor
- dcterms:created
- dcterms:date
- dcterms:description
- dcterms:format
- dcterms:hasPart
- dcterms:isPartOf
- dcterms:isReferencedBy
- dcterms:issued
- dcterms:isVersionOf
- dcterms:language
- dcterms:publisher
- dcterms:relation
- dcterms:rights
- dcterms:subject
- dcterms:title
- event:agent
- event:Event
- event:place
- event:produced\_in
- event:product
- event:sub\_event
- event:time
- foaf:Agent
- foaf:based\_near
- foaf:depiction
- foaf:Document
- foaf:family\_name
- foaf:givenname
- foaf:homepage
- foaf:image
- foaf:name
- foaf:Organization
- foaf:Person
- foaf:localityName
- prism:doi
- prism:edition
- prism:eissn
- prism:endingPage
- prism:isbn
- prism:issn
- prism:number
- prism:volume
- prism:volumeStartingPage
- rdf:List
- rdf:Seq
- rdf:value
- rdfo:Resource

## BIBO: Una parte del modelo



Extracto del modelo de BIBO

# BIBO: modelo e instancias



# BIBO in Protégé

The screenshot shows the Protégé interface for the BIBO ontology. The left pane displays the class hierarchy, showing **Document** as a base class for various document types. The right pane shows the details for the **Document** class, including its comment and label. The interface includes a menu bar, a toolbar, and a status bar at the bottom.

## BIBO: modelo e instancias – Sintaxis RDF/XML

```
<!-- http://spriger.de/resource/978-3-642-24794-1 -->
<owl:NamedIndividual rdf:about="http://spriger.de/resource/978-3-642-24794-1">
  <rdf:type rdf:resource="http://uri.org/ontology/bibo/Book"/>
  <prism:isbn>978-3-642-24794-1</prism:isbn>
  <terms:date>2012</terms:date>
  <terms:title>Ontology Engineering in a Networked World</terms:title>
  <numPages>444</numPages>
</owl:NamedIndividual>

<!-- http://cnr.it/resource/AGangemi -->
<owl:NamedIndividual rdf:about="http://cnr.it/resource/AGangemi">
  <rdf:type rdf:resource="terms:Agent"/>
  <editor rdf:resource="http://spriger.de/resource/978-3-642-24794-1"/>
</owl:NamedIndividual>

<!-- http://www.oeg-upm.es/resource/Asun -->
<owl:NamedIndividual rdf:about="http://www.oeg-upm.es/resource/Asun">
  <rdf:type rdf:resource="terms:Agent"/>
  <editor rdf:resource="http://spriger.de/resource/978-3-642-24794-1"/>
</owl:NamedIndividual>

<!-- http://kmi.uk/resource/EMotta -->
<owl:NamedIndividual rdf:about="http://kmi.uk/resource/EMotta">
  <rdf:type rdf:resource="terms:Agent"/>
  <editor rdf:resource="http://spriger.de/resource/978-3-642-24794-1"/>
</owl:NamedIndividual>

<!-- http://www.oeg-upm.es/resource/MC -->
<owl:NamedIndividual rdf:about="http://www.oeg-upm.es/resource/MC">
  <rdf:type rdf:resource="terms:Agent"/>
  <editor rdf:resource="http://spriger.de/resource/978-3-642-24794-1"/>
</owl:NamedIndividual>
```

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  - Estadísticas: Data Cube
  - Bibliotecas: FRBR
  - Otros vocabularios: sensores, provenance, VOID
5. Ejemplos de Redes de vocabularios en aplicaciones de datos enlazados
  - Instituto Geográfico Nacional

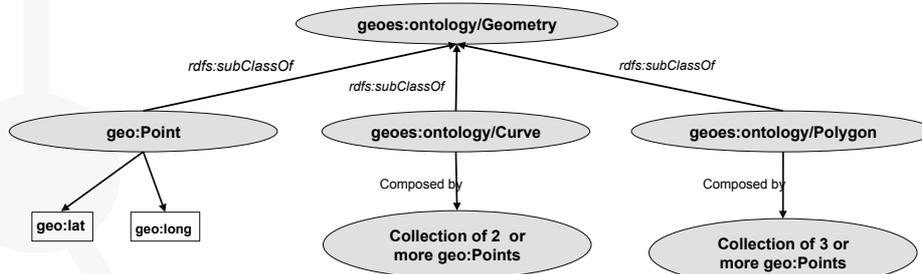
## Puntos en cartografía: WGS84

- Vocabulario para representar Puntos
  - latitud
  - Longitud
  - @en
- <http://www.w3.org/2003/01/geo/>

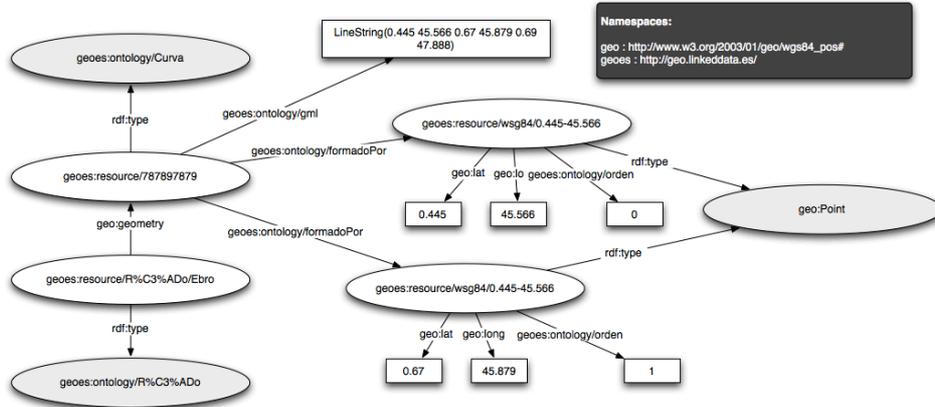
```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#">
<geo:Point>
  <geo:lat> 55.701</geo:lat>
  <geo:long>12.552</geo:long>
</geo:Point>
</rdf:RDF>
```

## Geoes: Modelo de Geometría

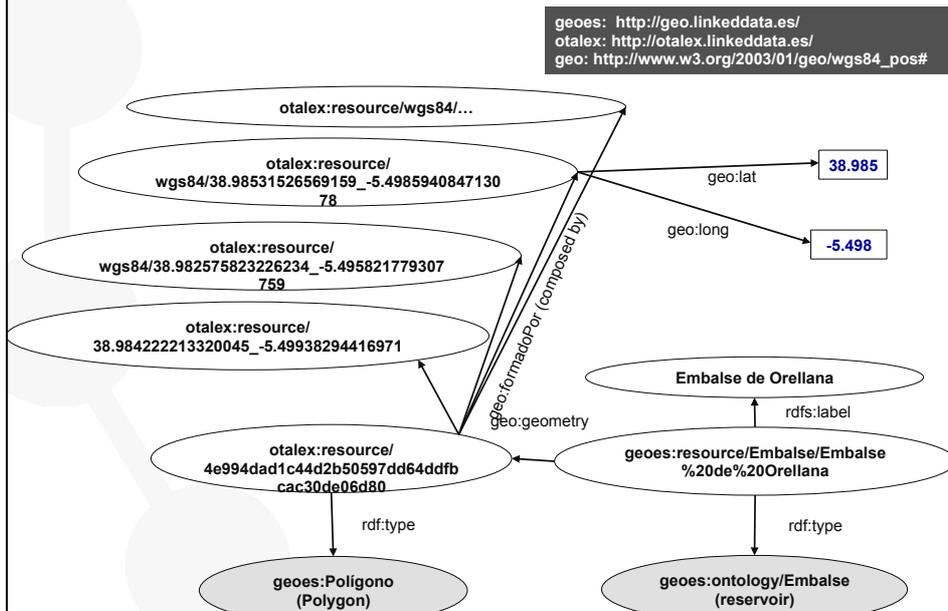
geoes: <http://geo.linkeddata.es/>  
geo: [http://www.w3.org/2003/01/geo/wgs84\\_pos#](http://www.w3.org/2003/01/geo/wgs84_pos#)



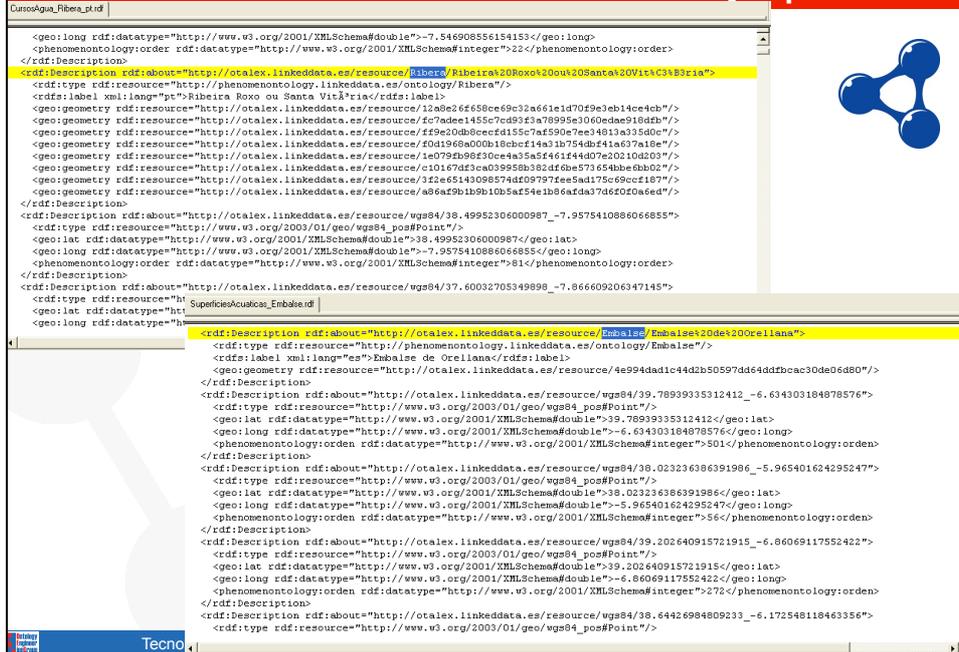
## Geoes: curvas



## Geoes: Polígonos



## Ejemplo de RDF



The screenshot displays an RDF document in XML format. The document describes a location named 'Ribeira' with various properties such as geometry, labels, and coordinates. The XML code is as follows:

```
<?xml version="1.0" encoding="UTF-8" ?>
<rdf:Description rdf:about="http://otalex.linkeddata.es/resource/otalex/Ribeira%20Box%20ou%20Santa%20Vita%20C%203%201%20"
  <rdf:type rdf:resource="http://phenomenontology.linkeddata.es/ontology/Ribera"/>
  <rdfls:label xml:lang="pt">Ribeira Roxo ou Santa Vit%3a%20/<rdfls:label>
  <geo:geometry rdf:resource="http://otalex.linkeddata.es/resource/12a8e26f6586e69c32a661e1d70f9e3eb14ce4cb"/>
  <geo:geometry rdf:resource="http://otalex.linkeddata.es/resource/3c7ade1455c7ed931a78995e1006ede9166d"/>
  <geo:geometry rdf:resource="http://otalex.linkeddata.es/resource/ff9e20db0ccfd155c7af590e7ee34813a335d0c"/>
  <geo:geometry rdf:resource="http://otalex.linkeddata.es/resource/2d01968a00b18bcbf14a31b754db41a637a18e"/>
  <geo:geometry rdf:resource="http://otalex.linkeddata.es/resource/1e0795b9630ce4a35a5461f44d07e20210d203"/>
  <geo:geometry rdf:resource="http://otalex.linkeddata.es/resource/c10187df3ca03958b382df6a573648be8ab02"/>
  <geo:geometry rdf:resource="http://otalex.linkeddata.es/resource/3f2e65143098574df09797fee5ad175c69ccf187"/>
  <geo:geometry rdf:resource="http://otalex.linkeddata.es/resource/a86af9b1b910b5af54e1b86afda37d620f0a6ed"/>
  </rdf:Description>
  <rdf:Description rdf:about="http://otalex.linkeddata.es/resource/wgs84/38.49952306000987_-7.9575410986066855">
  <rdf:type rdf:resource="http://www.w3.org/2003/01/geo/wgs84_pos#Point"/>
  <geo:lat rdf:datatype="http://www.w3.org/2001/XMLSchema#double">38.49952306000987</geo:lat>
  <geo:long rdf:datatype="http://www.w3.org/2001/XMLSchema#double">-7.9575410986066855</geo:long>
  <phenomenontology:orden rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">81</phenomenontology:orden>
  </rdf:Description>
  <rdf:Description rdf:about="http://otalex.linkeddata.es/resource/wgs84/37.60032705349898_-7.866609206347145">
  <rdf:type rdf:resource="http://otalex.linkeddata.es/resource/wgs84/37.60032705349898_-7.866609206347145">
  <geo:lat rdf:datatype="http://www.w3.org/2001/XMLSchema#double">37.60032705349898</geo:lat>
  <geo:long rdf:datatype="http://www.w3.org/2001/XMLSchema#double">-7.866609206347145</geo:long>
  </rdf:Description>
  <rdf:Description rdf:about="http://otalex.linkeddata.es/resource/Embalise%20de%20Orellana">
  <rdf:type rdf:resource="http://phenomenontology.linkeddata.es/ontology/Embalise"/>
  <rdfls:label xml:lang="es">Embalise de Orellana</rdfls:label>
  <geo:geometry rdf:resource="http://otalex.linkeddata.es/resource/4e994dad1c442b50597dd64ddfbca30de06d80"/>
  </rdf:Description>
  <rdf:Description rdf:about="http://otalex.linkeddata.es/resource/wgs84/39.78939335312412_-6.634303184878576">
  <rdf:type rdf:resource="http://www.w3.org/2003/01/geo/wgs84_pos#Point"/>
  <geo:lat rdf:datatype="http://www.w3.org/2001/XMLSchema#double">39.78939335312412</geo:lat>
  <geo:long rdf:datatype="http://www.w3.org/2001/XMLSchema#double">-6.634303184878576</geo:long>
  <phenomenontology:orden rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">501</phenomenontology:orden>
  </rdf:Description>
  <rdf:Description rdf:about="http://otalex.linkeddata.es/resource/wgs84/38.02323636391986_-5.965401624295247">
  <rdf:type rdf:resource="http://www.w3.org/2003/01/geo/wgs84_pos#Point"/>
  <geo:lat rdf:datatype="http://www.w3.org/2001/XMLSchema#double">38.02323636391986</geo:lat>
  <geo:long rdf:datatype="http://www.w3.org/2001/XMLSchema#double">-5.965401624295247</geo:long>
  <phenomenontology:orden rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">56</phenomenontology:orden>
  </rdf:Description>
  <rdf:Description rdf:about="http://otalex.linkeddata.es/resource/wgs84/39.202640915721915_-6.86069117552422">
  <rdf:type rdf:resource="http://www.w3.org/2003/01/geo/wgs84_pos#Point"/>
  <geo:lat rdf:datatype="http://www.w3.org/2001/XMLSchema#double">39.202640915721915</geo:lat>
  <geo:long rdf:datatype="http://www.w3.org/2001/XMLSchema#double">-6.86069117552422</geo:long>
  <phenomenontology:orden rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">272</phenomenontology:orden>
  </rdf:Description>
  <rdf:Description rdf:about="http://otalex.linkeddata.es/resource/wgs84/38.64426984809233_-6.172548118463356">
  <rdf:type rdf:resource="http://www.w3.org/2003/01/geo/wgs84_pos#Point"/>
```

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  - Bibliotecas:
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