



ALIADA

## Automatic Publication under Linked Data Paradigm of Library Data

# ALIADA, an Open Source Solution to Easily Publish Linked Data of Libraries and Museums

*ALIADA Project Consortium*  
SWIB15, November 23-25, 2015

Hamburg



# The challenge: why LOD in LM

- A **global pool of shared data** that can be re-used to describe resources will avoid the redundant effort of the current cataloging processes.
- The **use of the Web** and Web-based identifiers will make up-to-date resource descriptions directly citable by catalogers.
- Linked Data **is more durable and robust** than metadata formats that depend on a particular data structure.
- Developers will also **no longer have to work with library-specific data formats** (MARC, LIDO).
- With Linked Open Data, libraries can **increase their presence on the Web**, where most information seekers may be found.

<http://www.w3.org/2005/Incubator/ld/wiki/Benefits>

# The challenge: how to start

- Cataloguing data according international conceptual models and standards (FRBR, BIBFRAME, CIDOC-CRM, ...) 
- Exporting records to standard metadata schemes (MARC, LIDO or Dublin Core) and formats (XML) 
- Selecting an ontology 
- Converting MARC/LIDO/DC metadata to RDF statements 
- Linking their own dataset to other datasets (one domain or multidomain) 
- Publishing data as 5-star Linked Open Data 

# The challenge: how to start

“Librarians and curators are experts in cataloguing and making accessible their resources, but they don’t know about Linked Data technology, so they need *an ally*”

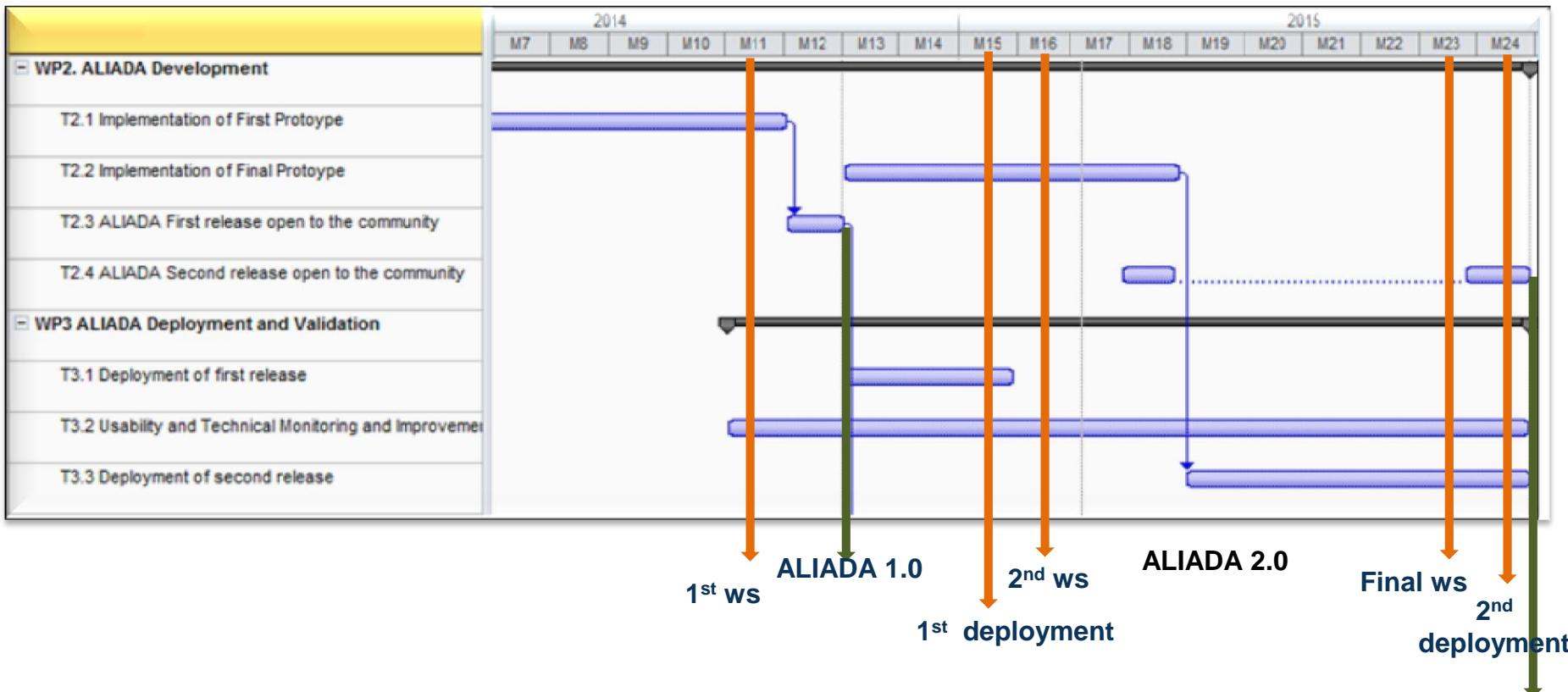
- Open source Java application to **automatically publish** as Linked Data the metadata created by a library or museum management system
- Supported **metadata types** (types of datasets): bibliographic records, authority records, descriptions of museum objects and other information resources
- Compliant with **MARC XML, LIDO XML and Dublin Core** formats
- Conversion to RDF triples (mapping) according to the **ALIADA ontology**, mainly based on **FRBRoo**, SKOS, WGS84 and FoaF ontologies
- Linking to other datasets, such as Europeana, British National Bibliography, Spanish National Library, Freebase Visual Art, DBpedia, Hungarian National Library, Library of Congress Subject Headings, Lobid, MARC codes list, VIAF Virtual International Authority File or Open Library
- Automatic publication of dumps (URIs) and SPARQL Endpoint on DataHub



- **EU FP7- ENV-2012** Collaborative project 2013-2015
- **Partners:** Art museums, libraries, ILS vendors, researchers on Semantic Web technology
- **Final release:** October 2015
- **Open source** community expected
- ALIADA is **free software**, you can redistribute it and/or modify it under the terms of the GNU GPL v3 ([License](#))



# ALIADA, the ally to publish LODLM



- M11 – September 2014: 1<sup>st</sup> Usability workshop
- M12 – October 2014: 1<sup>st</sup> Prototype + opening to the community
- M15 – January 2015: 1<sup>st</sup> deployment
- M16 – February 2015: 2<sup>nd</sup> Usability workshop
- M23 – September 2015: Final Usability workshop
- M24 – October 2015: 2<sup>nd</sup> Prototype & 2<sup>nd</sup> deployment + opening to the community

## 1<sup>st</sup> prototype (2014)

- User interface in Spanish and English.
- Validation of imported records (MARC Bibliographic and LIDO)
- Mapping templates (FRBRoo)
- RDF-izer ([ALIADA ontology](#))
- Linking to some datasets: Europeana, BNB, BNE, Freebase, Dbpedia, NSZL, Geonames and MARC Code Lists (SPARQL endpoint)
- Linked data server creation + SPARQL endpoint + URIs dereferencing .
- Linked dataset validation: through a number of SPARQL queries.

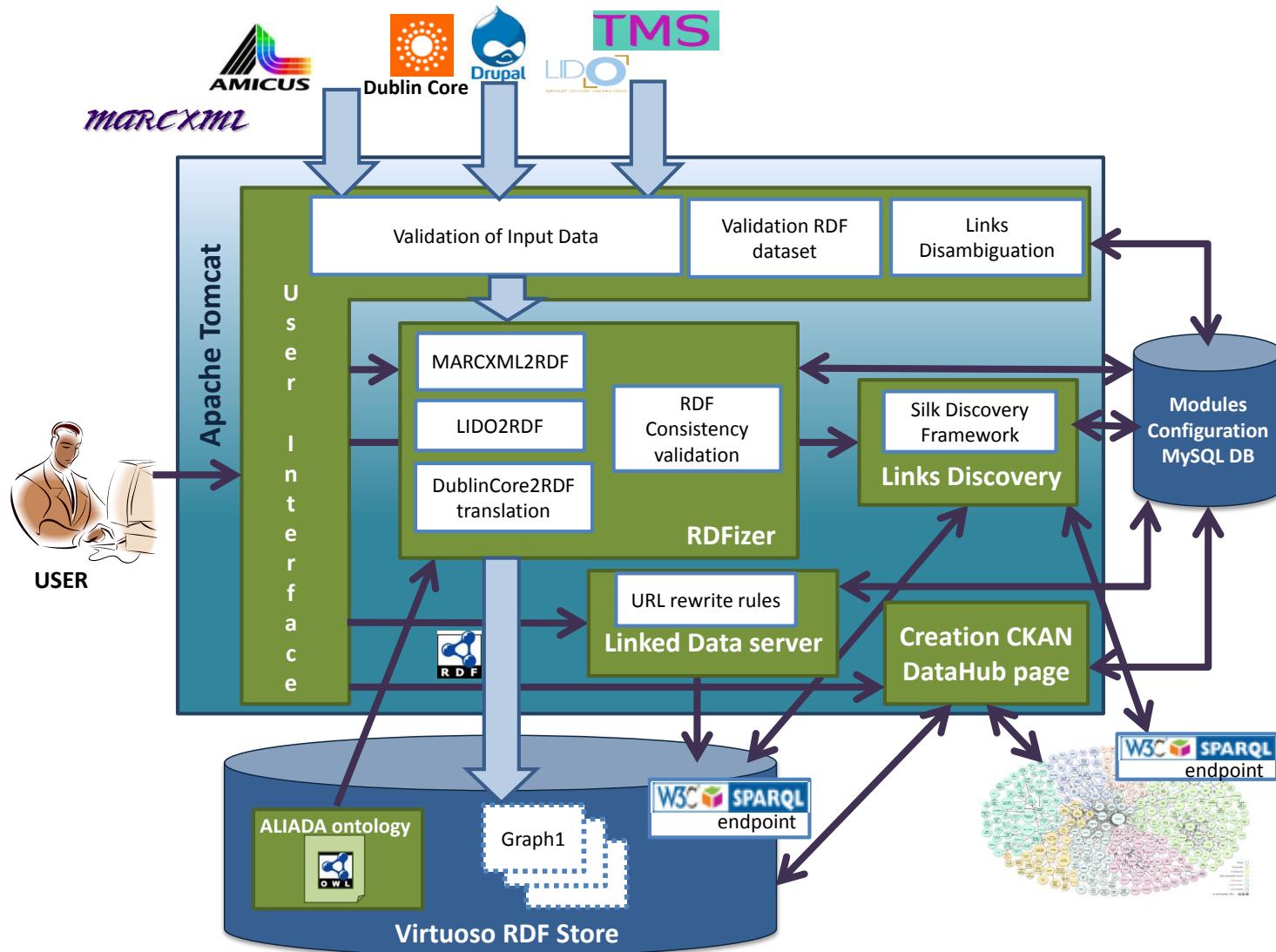
## 2nd prototype (2015)

- Translation of DublinCore XML and MARC XML Authorities to ALIADA ontology.
- Validation of RDF dataset consistency.
- NER (Named Entity Recognition) for some text free elements
- Ad-hoc linking to some of the listed external datasets , which do not provide a SPARQL endpoint such as VIAF, LOBID, Open Library and Library of Congress Subject Headings.
- Links disambiguation: the system offers to the user a set of possible ambiguous links: so the user can decide which links are correct and which ones should be rejected.
- Advanced URI de-referencing and creation of a web page for the generated dataset.
- Publication in CKAN of the created linked dataset + DataHub LOD validator.
- Translation of the user interface to Italian and Hungarian.
- ALIADA offers REST services in order to be integrated with other systems: ILS and CMS.

# ALIADA, LOD main features



ALIADA



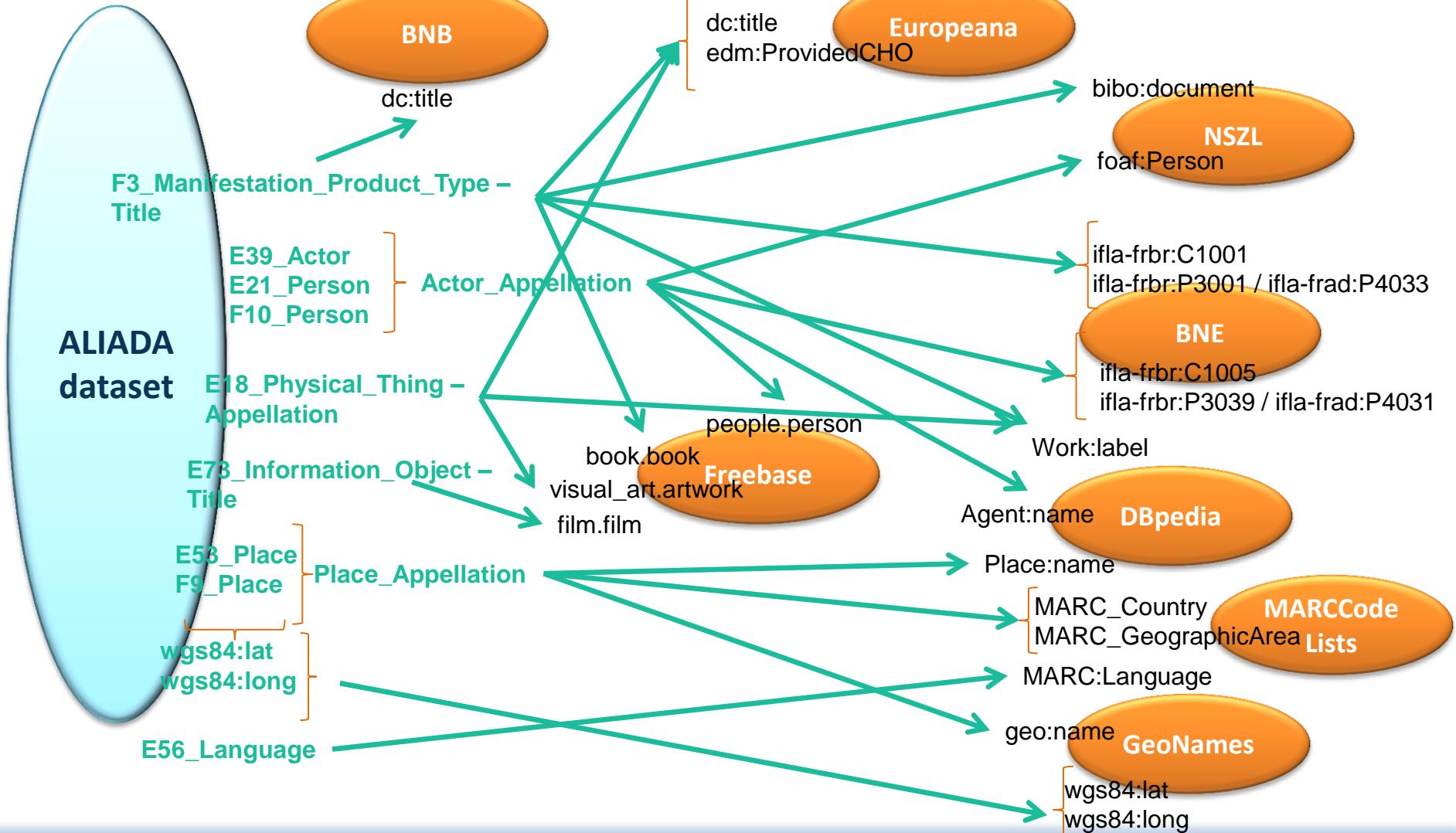
- **ALIADA RDFizer**

- Scalability (RESTful application, Apache Camel asynchronous channels, JEE web application)
- Modularity (Conversion templates are configurable and extensible)
- Reusability (Standalone installation of the RDFizer)
- Easy to use/maintain (Conversion job is controlled by the so-called “conversion templates”, which are runtime-interpreted scripts very easy to maintains)
- Easy to extend (The library is free to create their conversion template, producing an arbitrary output format, with another ontology)
- Validation before the conversion (Jena OWL Micro Reasoner)

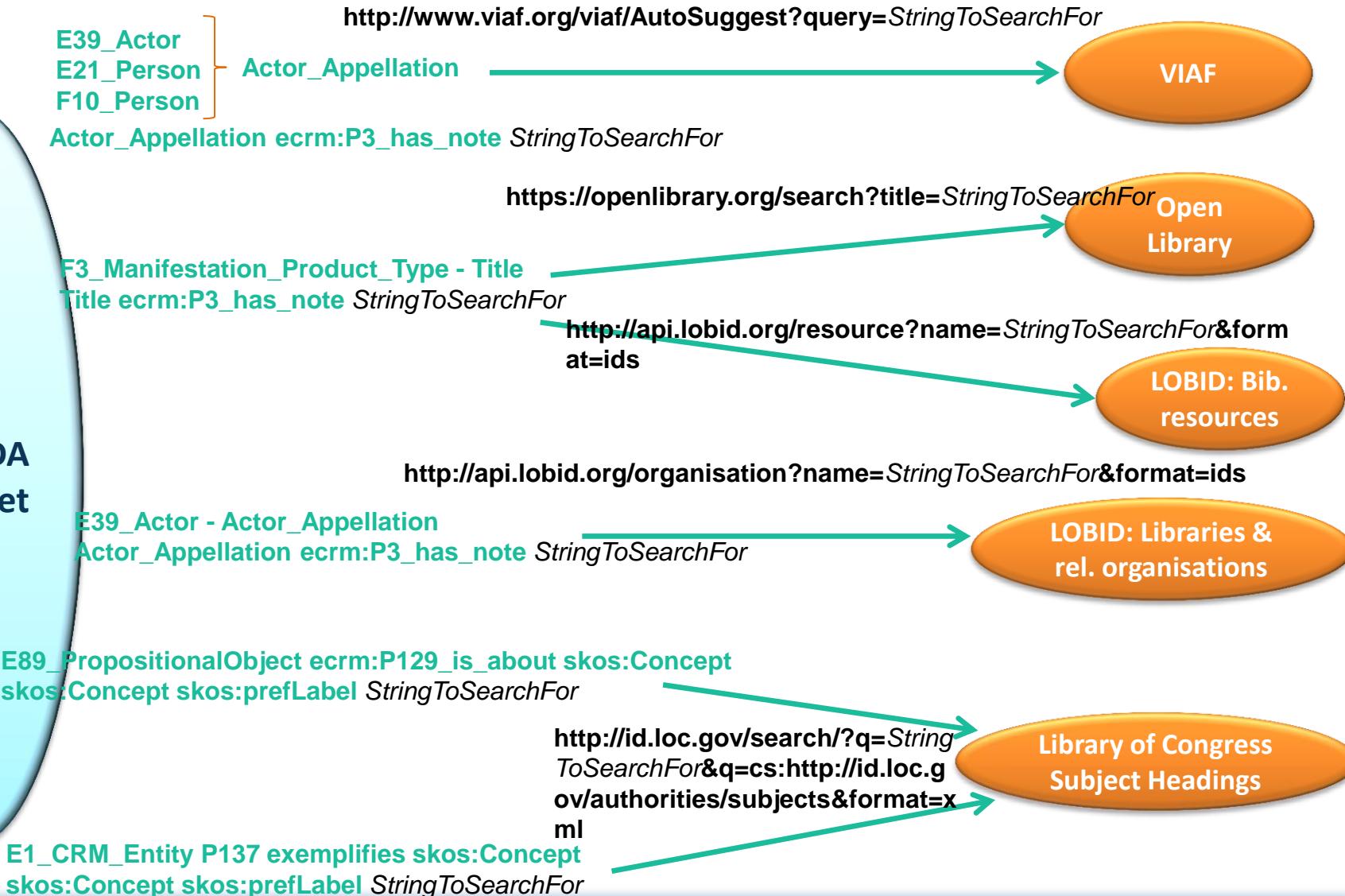
- **NER of free text fields.**

- A dedicated component for doing NLP (Natural Language Processing). Recognizes sequences of words in a text which are the names of things, such as person, company names and places.
  - In LIDO it is applied to <lido:descriptiveNoteValue xml:lang="en" lido:type ="physical-description">Sculpture of Mozart</lido:descriptiveNoteValue >
  - In MARC it is applied to
    - "522" "a": Geographic Coverage Note.
    - "525" "a": Supplement Note.
    - "520" "a": Summary, etc.
    - "520" "b": Expansion of summary note.
  - The NER results are stored as RDF triples that enrich the owning records

- Linking to Datasets that provide SPARQL endpoint



- Linking to Datasets that do not provide SPARQL endpoint



# ALIADA, LOD main features

- **Links disambiguation**

 ALIADA

Ambiguous links (158)
All links (294)

Ambiguous links																																																							
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<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Aliada URI</th> <th style="text-align: right;">External URI</th> </tr> </thead> <tbody> <tr><td><a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/00413d9a-6d92-39f1-ad0e-16fc8b380356</a></td><td style="text-align: right;"><a href="#">http://rdf.freebase.com/ns/m.0df65</a></td></tr> <tr><td><a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/00413d9a-6d92-39f1-ad0e-16fc8b380356</a></td><td style="text-align: right;"><a href="#">http://rdf.freebase.com/ns/en.egon_schiele</a></td></tr> <tr><td><a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/00413d9a-6d92-39f1-ad0e-16fc8b380356</a></td><td style="text-align: right;"><a href="#">http://data.nytimes.com/48774520370921546573</a></td></tr> <tr><td><a 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<a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/1d8731c8-7ba7-3c63-a3d4-7375fa04639a</a>	<a href="#">http://data.nytimes.com/michelangelo_buonarroti_per</a>																																																						
<a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/2e97fc55-7977-3c20-ae82-70d47da96837</a>	<a href="#">http://rdf.freebase.com/ns/m.060_7</a>																																																						
<a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/2e97fc55-7977-3c20-ae82-70d47da96837</a>	<a href="#">http://rdf.freebase.com/ns/en.pablo_picasso</a>																																																						
<a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/2e97fc55-7977-3c20-ae82-70d47da96837</a>	<a href="#">http://data.nytimes.com/N855344257183137093</a>																																																						
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<a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/2e97fc55-7977-3c20-ae82-70d47da96837</a>	<a href="#">http://dbpedia.org/resource/List_of_Picasso_artworks_1911%E2%80%9320</a>																																																						
<a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/30f1387a-694e-33e6-a7fa-1c1c5957c783</a>	<a href="#">http://rdf.freebase.com/ns/m.03j90</a>																																																						
<a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/30f1387a-694e-33e6-a7fa-1c1c5957c783</a>	<a href="#">http://rdf.freebase.com/ns/en.hans_christian_andersen</a>																																																						
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<a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/34dbc6d1-41e8-3aff-b7a9-e57b69d73b79</a>	<a href="#">http://data.nytimes.com/52199114612406425293</a>																																																						
<a href="#">http://aliada.scanbit.net:8891/id/collections/library/bib/E21_Person/34dbc6d1-41e8-3aff-b7a9-e57b69d73b79</a>	<a href="#">http://data.nytimes.com/viola_bill_per</a>																																																						
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- **Advanced URI de-referencing**

URI regulation : <http://www.w3.org/TR/cooluris/>

- Be on the web
  - Machines and people should be able to retrieve a description about the resource identified by the URI from the Web.
  - Machines should get RDF data and humans should get a readable representation, such as HTML
- Cool URIs
  - Simplisity: Short and mnemonic
  - Stability: Does not change as long as possible
  - Managabilty: Keep all URIs in a dedicated subdomain

- URI name convention of ALIADA: URI structure

**{domain}/{type}/{concept}/{class}/{reference}.{format}**

*data.szepmuveszeti.hu/id/collections/museum/E18\_Physical\_Thing/sz  
epmuveszeti.hu\_object\_29*

- **URI name convention of ALIADA: URI structure**

Extension	Media type	Common name
.html	text/html	HTML
.json	application/rdf+json	JSON
.jsonld	application/ld+json	JSON-LD
.nt	text/plain	N-Triples
.opac	OPAC of the institution (if restful)	OPAC
.rdf	application/rdf+xml	RDF/XML
.ttl	text/rdf+n3	N3/Turtle

[http://data.szepmuveszeti.hu/doc/collections/museum/E18\\_Physical\\_Ting/szepmuveszeti.hu\\_object\\_29.nt](http://data.szepmuveszeti.hu/doc/collections/museum/E18_Physical_Ting/szepmuveszeti.hu_object_29.nt)

[http://data.szepmuveszeti.hu/doc/collections/museum/E18\\_Physical\\_Ting/szepmuveszeti.hu\\_object\\_29.html](http://data.szepmuveszeti.hu/doc/collections/museum/E18_Physical_Ting/szepmuveszeti.hu_object_29.html)

- Dataset Default Web Page created by ALIADA

Artium	
Aliada dataset	
description	Open linked data from the Library and Museum of ARTIUM
publisher	ARTIUM
source	<a href="http://biblioteca.artium.org">http://biblioteca.artium.org</a>
created	2015-10-05
contributor	Aliada Consortium
license	<a href="http://creativecommons.org/publicdomain/zero/1.0/">http://creativecommons.org/publicdomain/zero/1.0/</a>
SPARQL endpoint	<a href="http://aliada.scanbit.net:8891/sparql">http://aliada.scanbit.net:8891/sparql</a>
vocabulary	<a href="http://aliada-project.eu/2014/aliada-ontology#">http://aliada-project.eu/2014/aliada-ontology#</a>
number of triples	11566
list of resources	<a href="http://aliada.scanbit.net:8891/doc/collections">http://aliada.scanbit.net:8891/doc/collections</a>
subsets	Library Bibliographic data: <a href="http://aliada.scanbit.net:8891/doc/collections/library/bib">http://aliada.scanbit.net:8891/doc/collections/library/bib</a> Library Authority data: <a href="http://aliada.scanbit.net:8891/doc/collections/library/auth">http://aliada.scanbit.net:8891/doc/collections/library/auth</a> Museum data: <a href="http://aliada.scanbit.net:8891/doc/collections/museum">http://aliada.scanbit.net:8891/doc/collections/museum</a> DC data: <a href="http://aliada.scanbit.net:8891/doc/collections/dc">http://aliada.scanbit.net:8891/doc/collections/dc</a>

# ALIADA, LOD main features

- Publication in CKAN Datahub

[/ Organizaciones / ARTIUM / aliada-scanbit-net](#)

**aliada-scanbit-net**

Seguidores  
0

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**Organización**



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## aliada-scanbit-net

Open linked data from the Library and Museum of ARTIUM

### Datos y Recursos

- [Sparql Endpoint](#) SPARQL endpoint for aliada-scanbit-net dataset
- [Dataset dump of Library Bibliographic data in ...](#) Dataset dump in N-Triples format.
- [Dataset dump of links to external datasets of ...](#) Dataset dump in N-Triples format.
- [aliadascanbitnet1891.ttl](#) Void file describing the main features of the aliada-scanbit-n...
- [Example resource of LIDO](#) Example resource of LIDO in RDF/XML format
- [Example resource of DC](#) Example resource of DC in RDF/XML format
- [Example resource of MARC BIB](#) Example resource of MARC BIB in RDF/XML format
- [Example resource of MARC AUTH](#) Example resource of MARC AUTH in RDF/XML format
- [RDF Schema](#) RDF Schema

format-foaf > format-fbroot > format-owl > format-owltime > format-skos >  
 format-wgs84 > license-metadata > lod > no-proprietary-vocab > no-vocab-mappings >  
 provenance-metadata > publications > published-by-producer >

### Información Adicional

Campo	Valor
Fuente	<a href="http://biblioteca.artium.org">http://biblioteca.artium.org</a>
Autor	Aliada Consortium
Versión	Tue Oct 27 17:53:11 CET 2015
Estado	active

- **Data Hub LOD Validator**

A handy record validator is provided at <http://validator.lod-cloud.net/validate.php> to check that at least the minimum required information is present.

After applying such validator over our dataset published by ALIADA, a completeness level of 3 is reached. The following step to reach the top completeness level of 4 is to e-mail to the contacts indicated at <http://lod-cloud.net/> page

# ALIADA, LOD main features



## • Integration of ALIADA with the LMS (RESTful API)

The screenshot shows the AMICUS Libri Suite Cataloguing interface. A search for 'AW malagon' has returned 10 results. The first result is highlighted, showing details for the book 'Malagón' by Malagón. The interface includes a sidebar with navigation links like Authority, Bibliographic, Search, Create new record, etc., and a right-hand panel with options for creating bibliographies and exporting to MARCXML.

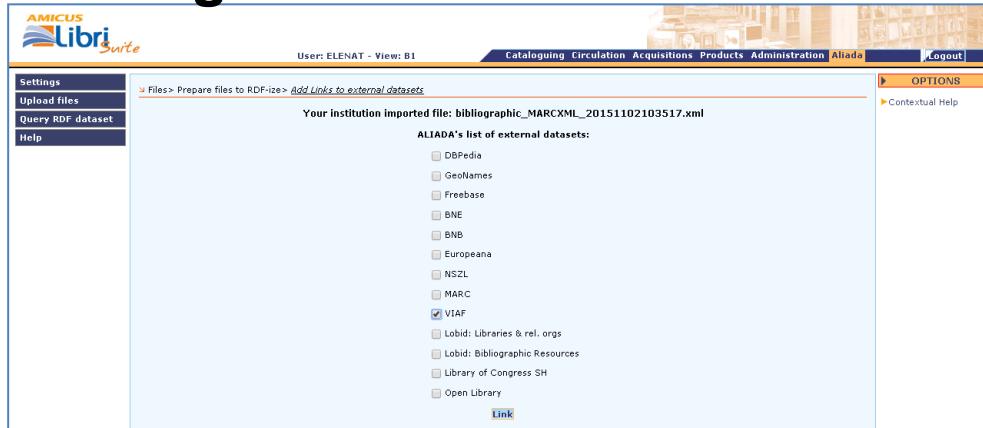
The screenshot shows the AMICUS Libri Suite Administration interface. It displays a list of uploaded files, all of which are in the 'idle' status. The files are named 'bibliographic\_MARCXML\_20151102103319.xml' through 'bibliographic\_MARCXML\_20151102103517.xml'. The sidebar includes links for Settings, Upload files, Query RDF dataset, and Help.

The screenshot shows the 'Conversion to RDF' setup screen. It's preparing files for conversion. The input file is 'bibliographic\_MARCXML\_20151102103517.xml', the template is 'MARC BIB', the dataset is 'Aliada dataset', and the subset is 'collections/library/bib'. The 'RDF-ize' button is visible at the bottom.

The screenshot shows the results of the 'Conversion to RDF' process. The input file is 'bibliographic\_MARCXML\_20151102103517.xml'. The process statistics are: Total number of records: 5, Number of statements processed: 5, Number of statements emitted: 467, Record processing throughput: 0, and Triples production throughput: 19. The 'Next>>' button is visible at the bottom.

# ALIADA, LOD main features

## • Integration of ALIADA with the LMS (RESTful API)



User: ELENAT - View: B1

Cataloguing Circulation Acquisitions Products Administration Aliada Logout

Your institution imported file: bibliographic\_MARCXML\_20151102103517.xml

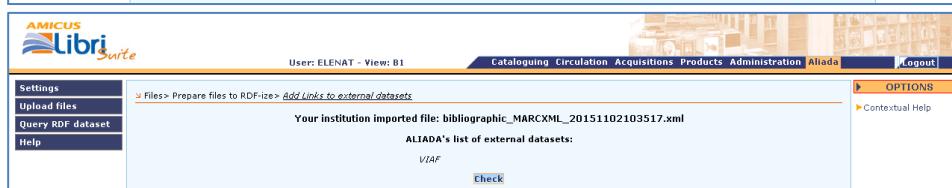
ALIADA's list of external datasets:

- DBpedia
- GeoNames
- Freebase
- BNE
- BNB
- Europeana
- NSZL
- MARC
- VIAF
- Lobid: Libraries & rel. orgs
- Lobid: Bibliographic Resources
- Library of Congress SH
- Open Library

[Link](#)

[OPTIONS](#)

[Contextual Help](#)



User: ELENAT - View: B1

Cataloguing Circulation Acquisitions Products Administration Aliada Logout

Your institution imported file: bibliographic\_MARCXML\_20151102103517.xml

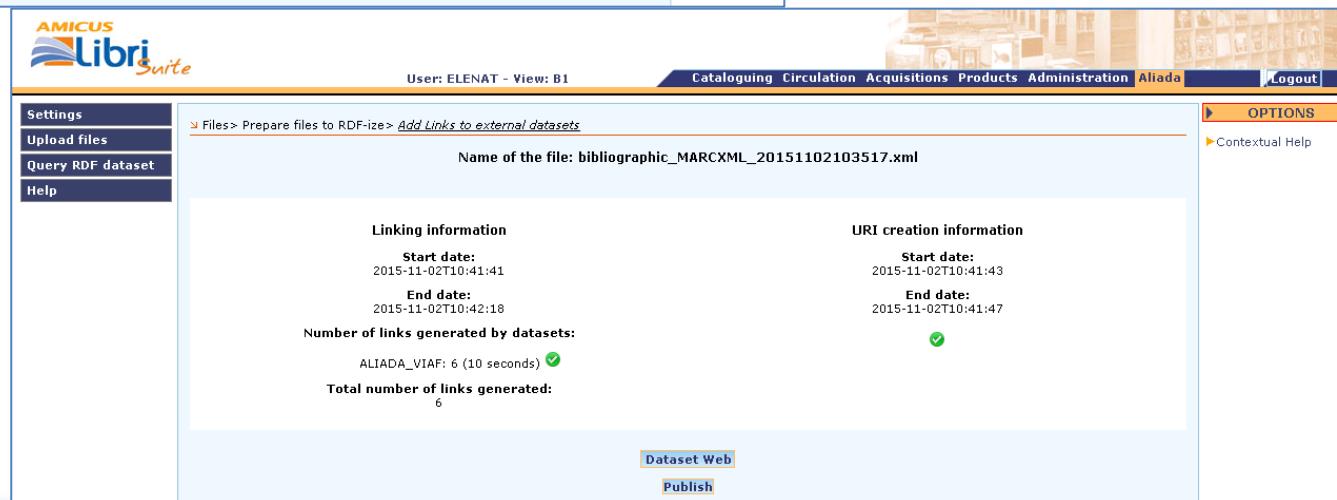
ALIADA's list of external datasets:

[VIAF](#)

[Check](#)

[OPTIONS](#)

[Contextual Help](#)



User: ELENAT - View: B1

Cataloguing Circulation Acquisitions Products Administration Aliada Logout

Name of the file: bibliographic\_MARCXML\_20151102103517.xml

[OPTIONS](#)

[Contextual Help](#)

**Linking information**

**Start date:**  
2015-11-02T10:41:41

**End date:**  
2015-11-02T10:42:18

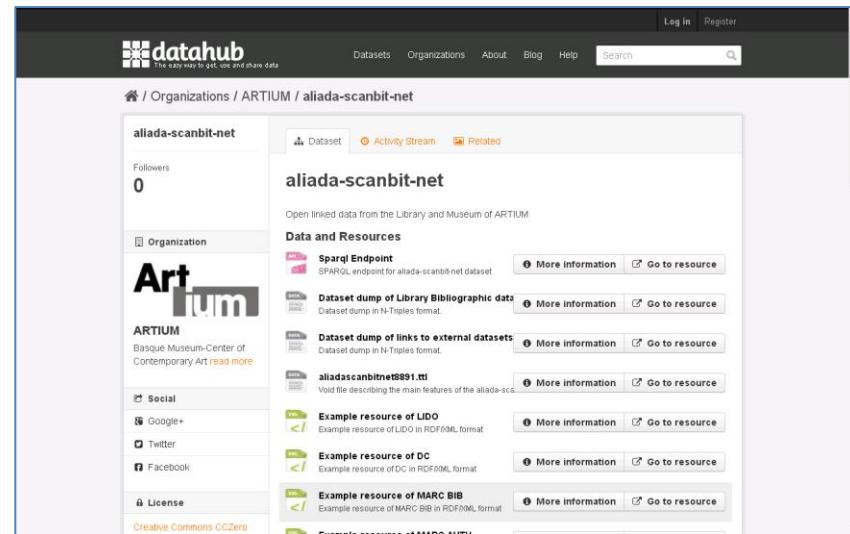
**Number of links generated by datasets:**

ALIADA\_VIAF: 6 (10 seconds)

**Total number of links generated:**  
6

[Dataset Web](#)

[Publish](#)



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/ Organizations / ARTIUM / aliada-scanbit-net

**aliada-scanbit-net**

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**Data and Resources**

**Sparql Endpoint** SPARQL endpoint for aliada-scanbit-net dataset [More information](#) [Go to resource](#)

**Dataset dump of Library Bibliographic data** Dataset dump in N-Triples format [More information](#) [Go to resource](#)

**Dataset dump of links to external datasets** Dataset dump in N-Triples format [More information](#) [Go to resource](#)

**aliadascanbitnet@891.ttl** Void file describing the main features of the aliada-scanbitnet dataset [More information](#) [Go to resource](#)

**Example resource of LIDO** Example resource of LIDO in RDF/XML format [More information](#) [Go to resource](#)

**Example resource of DC** Example resource of DC in RDF/XML format [More information](#) [Go to resource](#)

**Example resource of MARC BIB** Example resource of MARC BIB in RDF/XML format [More information](#) [Go to resource](#)

**Example resource of MARC\_ALIU**

## DEMO SITE

Demo video: <https://vimeo.com/aliadaproject>

ARTIUM's datasets  
<http://datos.artium.org/>

MFAB's dataset  
<http://data.szepmuveszeti.hu/>

ARTIUM's RDF data store (queries)  
<http://datos.artium.org/sparql>

MFAB's RDF data store (queries)  
<http://data.szepmuveszeti.hu/sparql>

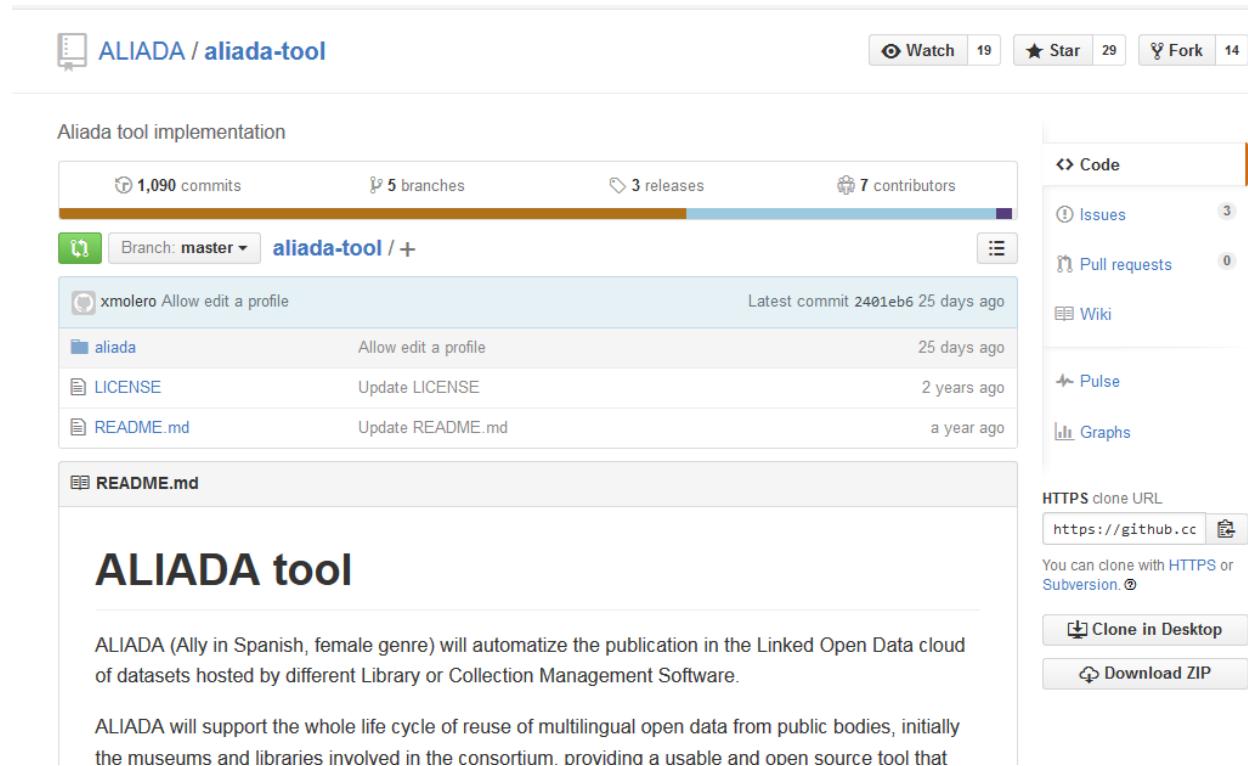
ALIADA site has been updated with the **second release**, the version resulting from the usability and performance tests as well as from the second deployment in public institutions



The screenshot shows the ALIADA website's homepage. At the top, there is a navigation bar with links to Home, About, Publications, Community, Download, News, Contact, Member Area, and FAQ. Below the navigation bar is a header for "datahub" with a sub-header "The easy way to get, use and share data". The main content area features a large search bar and a section titled "Publish your library and museum data in the Linking Open Data Cloud using ALIADA". It displays a map of the Linking Open Data Cloud and a list of 212 datasets found. A detailed description of the VIAF dataset is shown. On the left, there is a sidebar for "ALIADA: Automatic publication under Linked Data Paradigm of Library Data". On the right, there is a sidebar for "Get Involved" with fields for Username and Password, and a link to "Create new account".

<http://www.aliada-project.eu/>

The source code of the second release has been uploaded to the GitHub's ALIADA repository and the technical documentation, the user manual and the wiki have also been updated.



The screenshot shows the GitHub repository page for 'ALIADA / aliada-tool'. The repository has 1,090 commits, 5 branches, 3 releases, and 7 contributors. The 'master' branch is selected. The repository contains files like 'xmolero', 'aliada', 'LICENSE', and 'README.md'. The 'README.md' file is expanded, showing the 'ALIADA tool' section which describes the project's purpose of automating publication in the Linked Open Data cloud. The right sidebar provides options for cloning the repository via HTTPS or Subversion, and links to Code, Issues, Pull requests, Wiki, Pulse, and Graphs.

ALIADA / aliada-tool

Watch 19 Star 29 Fork 14

Aliada tool implementation

1,090 commits 5 branches 3 releases 7 contributors

Branch: master aliada-tool +

xmolero Allow edit a profile Latest commit 2401eb6 25 days ago

aliada Allow edit a profile 25 days ago

LICENSE Update LICENSE 2 years ago

README.md Update README.md a year ago

README.md

## ALIADA tool

ALIADA (Ally in Spanish, female genre) will automatize the publication in the Linked Open Data cloud of datasets hosted by different Library or Collection Management Software.

ALIADA will support the whole life cycle of reuse of multilingual open data from public bodies, initially the museums and libraries involved in the consortium. providing a usable and open source tool that

Code

Issues 3

Pull requests 0

Wiki

Pulse

Graphs

HTTPS clone URL

<https://github.com/ALIADA/aliada-tool>

You can clone with [HTTPS](#) or [Subversion](#).

Clone in Desktop

Download ZIP

<https://github.com/ALIADA/aliada-tool/>

**THANK YOU  
FOR  
YOUR  
ATTENTION!  
ANY QUESTIONS?**

[info@aliada-project.eu](mailto:info@aliada-project.eu)

