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Consiglio Nazionale delle Ricerche - IT

# Bridging registries of research organizations

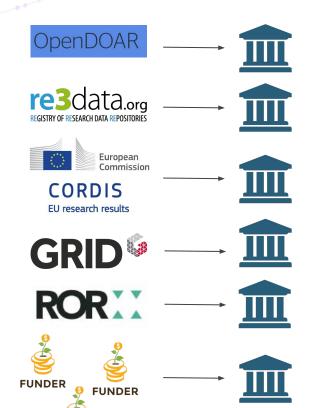
supporting disambiguation and improving the quality of data

OpenAIRE Tech-Clinic 2021-06-21

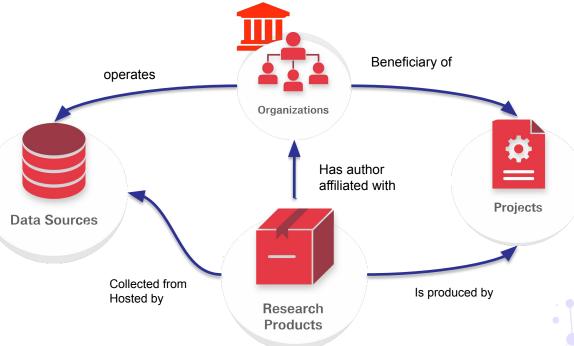








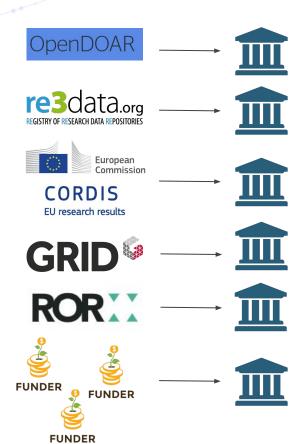
# Organizations in OpenAIRE





**FUNDER** 





# Problem statement [1] import phase

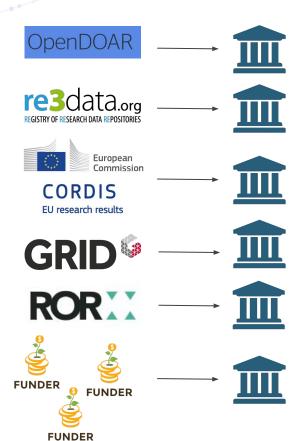
#### **Organizations (mentions)**

- 1. Responsible body for the management of a data provider
- 2. Project participant
- 3. Extracted from the article full-text as author affiliation

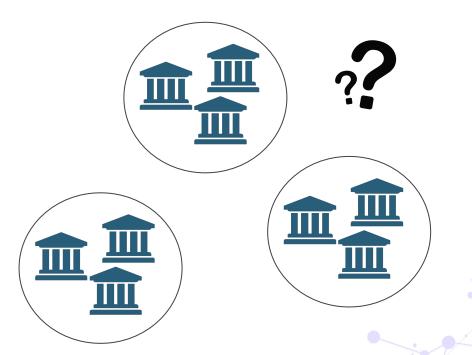
Lack of common identifiers!





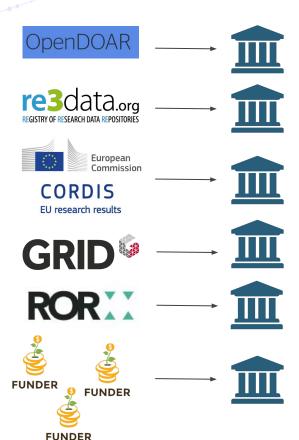


# Problem statement [2] disambiguation









# Problem statement [3] quality / completeness

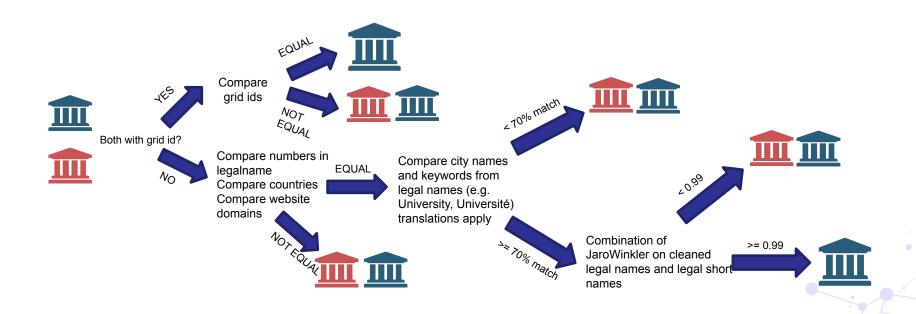
organization field completeness				
field	missing	% missing		
legalname	254	0.1%		
legalshortname	156,923	43.2%		
alternativenames	319,825	88.0%		
country	82,002	22.6%		
websiteurl	142,047	39.1%		
pid	184,536	50.8%		

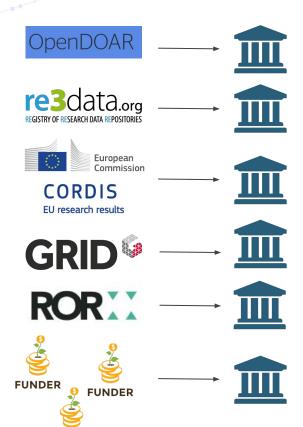




#### The duplicate identification algorithm in a nutshell

- Group organisations by legalname and by website URL (4 clustering functions)
- For each cluster we perform pairwise comparisons with early exit strategies.







### **Drawbacks**

#### **False positives**

- Inaccurate statistics (e.g. for institutional and country monitors)
- Inaccurate search results (e.g. finding only the US Concordia
   University and not the Canadian one)

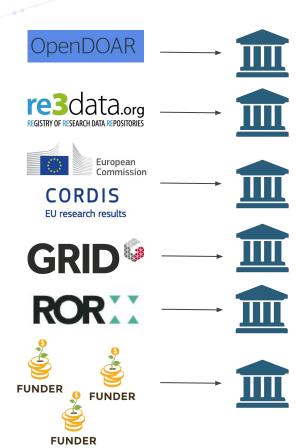
#### **False negatives**

One instance is linked to the papers, one to the project... but it is the same organization!



**FUNDER** 

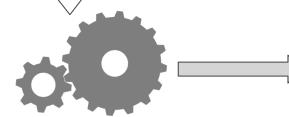




# Data provision pipeline

#### Configuration

- comparators
- thresholds
- decision trees





Deduplication

process





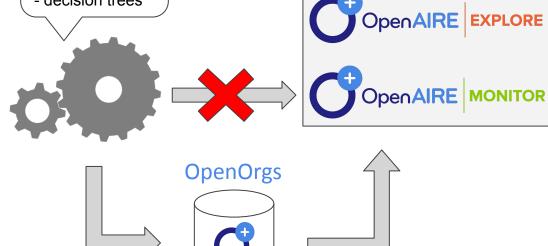
# re3data.org European Commission **CORDIS** EU research results **FUNDER**

# Data provision pipeline

Data curators

#### Configuration

- comparators
- thresholds
- decision trees





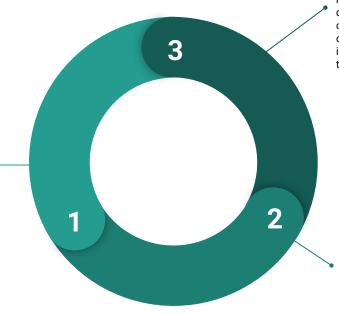
**FUNDER** 



# OpenOrgs activity pillars

# Automatic suggestion of duplicates

The process for the automatic identification of possible duplicates will periodically produce new suggestions for the data curators. This will happen when a new source of organization objects is registered in OpenAIRE (typically a new funder providing descriptions about projects and the relative beneficiaries)



#### **Metadata curation**

The quality of the data is a key aspect enabling the realization of data-centric services. In OpenOrgs data curators can enrich the metadata description of the organization entities, compensating the lack of information available from the sources and improving the discoverability / completeness of the organization records.

# Management of duplicates

Deciding whether two or more digital representations are duplicates of the same object can be a task that only humans can carry out precisely. The OpenOrgs tool allows data curator to manage the ambiguities in the data lack of the organization mentions aggregated by OpenAIRE





### User roles



#### Simple User

Scope limited to a set of countries

Metadata editing & enrichment

Creation of Org → To be approved by national admin/super admin

Approval of suggestions from the duplicate identification algorithm



#### **National admin**

Is a user (limited to a set of countries)

Approval of pending orgs → generates approved Orgs

Grant access to users for the Nation

Resolution of conflicts



#### Super admin

Is a National Admin for all countries
Grant access to National Admins





## Main concepts

**Approved org**: is an organization that was confirmed by a curator. It is persisted with a stable identifier (OpenOrgs ID) and its metadata fields can be enriched / curated;

**Pending (suggested) org**: is an organization to be approved by the national admin; the approval produces an OpenOrgs ID.

- Suggested by the dedup algorithm
- Suggested by the user

**Duplicate**: possible duplication of the same organization, to be resolved by the user. It is created between an approved org and a raw org (an external org with no OpenOrg ID, ie coming from Corda, Re3data, ROR...).

- Suggested by the dedup algorithm
- Created by the user

Hidden org: is an organization that should not be shown in the OpenAIRE public portals

**Conflict**: when two or more "approved" orgs are:

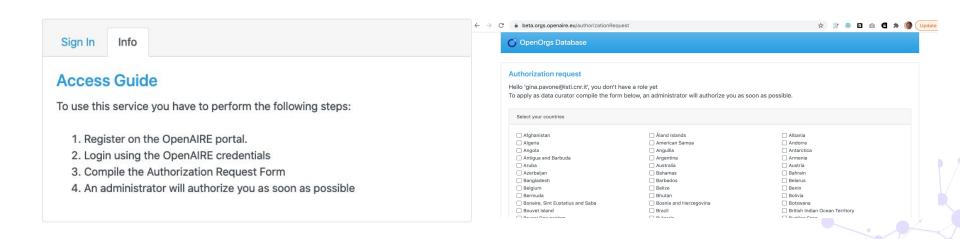
- Identified as duplicates by de-duplication
- Created by users approving already existing organizations
- They can be resolved through dedicated user actions that set as hidden the conflicting orgs





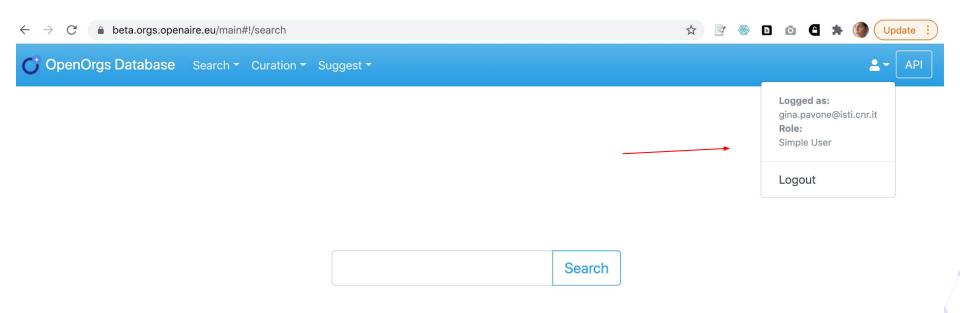
# **Enrolling data curators**

- 1. Create an OpenAIRE account @ <a href="https://services.openaire.eu/uoa-user-management/register.jsp">https://services.openaire.eu/uoa-user-management/register.jsp</a>
- 2. Sign in @ <a href="https://beta.orgs.openaire.eu">https://beta.orgs.openaire.eu</a>
- 3. You may choose different countries that you want to curate
- 4. Get in contact with admins: openorgs-admin@openaire.eu

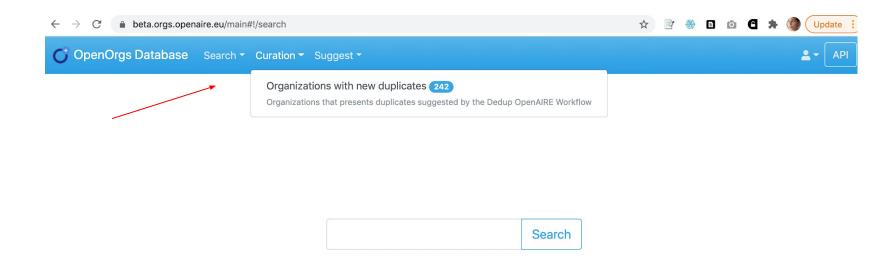


# Simple user operations

https://beta.orgs.openaire.eu



## Simple user task: resolution of duplicates



Menu: Curation  $\rightarrow$  Organizations with new duplicates.

An automated deduplication process has spotted similarities between two or more organizations and it suggests to confirm they are the same organization

## Curation → organization with new duplicates



#### **Duplicates**

Current country: IT \*

Filter...

Organization	Place	# pending duplicates
Agenzia Regionale per la Protezione Ambientale 🗷	Turin, IT	1
Alfasigma (Italy) 🗹	🛐 Bologna, IT	1
Ambiente Italia (Italy) 🗹	Milan, IT	2
AM Testing (Italy)	Pisa, IT	2
Archivio di Stato di Venezia 🗹	Venice, IT	1
Associazione della Croce Rossa Italiana 🗹	Rome, IT	1
Associazione Italiana per la Ricerca Industriale 🗹	Rome, IT	2
Azienda Mobilità e Trasporti 🗹	<b>∏</b> Genoa, IT	1
Azienda Ospedaliero-Universitaria Careggi 🗹	Florence, IT	1
Azienda Trasporti Milanesi (Italy) 🗹	Milan, IT	1
Azienda Unità Sanitaria Locale 11 di Empoli 🗹	■ Empoli, IT	1
Base Protection (Italy) 🗹	🛐 Barletta, IT	1

## Confirming identity between orgs

Politecnico di Milano

URL: http://www.polimi.it/

URL:

Polytechnic University of Milan

#### Polytechnic University of Milan × Registered organization Name Polytechnic University of Milan Type Education Place Milan, IT **Acronyms** Also known as Politecnico di Milano Polytechnikum Mailand Polytechnic University of Milan École polytechnique de milan Urls http://www.polimi.it/en/ **Related organization** Acronym Country Source Original Id: Politecnico di MILANO ? miur ::45646ba06dcfbb446dee13fdf2dfc Provenance: Ministero dell'Istruzione dell'Università e della Ricerca

**∕** 

Original Id:

Provenance: OpenDOAR

A5DB-E1341282462E

opendoar ::Politecnico di Milano IT

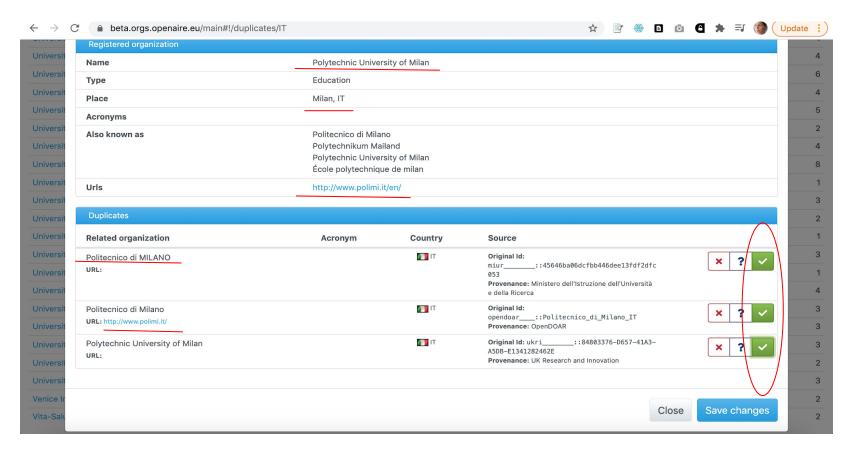
Provenance: UK Research and Innovation

Original Id: ukri ::84803376-D657-41A3-

?

?

## Confirming identity between organizations



# **Deduplication errors**

#### Agenzia Regionale per la Protezione Ambientale



Registered organization	
Name	Agenzia Regionale per la Protezione Ambientale
Туре	Government
Place	Turin, IT
Acronyms	ARPA
Also known as	Agenzia Regionale per la Protezione Ambientale Regional Environmental Protection Agency
Urls	https://www.arpa.piemonte.gov.it/english-version

Duplicates	cates				
Related organization	Acronym	Country	Source		
AGENZIA REGIONALE PROTEZIONE CIVILE-EMILIA ROMAGNA URL:		<b>a</b> ∎ IT	Original Id: corda::998349803 Provenance: CORDA - COmmon Research DAta Warehouse	x ? ~	

# Summary of situation per organization

#Dups = orgs already marked as different, new duplicate suggestions and orgs already

marked as the same

			/	
Organization name	Place Acroi	nyms	# Dups diff/sugg/sim	Туре
ACTION OF THE PROPERTY OF THE		- /		
Alcatel-Lucent (Italy)	Vimercate, IT		- / - / -	Company
Alenia Aermacchi	■ Varese, IT		-/-/4	Company
Alessandro Manzoni Hospital	Lecco, IT		-1-10	Healthcare
Alfasigma (Italy)	Bologna, IT		-/-/2	Company
Alitalia (Italy)	Rome, IT		-/-/1	Company
ALK-Abelló (Italy)	■ Lainate, IT	LK	-/-/1	Company
Alleanza Contro il Cancro	Rome, IT	cc	-/-/3	Nonprofit
Allegria	Milan, IT		-1-11	Nonprofit
Alma Mater Studiorum, Università di Bologna	■ Bologna, IT UN	IBO	2 / 2 / 10	Education
AlmavivA (Italy)	Palermo, IT		-/-/1	Company



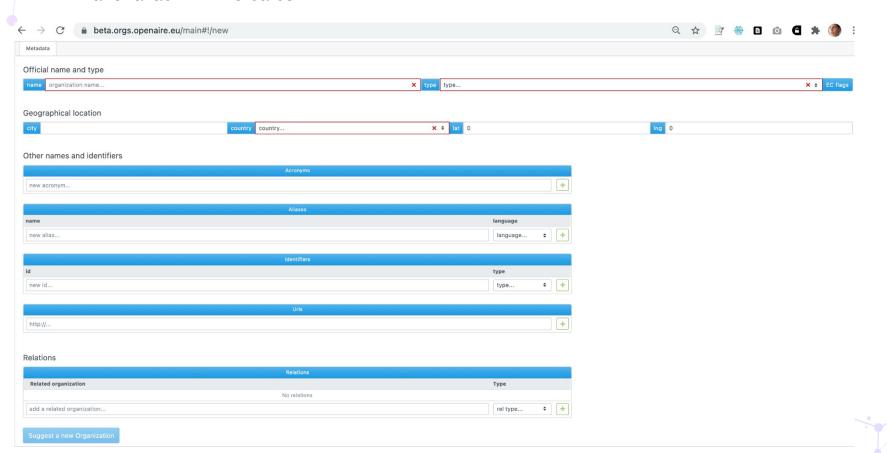


# There may be uncertainty

Duplicates				
Related organization	Acronym	Country	Source	
THE UNIVERSITY OF THE WEST INDIES URL:	UWI	<b></b> JM	Original Id: corda::999860287 Provenance: OpenOrgs Database	x ? ~
THE UNIVERSITY OF THE WEST INDIES U WI* URL: http://www.sta.uwi.edu	UWI	<b></b> JM	Original Id: corda::999871248 Provenance: CORDA - COmmon Research DAta Warehouse	x ? ✓
THE UNIVERSITY OF THE WEST INDIES U WI*  URL: http://www.sta.uwi.edu	UWI	<b></b> JM	Original Id: corda_h2020::999871248 Provenance: CORDA - COmmon Research DAta Warehouse - Horizon 2020	x ? ✓
The University of the West Indies URL:	The University of the West Indies	<b></b> JM	Original Id: doajarticles::The_University_of_the_West_In dies Provenance: DOAJ-Articles	x ? ✓
University of the West Indies URL:		<b></b> JM	Original Id: nsf::University_of_the_West_Indies Provenance: NSF - National Science Foundation	x ? ✓
University of the West Indies at Mona URL: http://www.mona.uwi.edu/		<b>™</b> JW	Original Id: opendoar::University_of_the_West_Indies _at_Mona_JM Provenance: OpenDOAR	x ? ✓
University of the West Indies URL:		<b></b> JM	Original Id: ukri::FD944103-8D9E-4A58- B8BC-79B246196C29 Provenance: UK Research and Innovation	x ? ✓

## Creation of a new org

- Simple user → suggests a new org
- National admin → creates



#### Metadata information

#### Official name and type:

- Name (mandatory)
- Type (mandatory)

(description of types: <a href="https://www.grid.ac/pages/policies">https://www.grid.ac/pages/policies</a>)

#### Geographical location:

- City (not mandatory, recommended)
- Country (mandatory)
- Lat and long (not mandatory)

#### Other names and identifiers

Acronyms (not mandatory)

#### Aliases:

 Alternative names and language of the alternative name (not mandatory)

#### **Identifiers**:

Id and type (automated compilation)

**Urls** (not mandatory)

#### **Relations:**

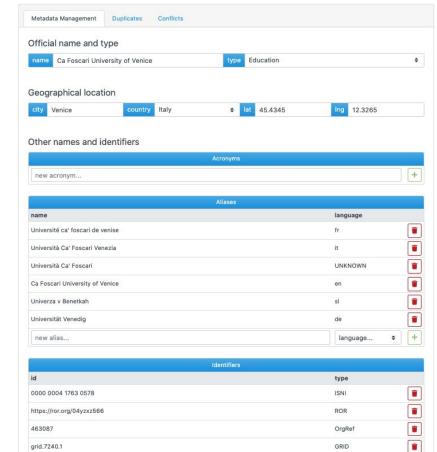
 Related organizations and relation type: (<a href="https://www.grid.ac/pages/policies">https://www.grid.ac/pages/policies</a>)



#### Ca Foscari University of Venice

ID: openorgs\_\_\_::0000097956

Created at July 16, 2020 11:48:19 by import:grid.ac Modified at July 16, 2020 11:48:19 by import:grid.ac



### Metadata curation

- It is not necessary to complete all metadata information

  You can choose to complete as much of the metadata as possible, enter only what you feel is necessary, or simply approve organizations (without completing the metadata).
- It is up to you how much information to add depending on the individual case, or depending on the rules established at a national level.
- We can decide together which information should be managed at national level and which should have international consistency.
- We recommend to curate as best as possible the following fields:
  - Name of the org: UTF-8 encoded and Latin letters
  - **Other names**: if possible, add the name in English and the acronym
  - Country when working with orgs that do not have an assigned country

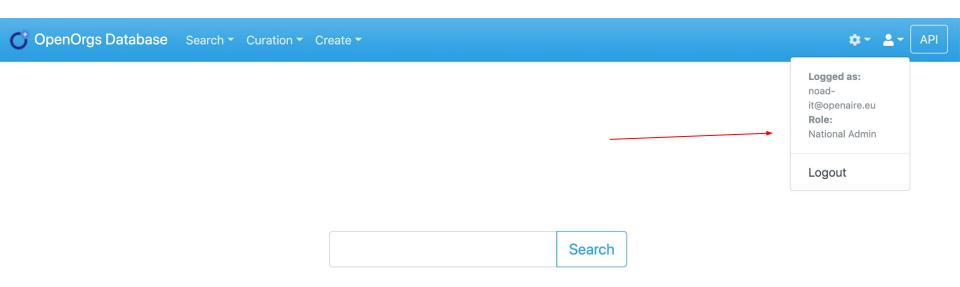




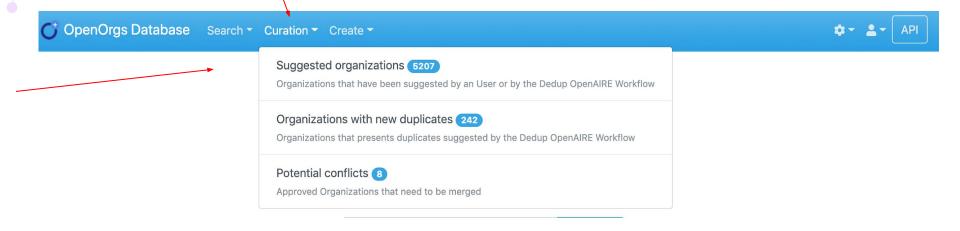


## National admin operations

https://beta.orgs.openaire.eu/



### National admin curation menu



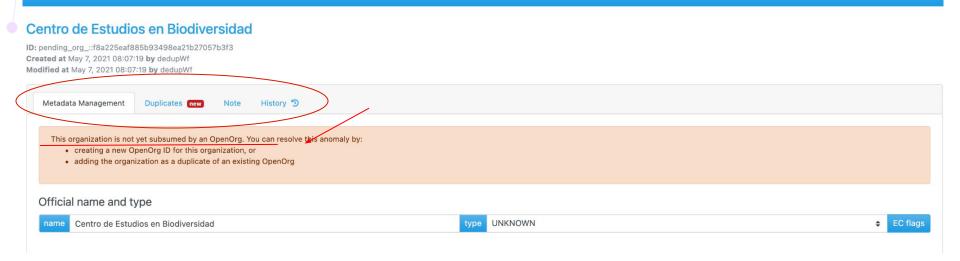
Menu: Curation → Suggested organizations:

Organizations to be confirmed by a curator. They will be persisted with a stable identifier (OpenOrgs ID) and it will be possible to enrich/curate their metadata fields.





## Single organization page



#### Curation → Suggested organizations → single org page

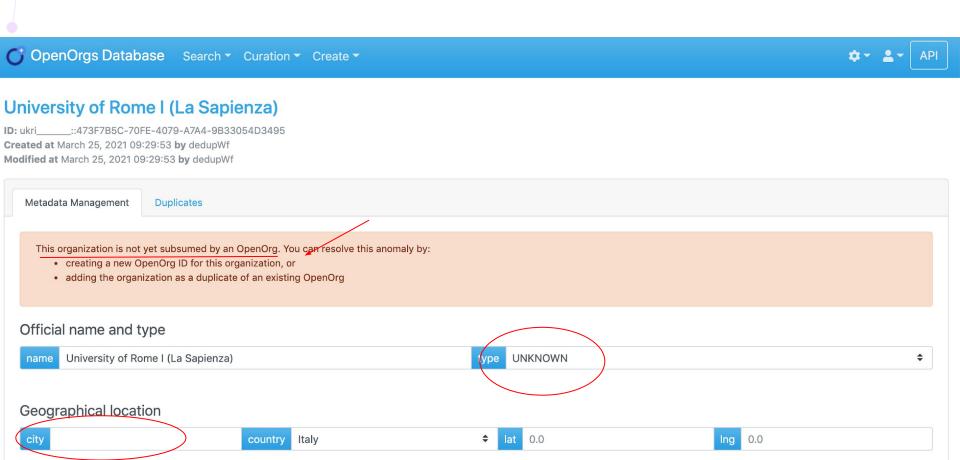
#### Suggested organizations:

- Metadata Management: to manage descriptive metadata information.
- Duplicates: where possible duplicates of the same organisation are suggested.
- Notes: something to remember
- History: activity log (action and who did it)

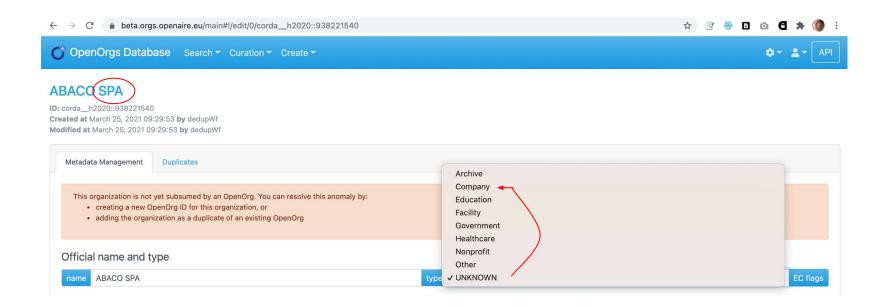




## National admin → Editing of metadata



## Editing of metadata

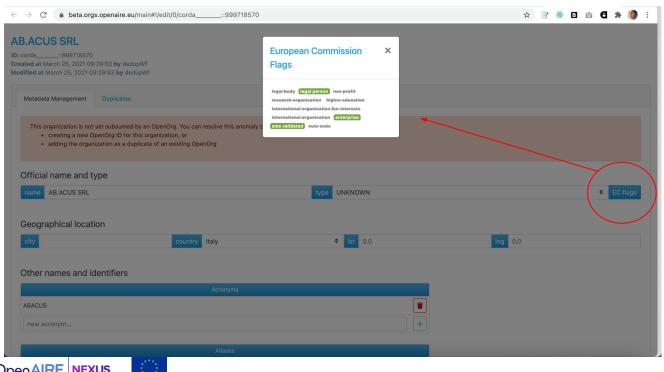






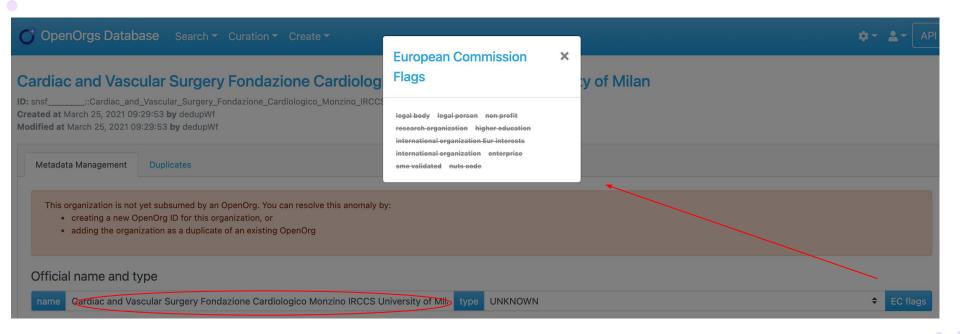
## **Organization Type**

Flags from the EC can help in determining the type of the org





## Organization Type: not alway an easy task

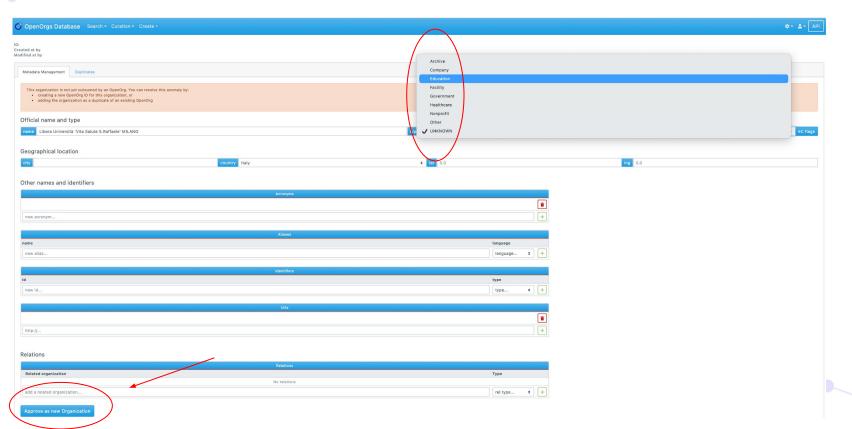




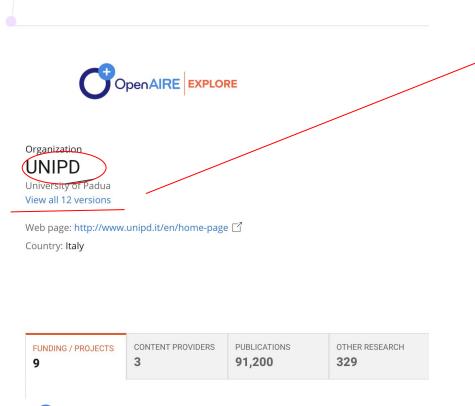


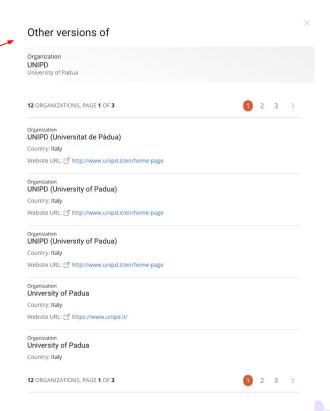
## National admin → approval of orgs

Curation menu → suggested Orgs → Pending Orgs



## A use case from the OpenAIRE EXPLORE portal









## Simple search by name, acronym or part of the name

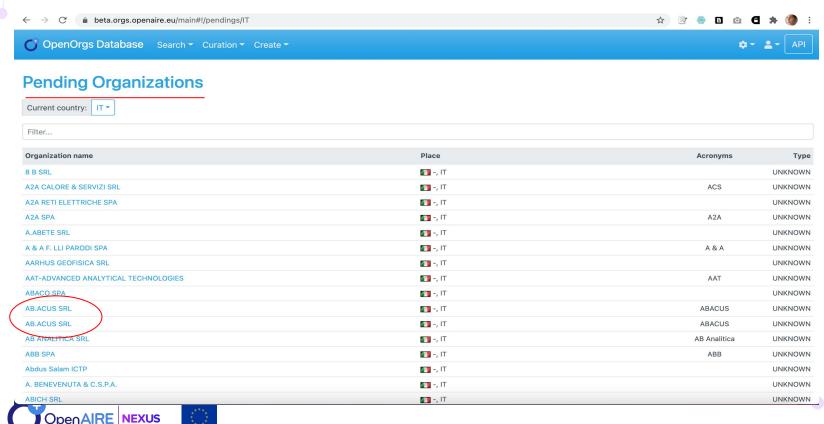
University of Padua

#### Registered organization

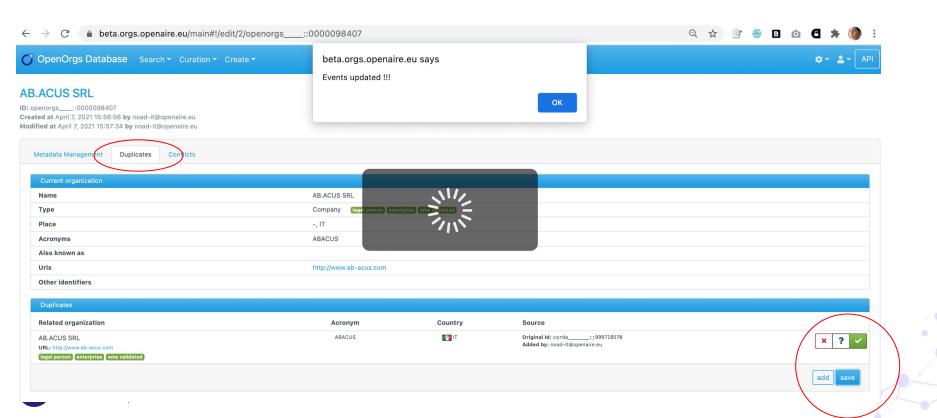
Duplicates				
Related organization	Acronym	Country	Source	
University of Padova URL:		П	Original Id: chistera::bf3f5e92d101afe06f9f2ae1fdc6f 0d4 Provenance: CHIST-ERA	~
Università degli Studi di PADOVA URL:		IT	Original Id: miur::bd694496f764d566b055c76a4040b f32 Provenance: Ministero dell'Istruzione dell'Università e della Ricerca	~
University of Padua URL: https://www.unipd.it/		T IT	Original Id: opendoar::University_of_Padua_IT Provenance: OpenDOAR	~
University of Padova URL: http://www.unipd.it		IT	Original Id: re3data::a5e8940188729f7f0fbe0d1ef21bc 41e Provenance: Registry of Research Data Repository	<b>~</b>
Universita degli Studi di Padova URL: http://www.unipd.it/		П	Original Id: re3data::f90f258b83fe628a8651e0797c8fa 5f5 Provenance: Registry of Research Data Repository	~

## Curation → suggested orgs

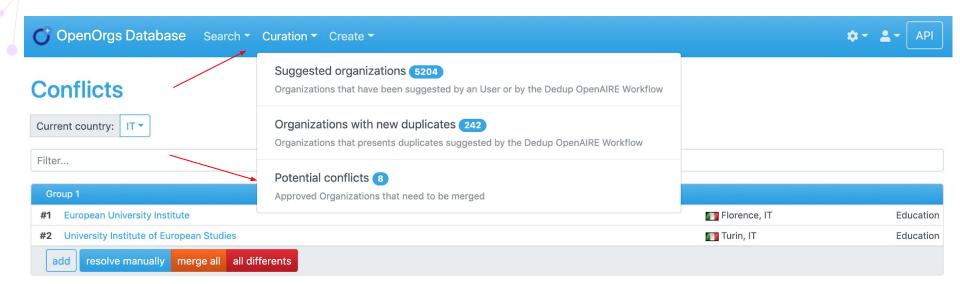
Beware not to create conflicts while approving new orgs



(All users) Curation → suggested orgs → select the approved org (here AB.ACUS SRL) → duplicates tab → approve the suggested duplicate (if right) and save → link the additional duplicate by clicking on add



### Conflicts

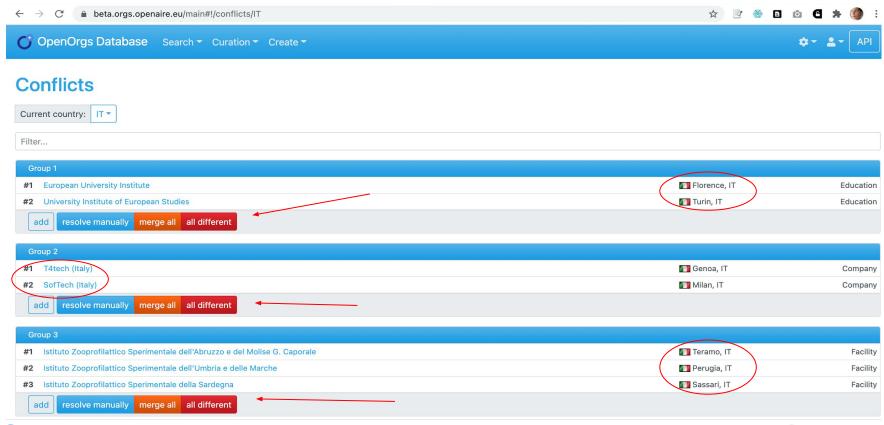


National admin: Menu  $\rightarrow$  Curation  $\rightarrow$  Potential conflicts When two or more "approved" orgs are:

- Identified as duplicates by de-duplication algorithm
- Created by users approving already existing organizations

They can be resolved through dedicated actions that set as hidden the conflicting orgs

### Conflict resolution: all different







## Conflict resolution: merge all

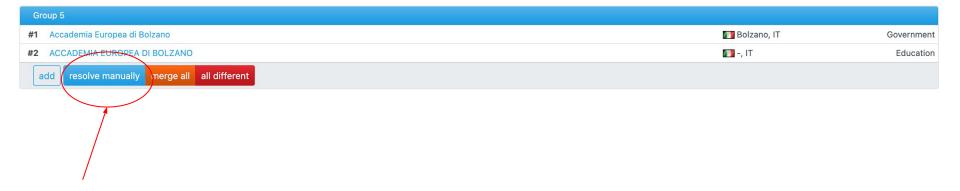






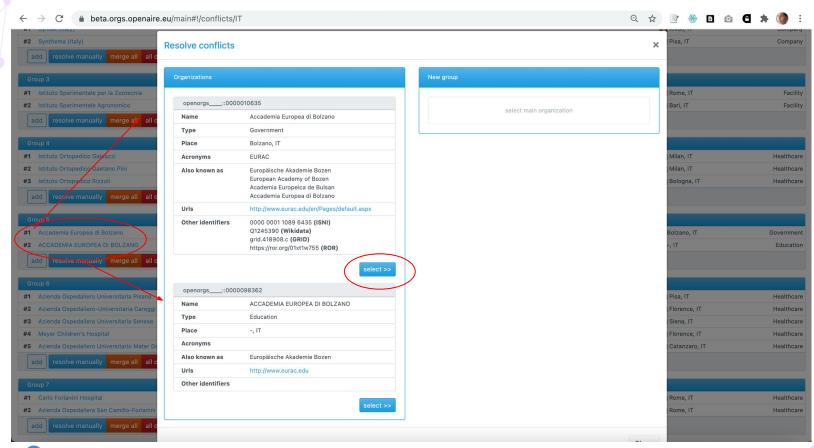


## Conflict resolution: resolve manually



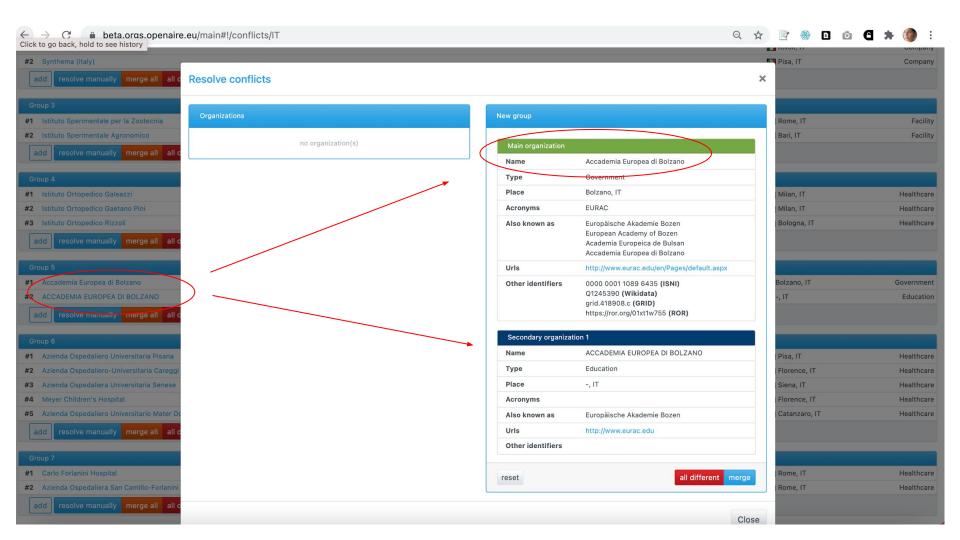












### Open questions

- Do we need to standardize metadata curation across all users or just at a national level?
- Do we need to curate only research institutions or also companies?
- Orgs main name should be in English or in national language?
- Do we want to adopt national standards for organization names? (uppercase/lowercase letters, e.g. upper cases for each words that is not a preposition as in English; use of prepositions, etc.)
- Should we look up official names of organizations or do we stick to a standard we establish for OpenOrgs?







### Next steps

- Continue the disambiguation task (Curation menu → Organizations with new duplicates)
- Approve new orgs (Curation menu → Suggested orgs)
- Resolve conflicts (Curation menu → Potential conflicts)
- Finalise testing on beta
- Have your say on open questions (in the feedback doc)
- Give us feedback:
  - https://docs.google.com/document/d/19 kvibAkQpyAOw8LphnapzblwrV90LwkshsP HSOW uQ/edit?usp=sharing

## Support

#### openorgs@openaire.eu

• Intended for registered users, internal communications

#### openorgs-admin@openaire.eu

• Intended to handle support requests, e.g. user registrations, assignment of countries. Open to all.

# Thanks!

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gina.pavone@isti.cnr.it

Support: openorgs@openaire.eu and openorgs-admin@openaire.eu



