

Idra

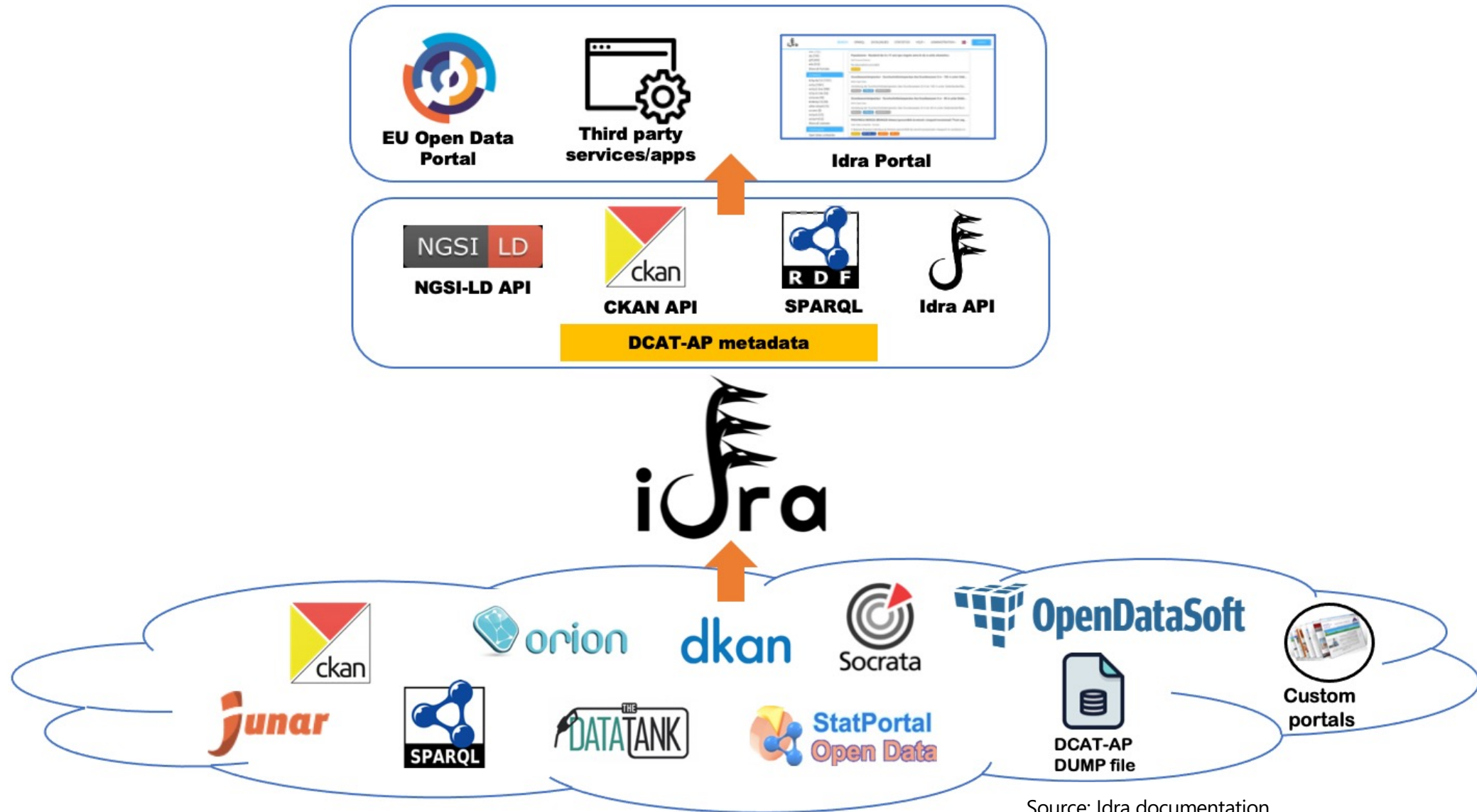
Open Data Federation Platform

March 2023

Fragmentation and interoperability

- One of the most relevant problems, that limits the adoption and usage of open data, is related to technology and standard **fragmentation**: every entity that wants to provide open data (e.g. Public Administration) uses different platforms and formats for their publication. This issue represents a **barrier for the user** that wants to search for open data, and for third-party applications that are not able to simply access and reuse it.
- **Idra is an open source platform** that provides a **unique access point** to open datasets coming from heterogeneous Open Data management systems, such as portals provided by Municipalities and PAs. The datasets remain in the original portals, **the platform imports and manages the metadata**, updating it periodically in order to assure that the information provided is up to date
- Idra, allowing a unique and standard access to the open data, is in line with **Freedom of Information** laws, to foster and simplify the access to data held by national governments.

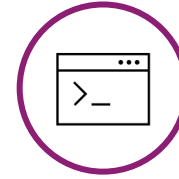




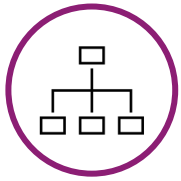
Main features



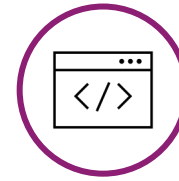
Web interface to search for open data in a federated and multi-language way



Public and open APIs to build smart and innovative applications



Unique access to open data regardless the **heterogeneity** of the underlying technologies



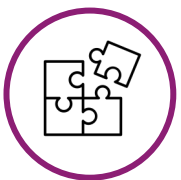
Compliance to **DCAT-AP** standard and **data.europa.eu** portal specifications



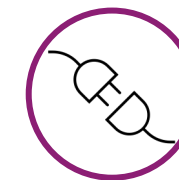
Ease of performing **SPARQL queries** on 5 stars RDF linked open data



Web scraping technology to federate open data portals that do not provide APIs

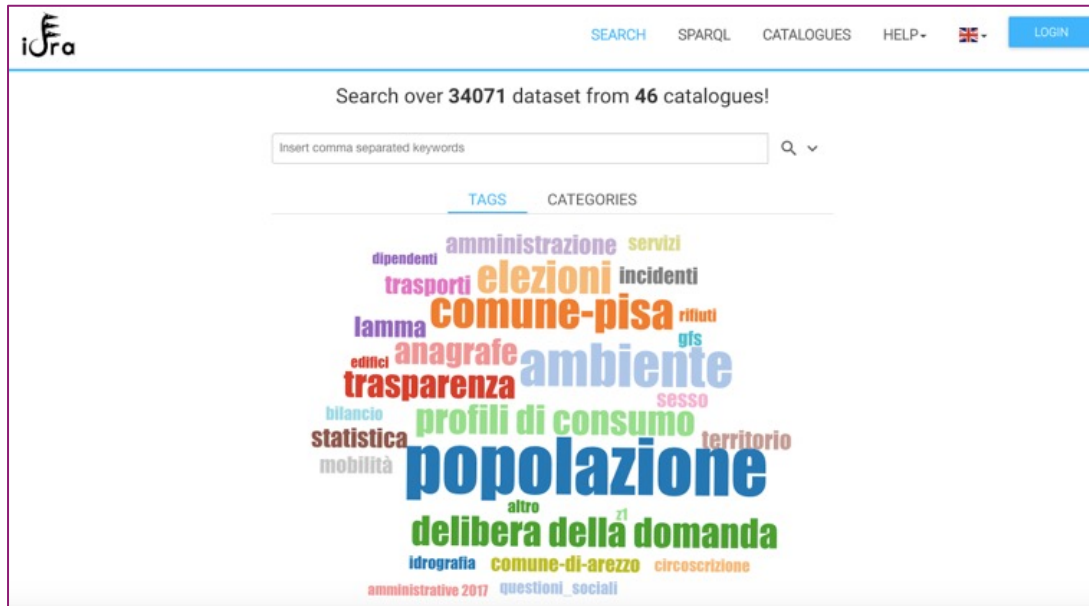


Integration of third party applications for the open data visualisation and federation

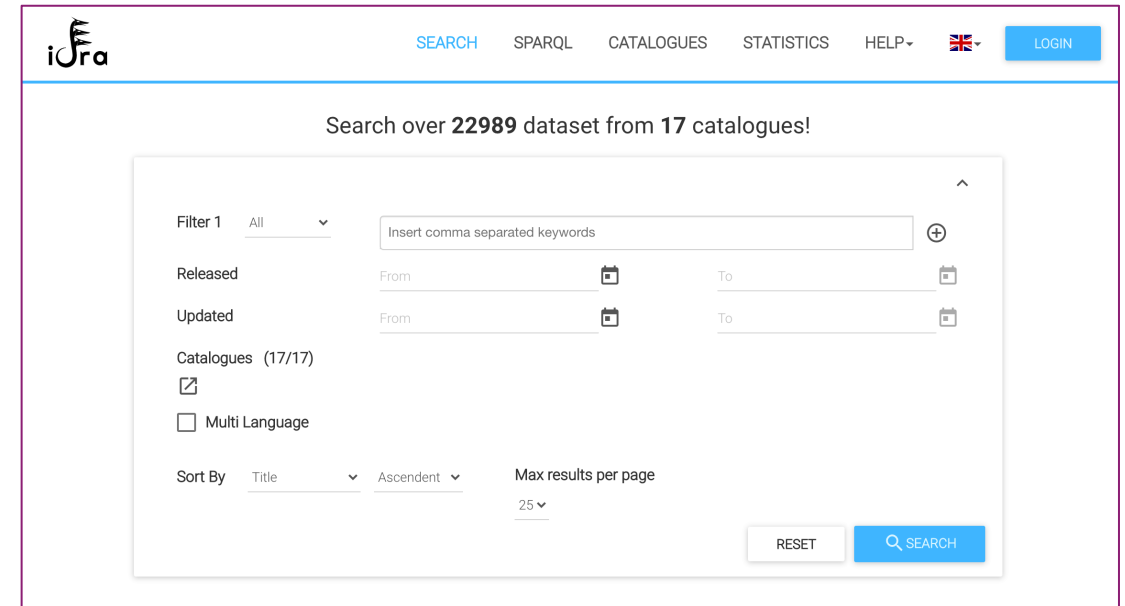


Connectors to simplify the federation of new portals reducing effort to the minimum

Idra portal overview



Idra provides a web portal to access to the federated open datasets in a uniform way independently from the the original catalogue



Filters and ordering : it is possible to search and order open data by keywords related to title, description, tags, data of creation and of modification etc.



Idra portal overview

The screenshot shows the Idra portal interface. At the top, there is a navigation bar with the Idra logo, a search bar, and links for SPARQL, CATALOGUES, STATISTICS, HELP, ADMINISTRATION, and a language selector (UK flag). A LOGOUT button is also present.

On the left side, there are two filter panels:

- Formats:** Lists various file formats with their counts: xlsx (752), zip (733), pdf (690), wfs (610), and a link to 'Show all Formats'.
- Licenses:** Lists various licenses with their counts: dl-by-de/2.0 (1531), cc-by (1261), cc-by-2.5-ar (398), cc by 3.0 de (53), cc-by-sa (40), dl-de-by-2.0 (39), other-closed (12), cc-zero (8), cc-by-4.0 (5), and cc-by/4.0 (2). A link to 'Show all Licenses' is at the bottom.
- Catalogues:** Lists 'Open Data Lombardia -'.

The main content area displays three dataset cards:

- Popolazione - Residenti da 0 a 17 anni per singolo anno di età e unità urbanistica:** Data from 'Dati Comune Genova'. No description provided. Format: CSV (3).
- Grundwassertemperatur - Durchschnittstemperatur des Grundwassers 0 m - 100 m unter Gelä...:** Data from 'Berlin Open Data'. Description: 'Verteilung der Durchschnittstemperatur des Grundwassers 0 m bis 100 m unter Geländeoberfläch...'. Formats: WMS (2), HTML (2), UNKNOWN (1).
- Grundwassertemperatur - Durchschnittstemperatur des Grundwassers 0 m - 50 m unter Gelä...:** Data from 'Berlin Open Data'. Description: 'Verteilung der Durchschnittstemperatur des Grundwassers 0 m bis 50 m unter Geländeoberfläch...'. Formats: WMS (2), HTML (2), UNKNOWN (1).

At the bottom, there is a card for **PROVINCIA MONZA BRIANZA** with the description 'Itinerari percorribili da veicoli o trasporti eccezionali "Fuori sag...'. It lists formats: CSV (1), RDF+XML (1), JSON (1), and XML (1).

The screenshot shows the Idra portal interface for a SPARQL query result. The top navigation bar is the same as the previous screenshot. The main content area shows the query result in XML format.

The XML result is as follows:

```

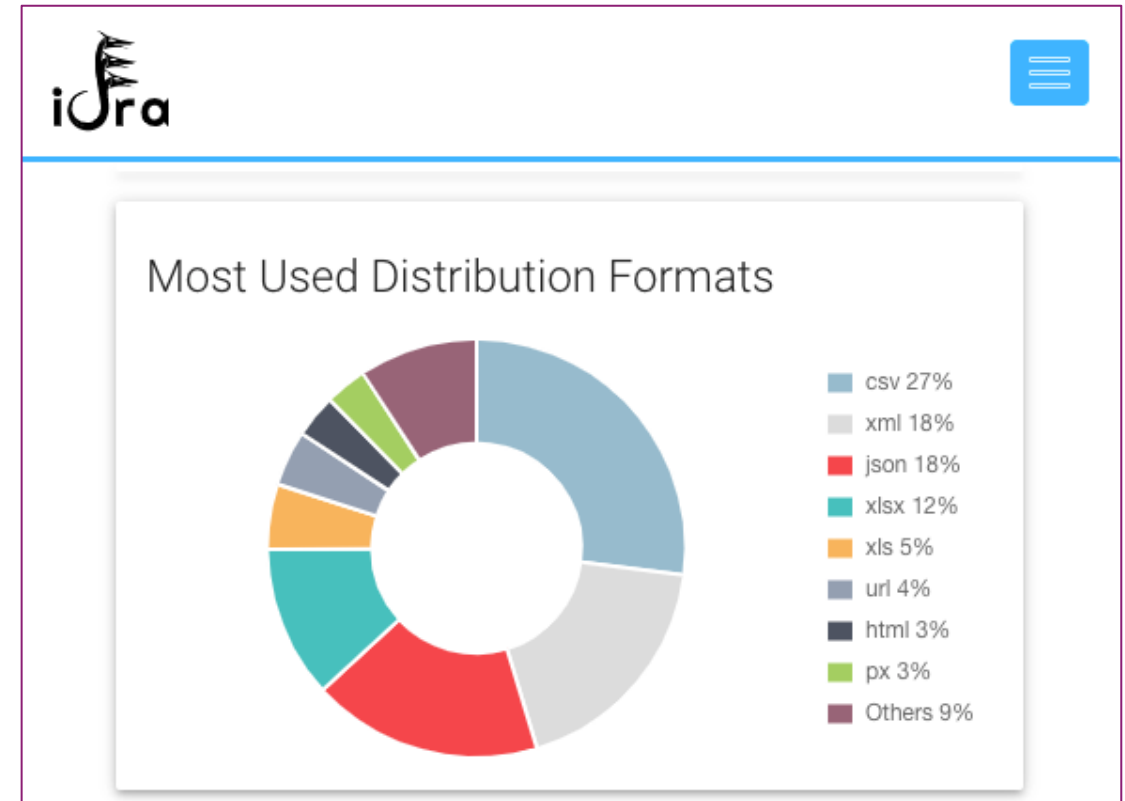
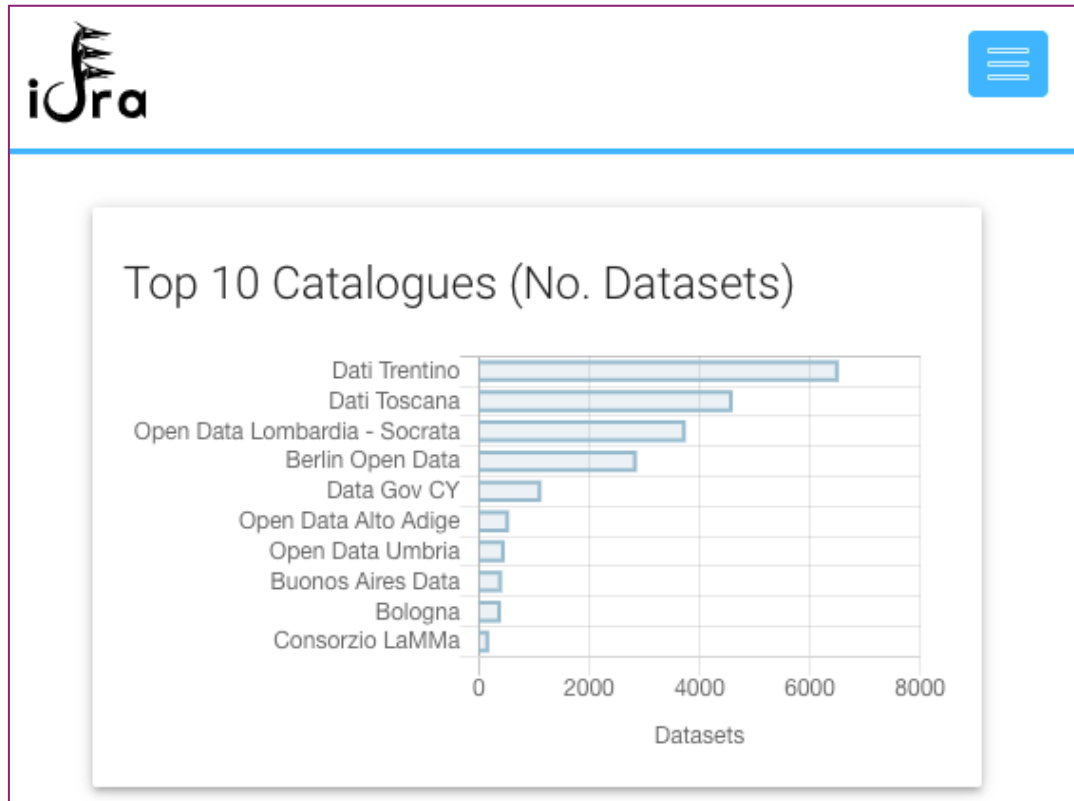
1 <?xml version="1.0"?>
2 <sparql xmlns="http://www.w3.org/2005/sparql-results#">
3   <head>
4     <variable name="object"/>
5   </head>
6   <results>
7     <result>
8       <binding name="object">
9         <literal>City of Berlin open data</literal>
10      </binding>
11    </result>
12    <result>
13      <binding name="object">
14        <literal datatype="http://www.w3.org/2001/XMLSchema#da
15      </binding>
16    </result>
17    <result>
18      <binding name="object">
19        <literal datatype="http://www.w3.org/2001/XMLSchema#da
20      </binding>
21    </result>
22    <result>
23      <binding name="object">
24        <literal>Berlin Open Data</literal>
25      </binding>
26    </result>
27    <result>
28      <binding name="object">
29        <uri>http://www.w3.org/ns/dcat#Catalog</uri>
30      </binding>
31    </result>
32  </results>
  
```

At the bottom of the result area, there are two buttons: 'COPY' and 'DOWNLOAD'.

Idra allow to browse open datasets filtering them by facets (e.g. type of licenses, distribution etc.)

Idra provides a **SPARQL editor** to perform queries on Linked Open Data

Idra portal overview



Idra shows **comparative statistics** about federated catalogues: number of datasets, distribution format types, most active catalogues etc.

Idra portal overview

Home / Datasets / Cognomi di tutti i residenti di Matera aggiornati al 31/08/2013

Cognomi di tutti i residenti di Matera aggiornati al 31/08/2013

OpenData Matera

Il file CSV contiene i cognomi di tutti i residenti nel comune di Matera. Nella seconda colonna è visualizzato il numero totale di individui aventi il relativo cognome. L'aggiornata al 31 Agosto 2013.

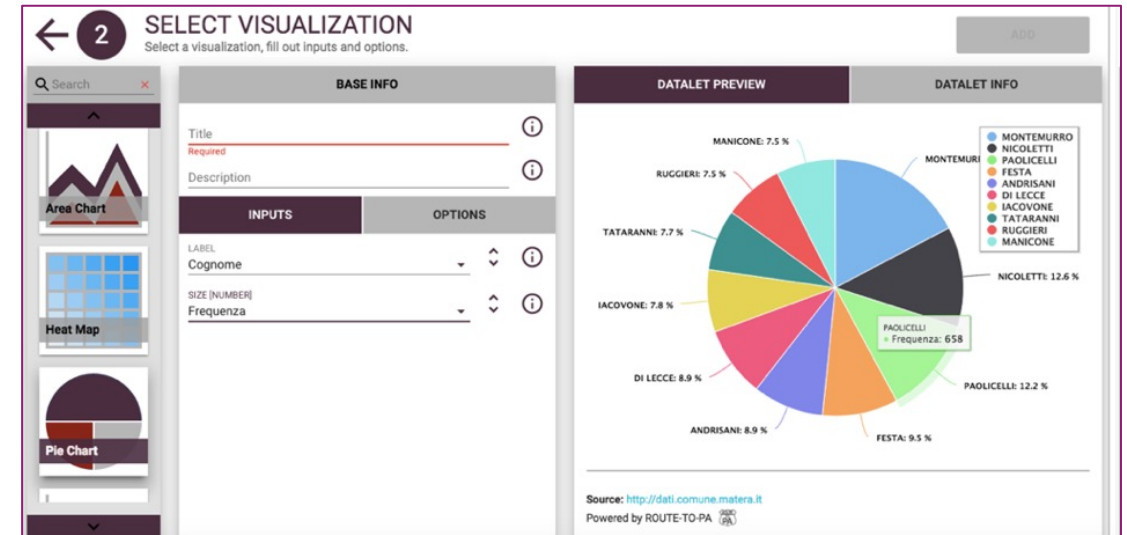
Tags

cognomi residenti statistica

Resources

Format	File Name	Type	Description	Actions
JSON	cognomimatera.json	JSON	file in formato json	Download, Upload, Share
CSV	cognomimatera.csv	CSV	I cognomi di tutti i residenti nel comune di Matera	Download, Upload, Share

Create new dataset

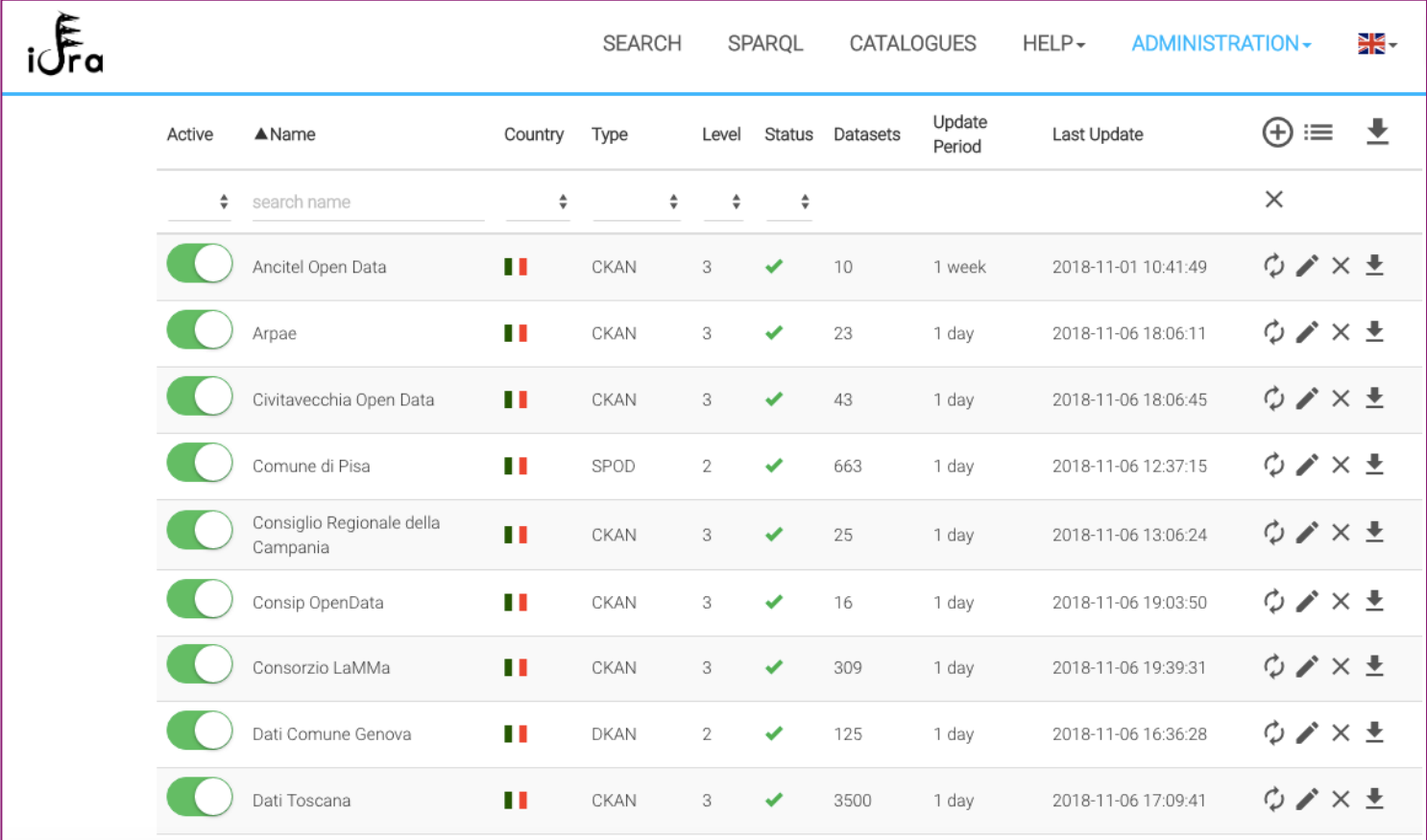


The platform is integrated with an external component (Datalet creator¹) able to generate “on the fly” charts from open data files

Further external components can be integrated to add specific visualisation and data analysis functionalities

Idra portal overview

Idra provides administration functionalities to manage federated open data catalogues and platform configuration

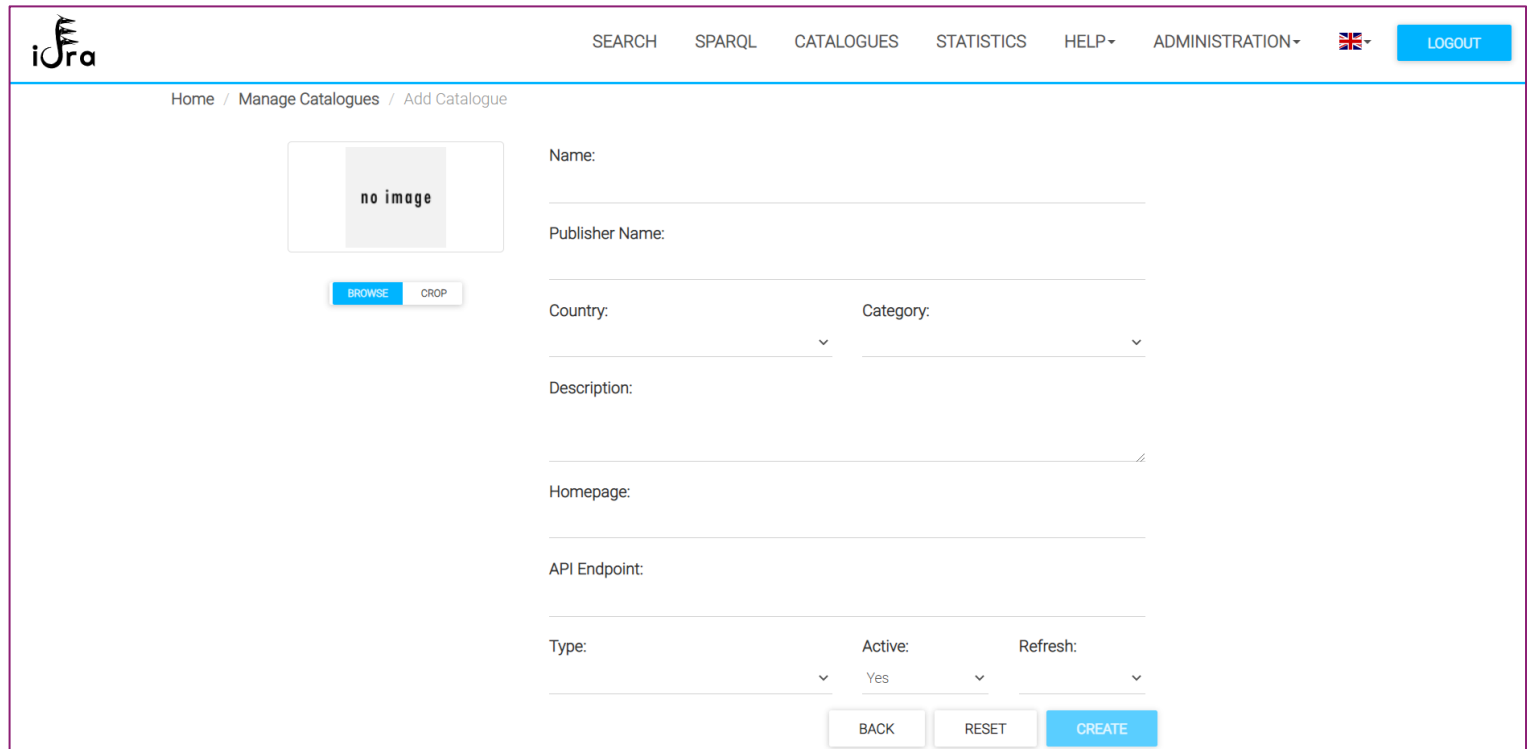


The screenshot displays the Idra portal's administration interface. At the top, there is a navigation bar with the Idra logo, a search bar, and links for SEARCH, SPARQL, CATALOGUES, HELP, and ADMINISTRATION. A language selector (UK flag) is also present. Below the navigation bar is a table listing various federated open data catalogues. The table has columns for Active status, Name, Country, Type, Level, Status, Datasets, Update Period, and Last Update. Each row represents a different catalogue, such as Ancitel Open Data, Arpae, Civitavecchia Open Data, Comune di Pisa, Consiglio Regionale della Campania, Consip OpenData, Consorzio LaMMa, Dati Comune Genova, and Dati Toscana. Each row includes a toggle switch for the Active status, a search icon, and a download icon.

Active	Name	Country	Type	Level	Status	Datasets	Update Period	Last Update	
<input checked="" type="checkbox"/>	Ancitel Open Data	Italy	CKAN	3	✓	10	1 week	2018-11-01 10:41:49	
<input checked="" type="checkbox"/>	Arpae	Italy	CKAN	3	✓	23	1 day	2018-11-06 18:06:11	
<input checked="" type="checkbox"/>	Civitavecchia Open Data	Italy	CKAN	3	✓	43	1 day	2018-11-06 18:06:45	
<input checked="" type="checkbox"/>	Comune di Pisa	Italy	SPOD	2	✓	663	1 day	2018-11-06 12:37:15	
<input checked="" type="checkbox"/>	Consiglio Regionale della Campania	Italy	CKAN	3	✓	25	1 day	2018-11-06 13:06:24	
<input checked="" type="checkbox"/>	Consip OpenData	Italy	CKAN	3	✓	16	1 day	2018-11-06 19:03:50	
<input checked="" type="checkbox"/>	Consorzio LaMMa	Italy	CKAN	3	✓	309	1 day	2018-11-06 19:39:31	
<input checked="" type="checkbox"/>	Dati Comune Genova	Italy	DKAN	2	✓	125	1 day	2018-11-06 16:36:28	
<input checked="" type="checkbox"/>	Dati Toscana	Italy	CKAN	3	✓	3500	1 day	2018-11-06 17:09:41	

Idra portal overview

Idra provides administration functionalities to manage federated open data catalogues and platform configuration

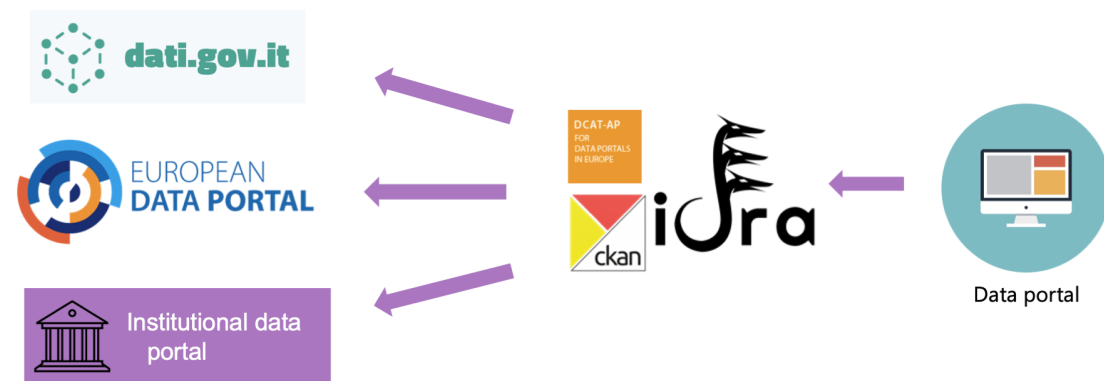
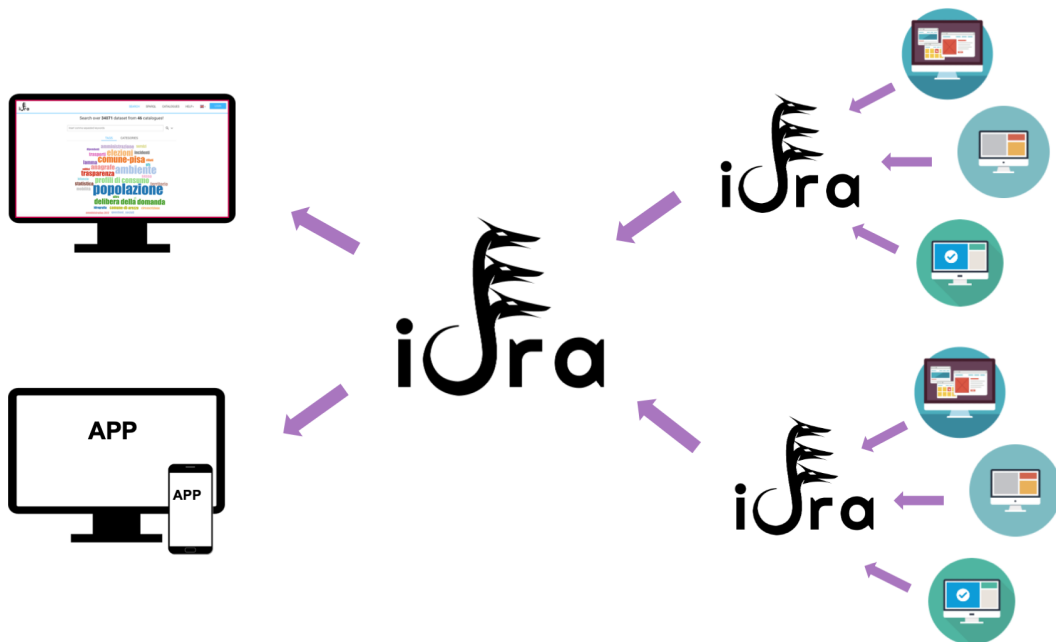
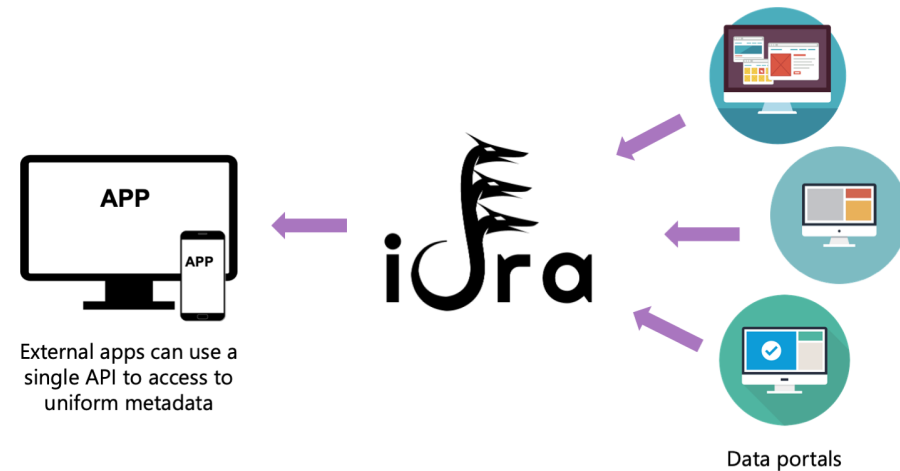
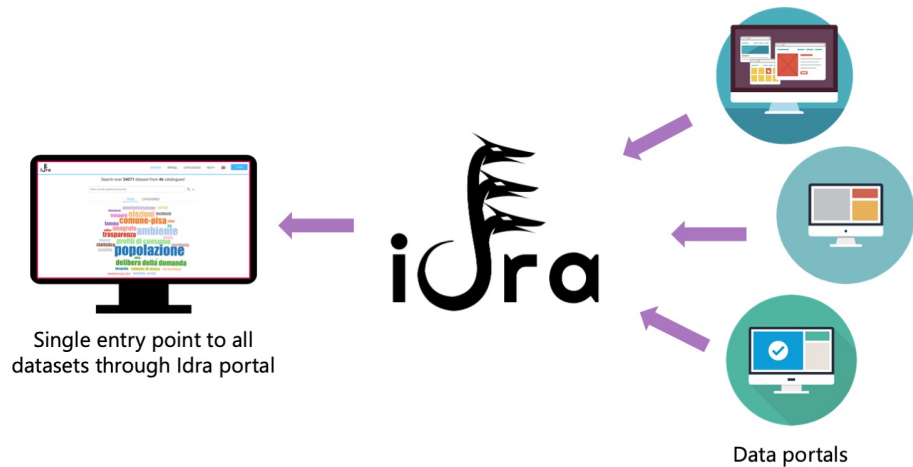


The screenshot shows the 'Add Catalogue' page in the Idra portal. The page has a header with the Idra logo and navigation links: SEARCH, SPARQL, CATALOGUES, STATISTICS, HELP, ADMINISTRATION, and a LOGOUT button. The breadcrumb trail is 'Home / Manage Catalogues / Add Catalogue'. The form is divided into two main sections. On the left, there is a placeholder for a logo with the text 'no image' and two buttons: 'BROWSE' and 'CROP'. On the right, there are several input fields: 'Name:', 'Publisher Name:', 'Country:' (with a dropdown arrow), 'Category:' (with a dropdown arrow), 'Description:' (with a text area and a '↵' icon), 'Homepage:', and 'API Endpoint:'. At the bottom, there are three dropdown menus: 'Type:', 'Active:' (with 'Yes' selected), and 'Refresh:'. At the very bottom right, there are three buttons: 'BACK', 'RESET', and 'CREATE'.

Idra connectors

Connector	Supported version	Description
CKAN	API v3	Connector for CKAN portals
DCATDUMP	DCAT-AP v1.1	Connector to import metadata via dump file compliant with DCAT-AP or DCAT-AP_IT
DKAN	DCAT Catalogue endpoint	Connector for DKAN portals
Junar	API v2.0	Connector for Junar portals
NATIVE	API v1.0	Connector for Idra Federation API
OpenDataSoft	Seacrh API v2	Connector for OpenDataSoft portals
ORION	NGSI v2, NGSI-LD	Connector that allows to create datasets with NGSIv2/NGSI-LD query-based distributions
SOCRATA	DCAT Catalogue endpoint	Connector for Socrata portals
SPARQL	V1.1	Connector that allows to create datasets with SPAQRL query-based distributions
SPOD	CKAN API v1 & v2	Connector for Stat Portal Open Data (SPOD)
WEB	v1.0	Connector to import sitemaps in order to scrape and federate custom websites





Idra: an open source project

- Idra has been created inside EU funded projects and it is **currently improved and maintained by Engineering**
- Idra is an open source project released under the **AGPLv3 license**
- Idra is part (Generic Enabler) of the European open platform **FIWARE**, a suite of open source components to support different applicative domains, in particular **IoT** e **Smart City**



Developer resources

- GitHub repository : <https://github.com/OPSILab/Idra>
- DockerHub: <https://hub.docker.com/u/idraopendata/>
- API documentation: <https://idraopendata.docs.apiary.io/>
- User manual: <http://idra.readthedocs.io/>
- Information and support: idra@eng.it



Grazie per l'attenzione.



Giuseppe Ciulla
Senior Researcher



www.eng.it



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