



# PgMetadata

A  **QGIS** plugin to manage metadata  
for your **PostgreSQL** data 

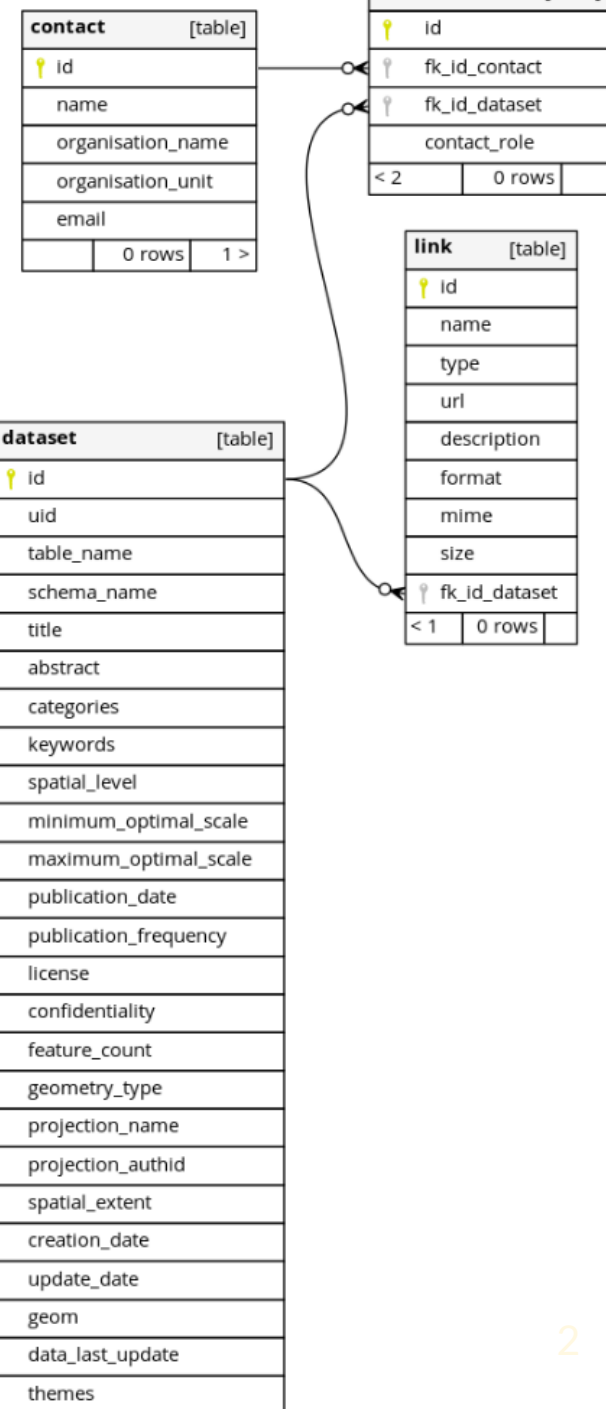
*Michaël Douchin*



# What is Metadata ?

Help people to understand your data

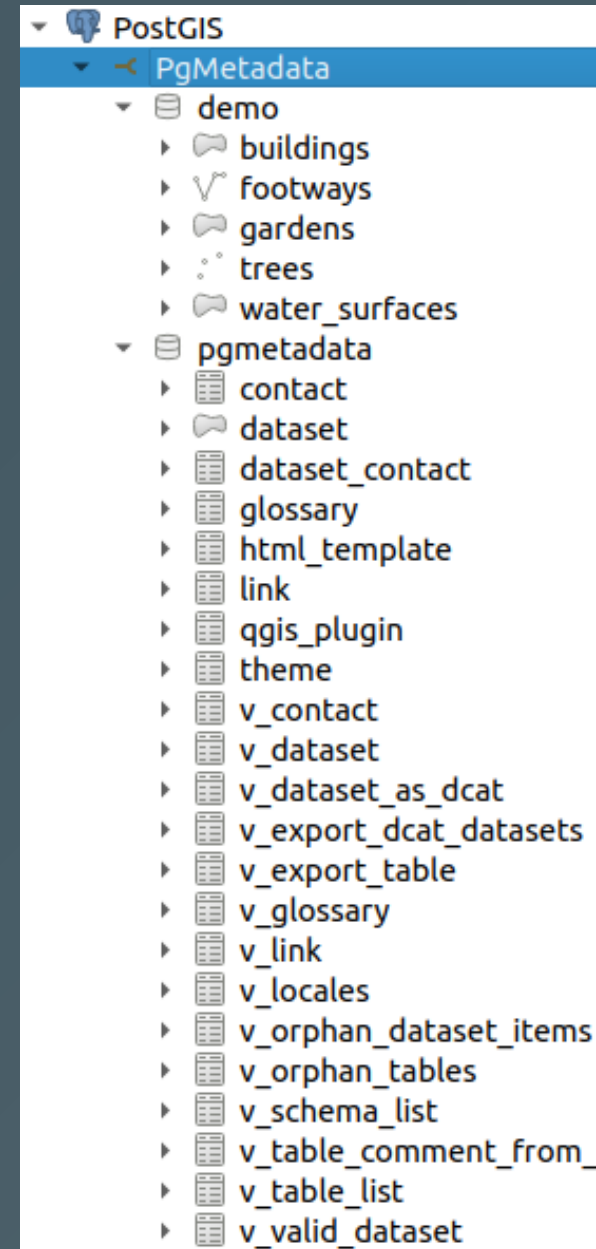
- **Identification:** Title, abstract, categories, themes, keywords, data last update,
- **Spatial properties:** spatial level, optimal scales,
- **Publication:** date, frequency, license, confidentiality
- **Computed:** feature count, geometry type, projection name & code, extent
- **Contact(s):** owner, publisher, custodian, etc.
- **Link(s)** to resources, web pages, documents



# Pg Metadata

Designed for people using **PostgreSQL** to store their vector (& raster) data.

- **Centralized:** data & metadata in the **same database**
- **Accessible:** a PostgreSQL connection to share the metadata
- **PostgreSQL** rich features:
  - **SQL powered:** relations, constraints, views, functions, triggers
  - **Rights** & access control: readers VS editors
- **See & Edit** with your preferred SQL client:
  - Libreoffice, PgAdmin, psql, DBeaver,
  - **QGIS** with its powerful forms !
- **Backup & restore** metadata with your data

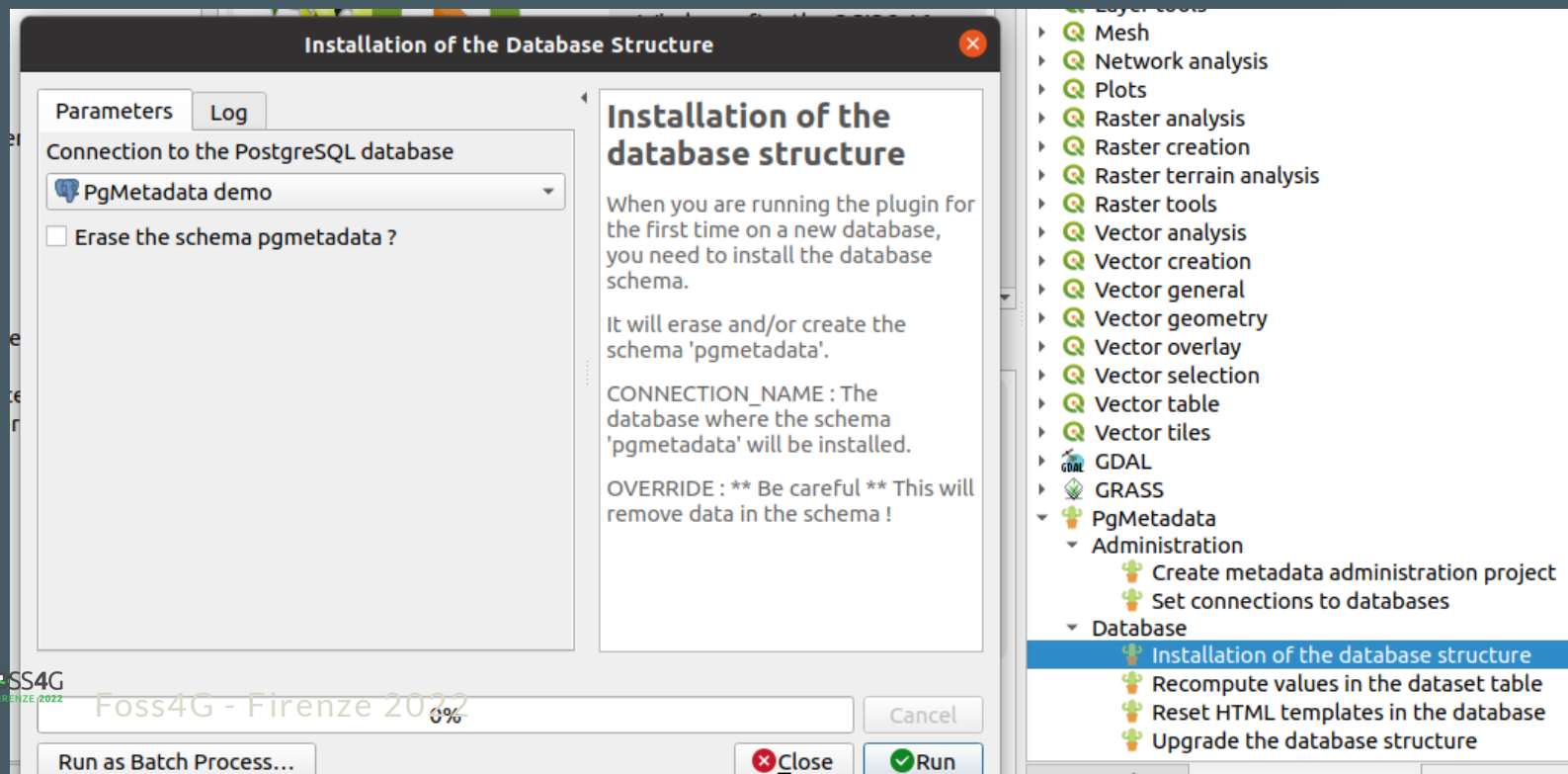


# PgMetadata for the GIS administrator

# Create the pgmetadata schema

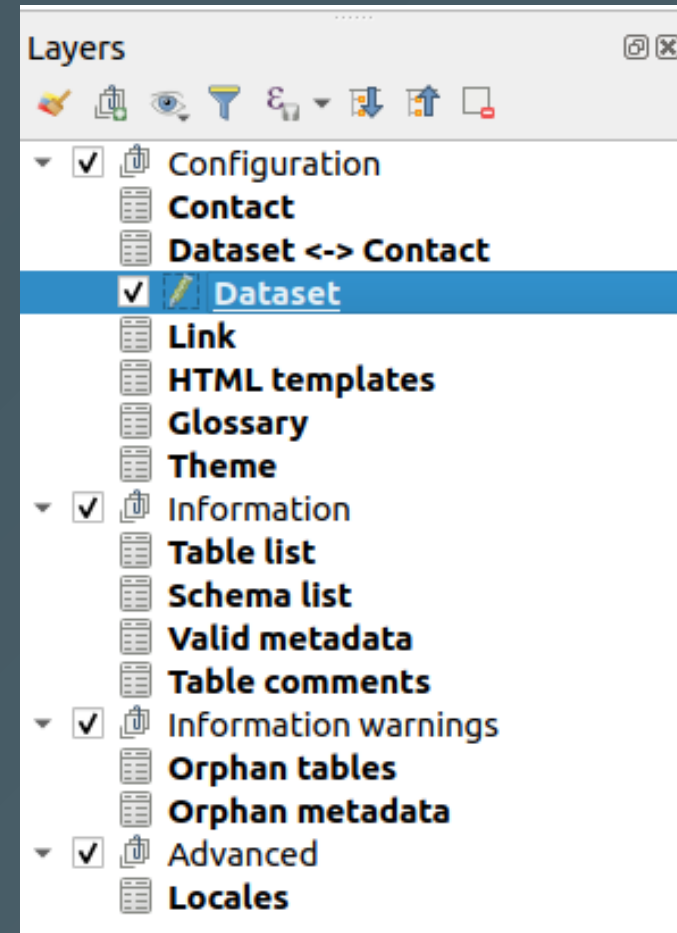
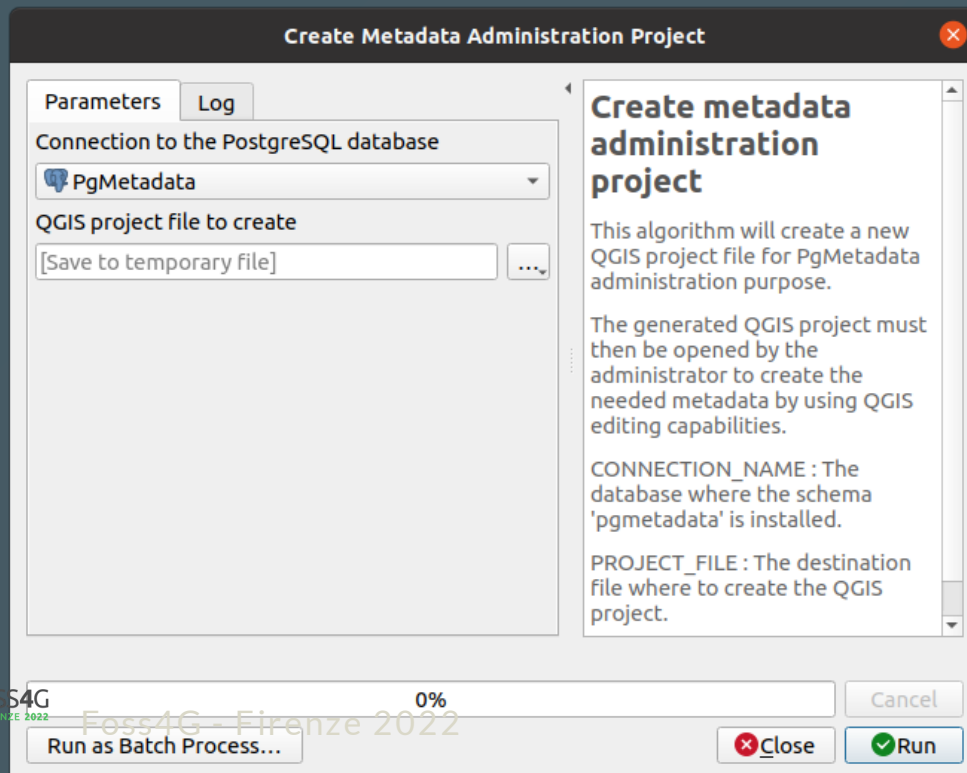
The plugin is using a **schema** `pgmetadata` in PostgreSQL.

A **QGIS processing algorithm** allows to create it in your database and fill it with the needed **tables, views and data** (glossary and translations)



# A QGIS admin project builder

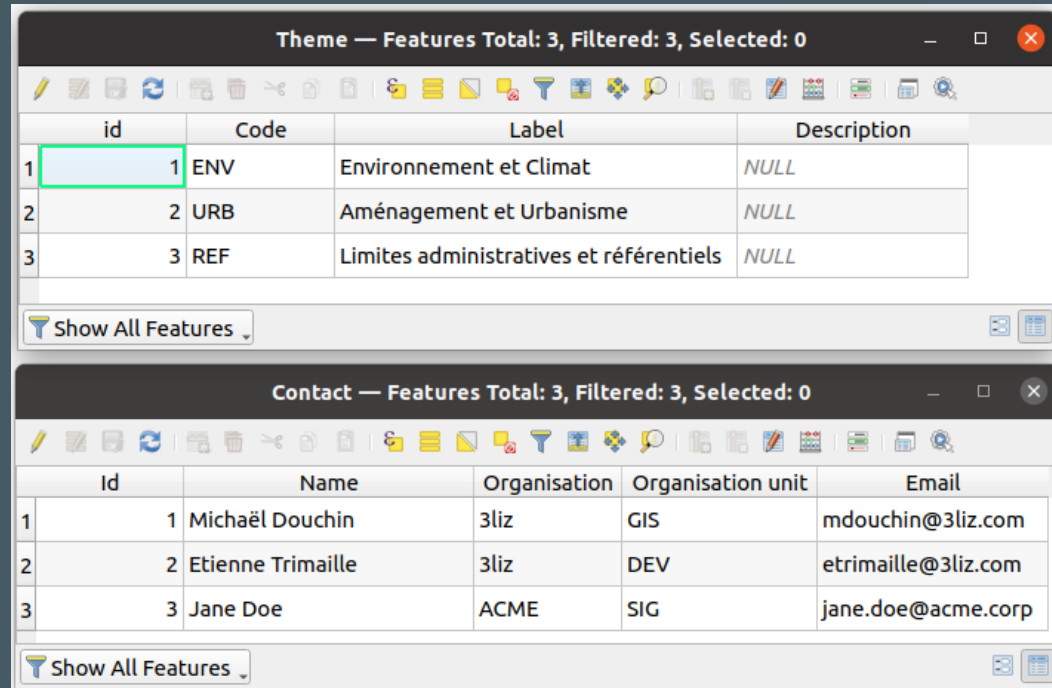
A QGIS processing algorithm to create a full featured **QGIS administration project** with rich forms:



# Prepare editing

Create the needed contextual data in the dedicated **tables**:

- User-defined **themes**
- **Contacts**: name, organisation, unit, email
- The existing **glossary** can be changed
- **Translations** can be added if missing



**Theme — Features Total: 3, Filtered: 3, Selected: 0**

	id	Code	Label	Description
1	1	ENV	Environnement et Climat	NULL
2	2	URB	Aménagement et Urbanisme	NULL
3	3	REF	Limites administratives et référentiels	NULL

Show All Features

**Contact — Features Total: 3, Filtered: 3, Selected: 0**

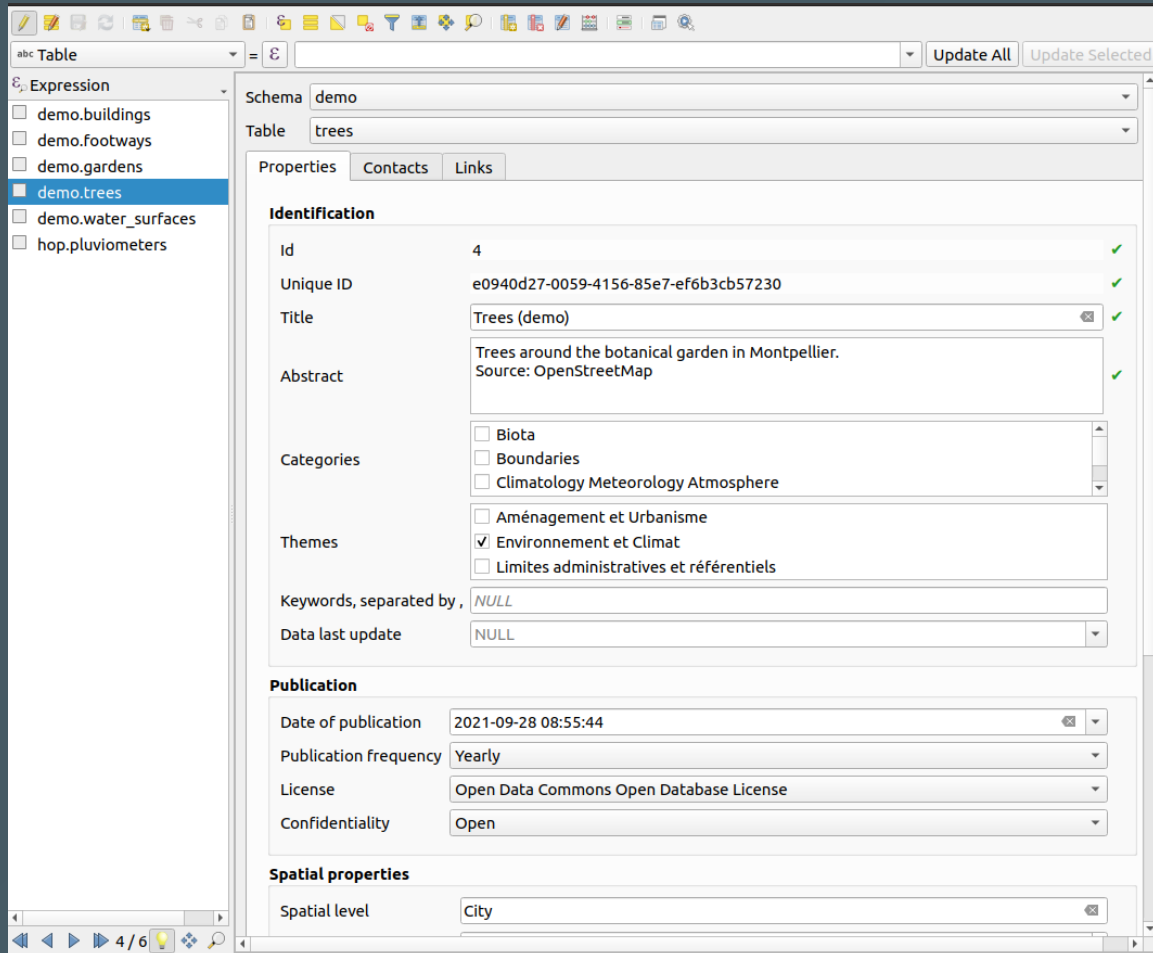
	Id	Name	Organisation	Organisation unit	Email
1	1	Michaël Douchin	3liz	GIS	mdouchin@3liz.com
2	2	Etienne Trimaille	3liz	DEV	etrimaille@3liz.com
3	3	Jane Doe	ACME	SIG	jane.doe@acme.corp

Show All Features

# Edit your datasets with QGIS forms

Choose the **schema** and **table**, then edit:

- the main **fields**: title, abstract, keywords, etc.
- the **contacts** and their roles
- the **dataset** related links



The screenshot shows the QGIS PgMetadata interface. On the left, a tree view under 'abc Table' shows a list of schemas: demo.buildings, demo.footways, demo.gardens, demo.trees (selected), demo.water\_surfaces, and hop.pluviometers. The main panel displays the 'demo' schema and 'trees' table. The 'Properties' tab is active, showing fields for Identification, Publication, and Spatial properties. The 'Identification' section includes fields for Id (4), Unique ID (e0940d27-0059-4156-85e7-ef6b3cb57230), Title (Trees (demo)), Abstract (Trees around the botanical garden in Montpellier. Source: OpenStreetMap), Categories (Biota, Boundaries, Climatology Meteorology Atmosphere), Themes (Aménagement et Urbanisme, Environnement et Climat, Limites administratives et référentiels), Keywords, separated by (NULL), and Data last update (NULL). The 'Publication' section includes Date of publication (2021-09-28 08:55:44), Publication frequency (Yearly), License (Open Data Commons Open Database License), and Confidentiality (Open). The 'Spatial properties' section includes Spatial level (City).





# Admin helpers

Some data are **calculated** from the table content:

- valid **unique id** for the dataset `e0940d27-0059-4156-85e7-ef6b3cb57230`
- layer extent, feature count, geometry type, projection id & name.
- creation and update timestamps, etc.

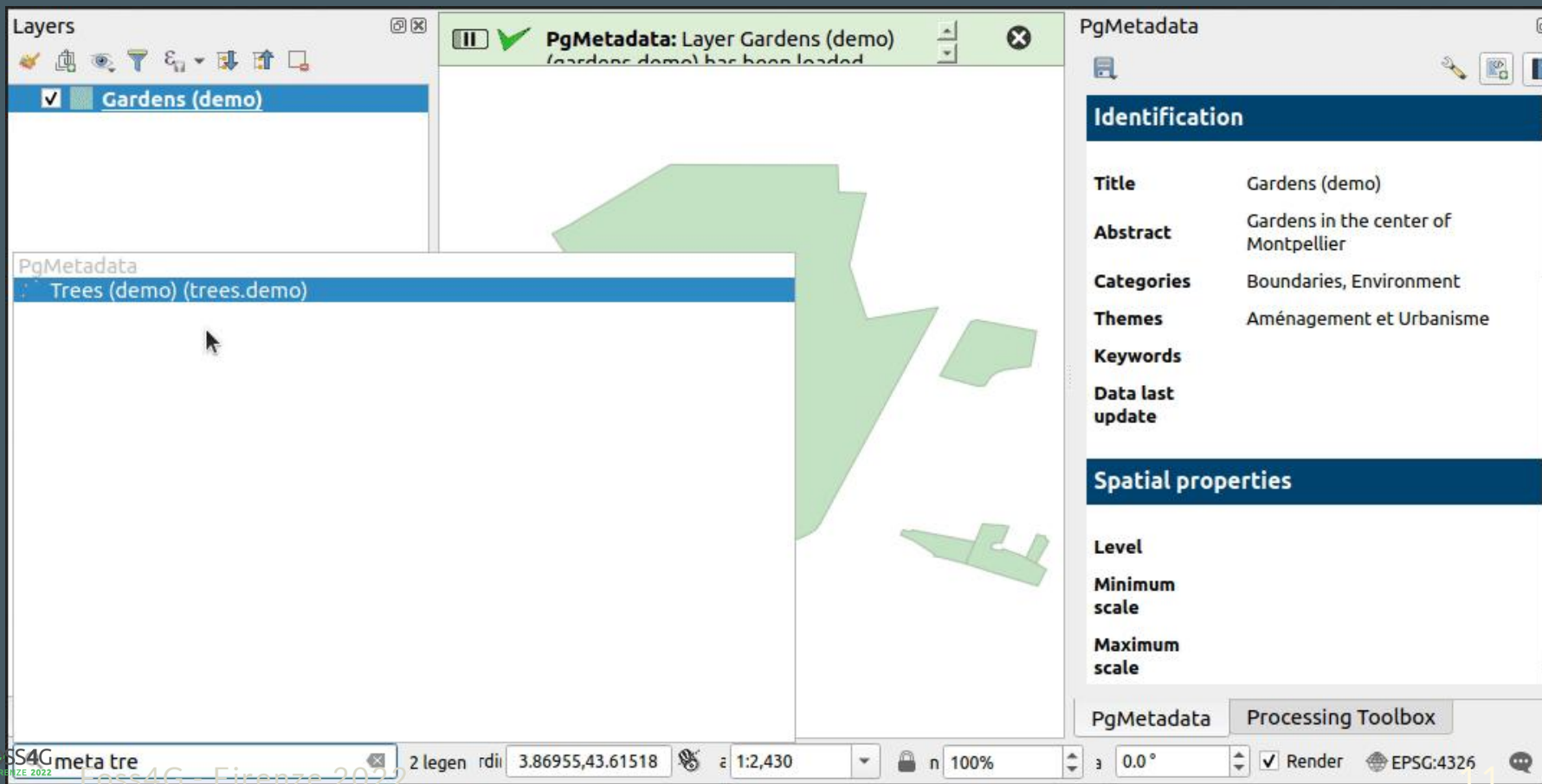
Some useful **views**:

- **Orphan PostgreSQL tables**: no metadata exists in the dataset table for this tables
- **Orphan metadata**: a line exists in your dataset table, but no table corresponds in your database
- **Flat representation of the datasets**: lists the datasets with contacts and links aggregated

# PgMetadata for the GIS user in QGIS

# QGIS locator & Metadata panel

CTRL+K, type **meta**, find the table, add the layer & view metadata.  
See [animated GIF](#)



The screenshot shows the QGIS interface with the PgMetadata panel open. The Layers panel on the left shows the 'Gardens (demo)' layer selected. The PgMetadata panel on the right displays the metadata for the 'Gardens (demo)' layer. The map area shows a green polygon representing the garden area.

**Layers**

- ☒ Gardens (demo)

**PgMetadata: Layer Gardens (demo)**  
(gardens demo) has been loaded

**PgMetadata**

**Identification**

<b>Title</b>	Gardens (demo)
<b>Abstract</b>	Gardens in the center of Montpellier
<b>Categories</b>	Boundaries, Environment
<b>Themes</b>	Aménagement et Urbanisme
<b>Keywords</b>	
<b>Data last update</b>	

**Spatial properties**

<b>Level</b>	
<b>Minimum scale</b>	
<b>Maximum scale</b>	

**PgMetadata** **Processing Toolbox**

2 legen rdi 3.86955,43.61518 1:2,430 100% 0.0° Render EPSG:4326



# Export

The user can export each dataset metadata to:

- HTML
- PDF
- DCAT <https://www.w3.org/TR/vocab-dcat-2/>

```
<dcat:dataset>
  <dcat:Dataset>
    <dct:identifier>e0940d27-0059-4156-85e7-ef6b3cb57230</dct:identifier>
    <dct:title>Trees (demo)</dct:title>
    <dct:description>Trees around the botanical garden in Montpellier.
Source: OpenStreetMap</dct:description>
    <dct:language>en</dct:language>
    <dct:license>Open Data Commons Open Database License</dct:license>
    <dct:rights>Open</dct:rights>
    <dct:accrualPeriodicity>Yearly</dct:accrualPeriodicity>
    <dct:spatial>{"type":"Polygon","coordinates":[]}</dct:spatial>
    <dct:created rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2021-09-28T08:55:44.606067</dct:created>
    <dct:issued rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2021-09-28T08:55:44.606067</dct:issued>
    <dct:modified rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2021-09-28T08:55:44.606067</dct:modified>
    <dcat:contactPoint>
      <vcard:Organization>
        <vcard:fn>Jane Doe - ACME (SIG)</vcard:fn>
        <vcard:hasEmail rdf:resource="jane.doe@acme.corp">jane.doe@acme.corp</vcard:hasEmail>
      </vcard:Organization>
    </dcat:contactPoint>
```

# PgMetadata advanced features



# Advanced features

- Easily change the **templates** for the HTML content (visible in the panel): they are stored inside the `html_template` table
- Generate a dataset **HTML card** with **SQL**

```
SELECT pgmetadata.get_dataset_item_html_content('demo', 'trees', 'fr');
```

- Generate a **DCAT representation** with SQL for one or many tables

```
SELECT *  
FROM pgmetadata.get_datasets_as_dcat_xml('fr')  
WHERE True
```

- **Deploy easily in you organisation** with QGIS configuration file variables (hide admin tools, auto-activate plugin)

```
[pgmetadata]  
auto_open_dock=true  
end_user_only=true  
connection_names=Connection 1;Connection 2;Connection 3
```

```
[Plugins]  
pg_metadata=true
```

# Share

(web) Applications can use the **SQL functions** to show the localized metadata in **HTML format** or **publish the full catalog** in **DCAT** (and be harvested by Third party Metadata portals).

Example of **Lizmap Web Client PgMetadata module**:

<https://github.com/3liz/lizmap-pgmetadata-module/>

The screenshot displays the Lizmap Web Client interface for the PgMetadata module. The top header shows 'Données ouvertes' and 'Données de référence'. The left sidebar contains a 'Layers' panel with a legend and a list of administrative and social layers. The 'Administratif' section includes 'Mairies', 'Communes' (selected), 'Cantons électoraux', 'EPCI', 'PETR', 'Pays', 'SCOT', 'Circonscriptions législatives', and 'Sites du département'. The 'Développement social' section includes 'Etablissements pers. handicapées adultes', 'Etablissements pers. âgées', and 'Crèches' (selected). The main map area shows a satellite view of Gard, France, with numerous pink icons representing crèches. The right panel displays the metadata for the selected layer, 'Les crèches gardoises'.

**GARD 30**  
Département

Données ouvertes Données de référence

Search Connect

Layers Legend

**Administratif**

- ☐ Mairies
- ☒ Communes
- ☐ Cantons électoraux
- ☐ EPCI
- ☐ PETR
- ☐ Pays
- ☐ SCOT
- ☐ Circonscriptions législatives
- ☐ Sites du département

**Développement social**

- ☐ Etablissements pers. handicapées adultes
- ☐ Etablissements pers. âgées
- ☒ Crèches

**GARD 30**  
Département

Département du Gard S.I.G 3.0

**Identification**

**Titre** Les crèches gardoises

**Résumé** Localisation des crèches à l'adresse à partir d'un fichier transmis par la direction petite enfance - Reste une incertitude sur certaines localisation à préciser\_ rajout en 2013 d'un ID carto commun afin de faciliter les mises à jour

**Catégories**

**Thèmes** Administration et action publique, Social, santé et sports

**Mots clés** gard, social;équipement collectif;crèche;enfance

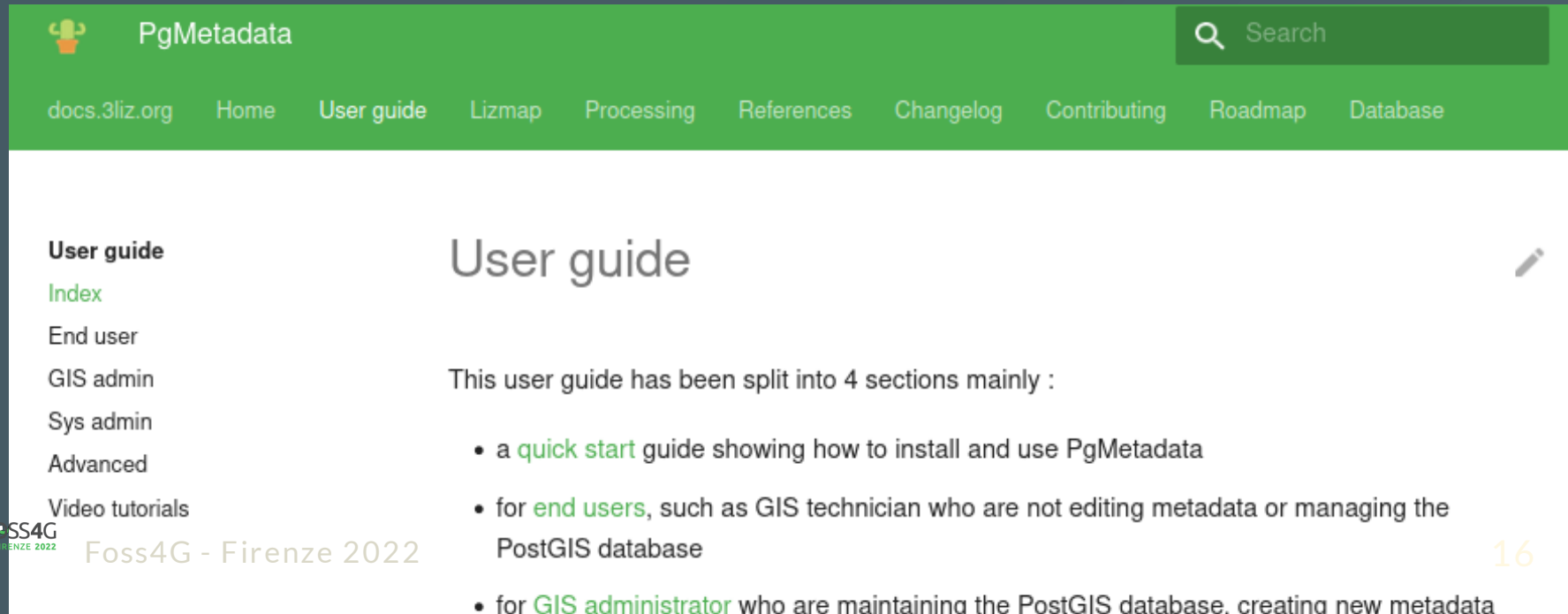
**Référence géographique**

**Granularité** POI

# Documentation

<https://docs.3liz.org/qgis-pgmetadata-plugin/>

- For the **administrator**
- For the **end user**
- For the **system administrator**
- **Ressources**: Changelogs, videos, road map, database structure, etc.



The screenshot shows the PgMetadata documentation website. The header is green with the PgMetadata logo and a search bar. The navigation menu includes links to docs.3liz.org, Home, User guide, Lizmap, Processing, References, Changelog, Contributing, Roadmap, and Database. The main content area is titled 'User guide' and contains a list of links: Index, End user, GIS admin, Sys admin, Advanced, and Video tutorials. The text states that the user guide is split into 4 sections: a quick start guide, for end users, for GIS administrators, and for GIS administrators. The footer includes the Foss4G - Firenze 2022 logo and the page number 16.

PgMetadata

Search

docs.3liz.org Home User guide Lizmap Processing References Changelog Contributing Roadmap Database

User guide

User guide

This user guide has been split into 4 sections mainly :

- a **quick start** guide showing how to install and use PgMetadata
- for **end users**, such as GIS technician who are not editing metadata or managing the PostGIS database
- for **GIS administrator** who are maintaining the PostGIS database, creating new metadata

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# Conclusion



# Why another metadata tool ?

Many open-source tools already exist to store and share metadata.

## Why **PgMetadata** ?

- See the previous slide about **PostgreSQL** 
- Keep the metadata **as close as possible to the data**
- Not a new application, but a set of tools for **QGIS** and your **existing PostgreSQL database**:
  - the GIS administrator already uses PostgreSQL and can understand easily how PgMetadata works,
  - the GIS users do not need to learn to use a new application
- **GIS user oriented**: as a user, search & get the metadata **from QGIS** *VERSUS* browse a web page and download the data
- It is **NOT designed to replace the existing metadata web portals**, but to be used as a **complementary** tool !



# Road map

We will release a new version in **September, 2022** with:

- **License:** GNU General Public License **GPL v2.0**
- Raise the **QGIS minimum version to 3.16**
- **Raster support**
- Better handling of backslashes in links to Windows files
- **New fields:** contact phone number, license attribution and number
- Clickable email links

Other ideas:

- **Auto-fill** the dataset table from a selection of PostgreSQL tables/views
- **Import/Export** the QGIS native layer metadata properties
- Import metadata from **DCAT**



# Resources

- Documentation: <https://docs.3liz.org/qgis-pgmetadata-plugin/>
- Database structure: <https://docs.3liz.org/qgis-pgmetadata-plugin/database/>
- Source code: <https://github.com/3liz/qgis-pgmetadata-plugin/>
- Translations: <https://www.transifex.com/3liz-1/pgmetadata/>
- Twitter: [@3liz\\_news](https://twitter.com/3liz_news)
- Email: [info@3liz.com](mailto:info@3liz.com)



# Thanks



Thanks to the French **Gard province** for funding the first version of this extension !

Thanks to my colleague **Etienne Trimaille** [@Gustry](#) for helping and maintaining this plugin !

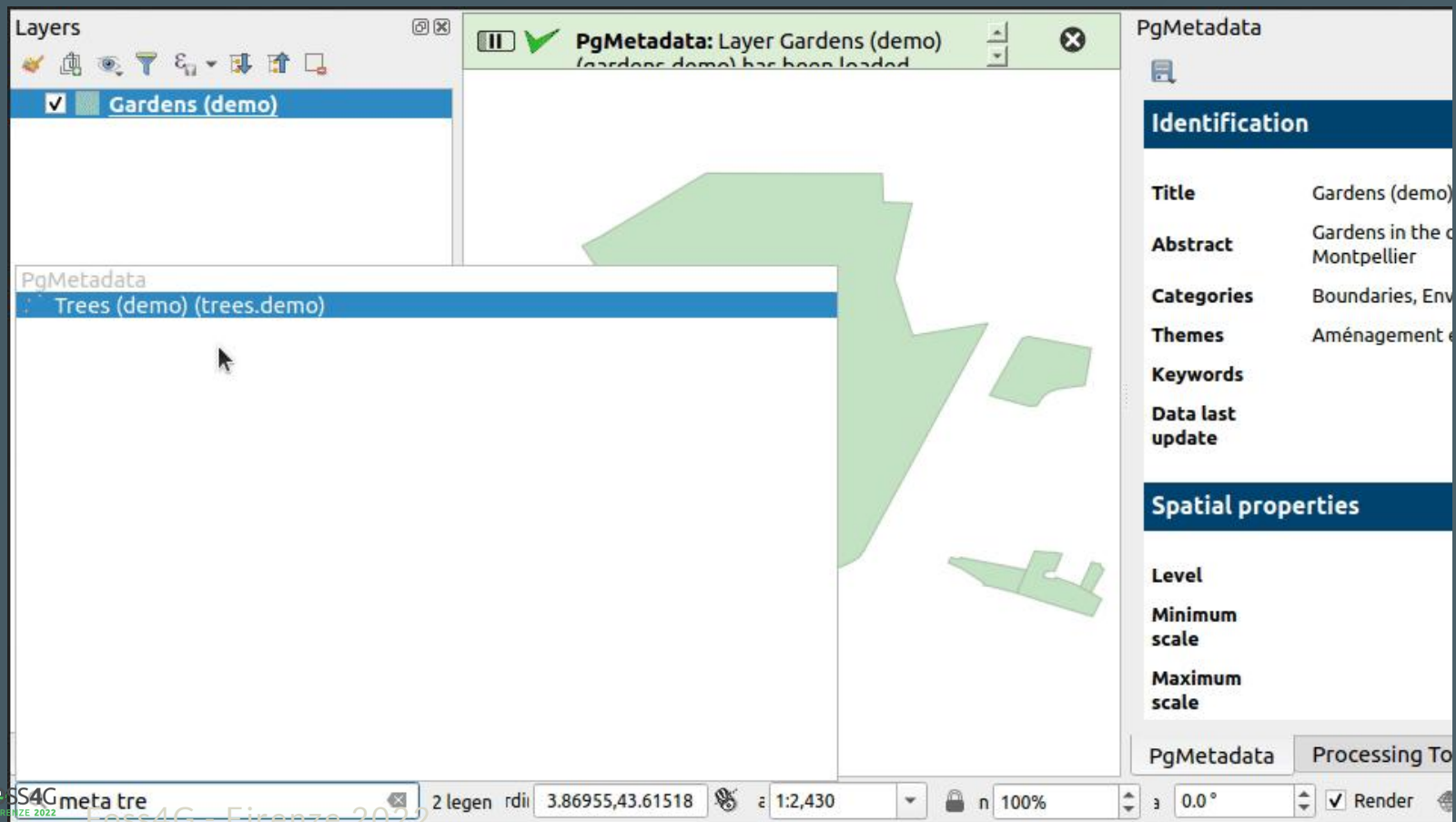
Many thanks to our external active **contributors**:

- **Florian Jenn** [@effjot](#) for ideas, fixes & improvements
- Our kind translators in Transifex for
  - **Finnish** (Santtu Majuri [@BinkiBai](#), Santtu Pyykkönen [@santtuvp](#)),
  - **German** (Florian Jenn [@effjot](#))
  - **Spanish** (Carlos López Quintanilla [@carlos.psig](#))

# Thank you for your attention

Questions ?

I would love to hear feedback from any PgMetadata user !



The screenshot displays the PgMetadata web application interface. On the left, a 'Layers' panel shows 'Gardens (demo)' as the active layer. Below it, a 'PgMetadata' panel lists 'Trees (demo) (trees.demo)'. The main map area shows a green polygon representing a garden. On the right, a 'PgMetadata' panel provides metadata for the 'Gardens (demo)' layer. The metadata is organized into sections: Identification, Spatial properties, and Processing Tools.

Identification	
Title	Gardens (demo)
Abstract	Gardens in the c Montpellier
Categories	Boundaries, Env
Themes	Aménagement e
Keywords	
Data last update	

Spatial properties	
Level	
Minimum scale	
Maximum scale	

At the bottom, a status bar shows the map's extent (3.86955, 43.61518), scale (1:2,430), and other technical details.