

# Pl@ntNet-DataManager

## Gestion distribuée de données de biodiversité

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Projet Pl@ntNet

- \* Le projet Pl@ntNet
- \* Pl@ntNet-DataManager
- \* Exemples de cas d'utilisations
- \* Limites et perspectives



Projet 2009-2014



“Identification interactive des plantes  
et Système d'information collaboratif”

Fournir des outils numériques pour la découverte et le partage des connaissances botaniques

## Aide à l'Identification des plantes



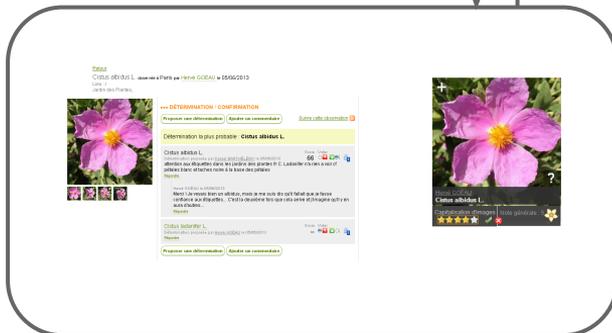
## Stockage "Big-Data"



## Gestion de données



## Validation collaborative



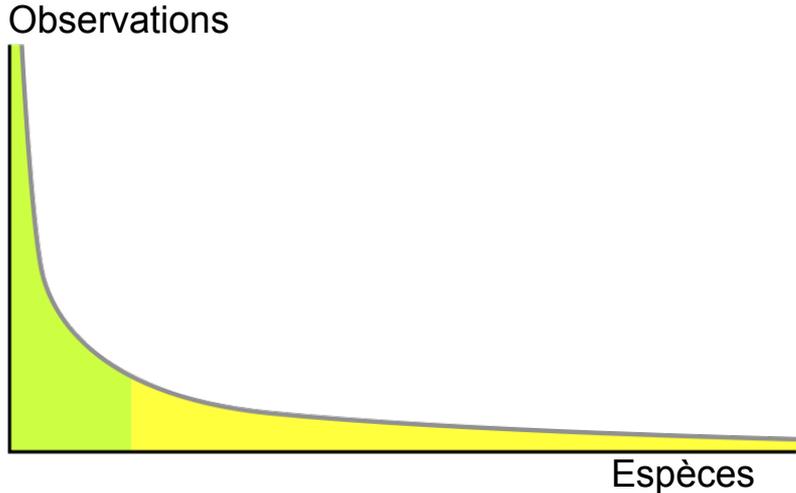
IdentiPlante / PictoFlora



Pl@ntNet-Publish

# Des “données orphelines” ...

La masse des données botaniques concerne une minorité d'espèces. Comment en acquérir ou en mobiliser de nouvelles ?



## Problèmes identifiés :

- *Les données n'existent pas*
- *Les données existent mais ne sont pas valorisées*

# Pl@ntNet-DataManager

Collecte, gestion et diffusion collaborative  
de données en écologie et en botanique



## Objectif :

*Fournir une plateforme de gestion de données générique  
pour les **petits projets de recherche indépendants**,  
facilitant l'échange et le partage.*

# Les données de botanique

Centrées Individus ou Taxons

Observations Botaniques

Images / Documents

Des référentiels

Taxonomiques (famille, genre, espèce...)

Geographiques (pays, region, lieux...)

Auteurs

**Structuration Hierarchique des données**

Informations spécifiques selon les besoins



*Etlingera elatior* (Jack) R.M. Smith par Inge WULLWEBER

# Des données pour la recherche



Favoriser l'agrégation et le partage des données, dans un domaine où la dispersion et l'hétérogénéité des sources prédominent

Projets de petites tailles (quelques personnes)

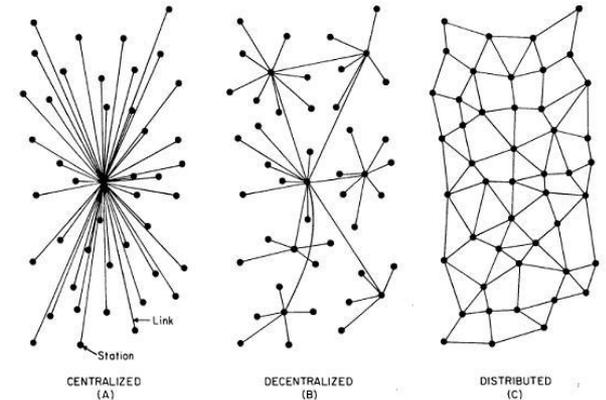
Pas de standardisation

(1 projet = 1 problématique = 1 modèle spécifique)

Pas de SI centralisé

Chaque groupe veut gérer ses données indépendamment

Echanger tout ou partie de ses données avec ses partenaires



# Une nouvelle approche...

Les technologies **NoSQL** pour

**Structuration souple des données**

**Distribution des données**

Adapté si

**Pas de contraintes de transaction**

**Peu de relation entre les données**

**Pas de requêtes SQL**

## NOT Only SQL

*It's about recognizing  
that for some problems  
other storage solutions  
are better suited!*

# Echange / Synchronisation

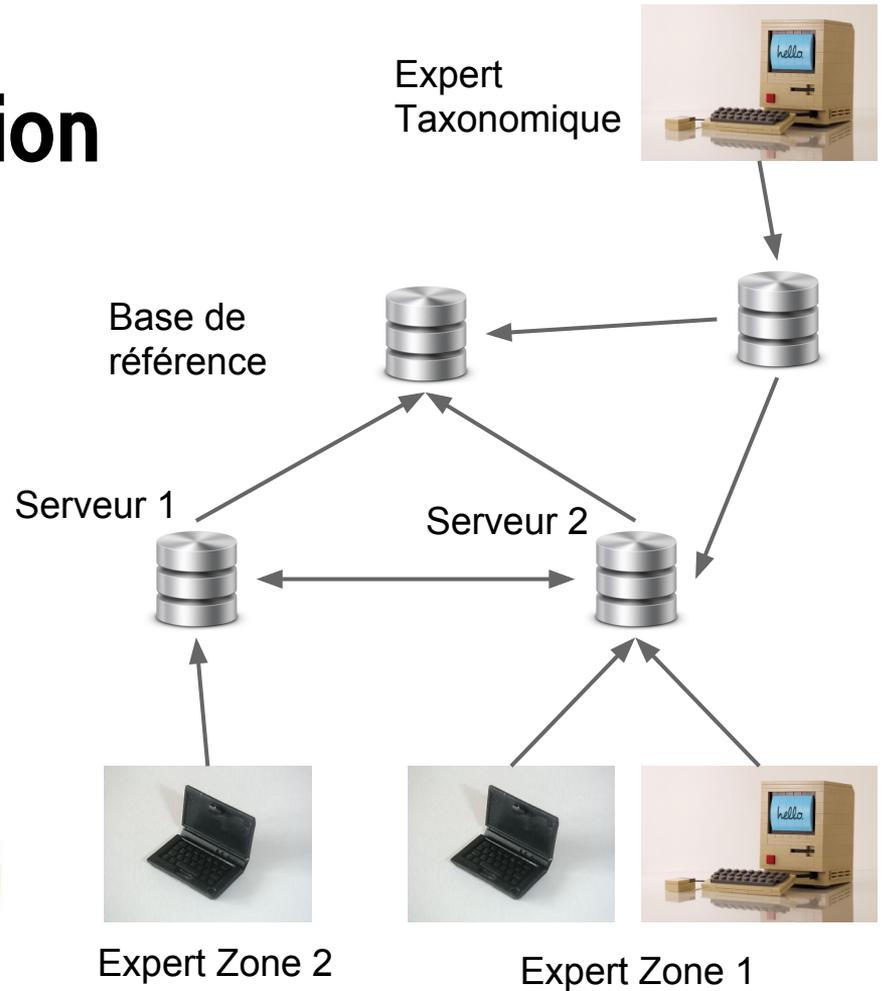
Architecture distribuée

Mode hors ligne

Différents

groupes d'utilisateurs

Detection des conflits



# Appli Web ou Hors ligne

The screenshot shows a web browser window displaying the Pi@ntNet-Datamanager interface. The browser's address bar shows the URL `data.plantnet-project.org/datamanager/_design/datamanager/start.html#/dbs`. The page header includes the logo, version `v0.8.0`, a user profile `@data`, and a `Create a new account` button. A navigation bar contains a `Home` link. The main content area features the title `Pl@ntNet - Datamanager` and a descriptive paragraph: `Pi@ntNet-Datamanager is a distributed data management system dedicated to botany. With this software, you can :` followed by a bulleted list of features: 

- create databases with their own data organisation
- send / Retrieve data to / from other Pi@ntNet-Datamanager instances
- manage your data locally on your computer. Pi@ntNet-Datamanager is decentralized. The software can be installed on servers but also on personal computer or on mobile devices.

A `Help and forums »` button is located below the list. A row of partner logos includes `agroparis-sudparis`, `cirad`, `INRA`, `Inria`, `IRD`, and `Tela Botanica`. A `Sign in` box on the right contains input fields for `Login` and `Password`, and a `Sign in` button. Below this is a `Public database list` section with the text `You can access to those databases without signin.` and a table of database entries.

Name	Description
<a href="#">public_data_apg3</a>	Angiosperm Phylogeny according to APG III (2009), Haston et al. (2009) [LAPG III] and Chase & Reveal 2009
<a href="#">public_data_flore_france</a>	click to edit me
<a href="#">public_data_secteurs_administratifs_france</a>	
<a href="#">public_data_world_geographical_region_and_countries</a>	
<a href="#">public_data_world_geographical_scheme_tdwg</a>	<a href="http://www.kew.org/science-research-data/kew-in-depth/gis/resources-and-publications/data/tdwg/index.htm">http://www.kew.org/science-research-data/kew-in-depth/gis/resources-and-publications/data/tdwg/index.htm</a>

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# Organisation par “structure”

The screenshot shows the DataManager web interface for a database named 'reunion\_observation'. The browser address bar shows the URL: `data.plantnet-project.org/reunion_observation/_design/datamanager/database.html#/db-manager`. The interface includes a navigation menu with 'Database overview', 'Structures: Dictionary', 'Structure', and 'New Structure'. A search bar is present with the text 'Quick Search' and a dropdown for 'Select a structure'. The main content area is divided into sections: 'Database description' (containing the text 'observations from reunion island'), 'Notes / Comments' (containing the text 'Used for demonstration. I can write something here... yes indeed'), 'Available structures' (a table listing structures like 'bdtre', 'geo', and 'pni\_observations'), and 'Last changes' (a table listing document changes with columns for Doc, Author, Date, and Diff).

Database description  
observations from reunion island

Notes / Comments  
Used for demonstration. I can write something here... yes indeed

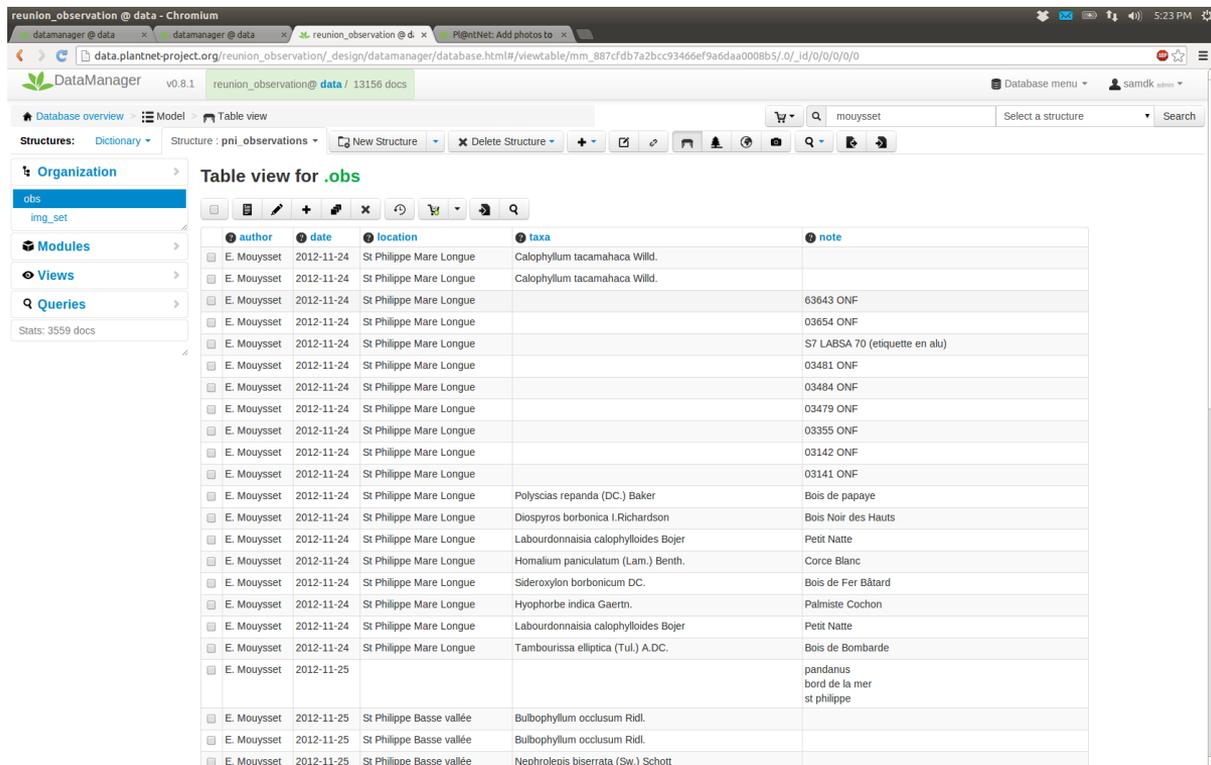
Available structures

Name	Description	Type
<a href="#">bdtre</a>	taxonomy	Dictionary
<a href="#">geo</a>	geo localisation	Dictionary
<a href="#">pni_observations</a>	observations pour identify	Data

Last changes

Doc	Author	Date	Diff
<a href="#">E. Mouysset 2012-11-19</a>	samdk	2013-03-13 16:00:30	<a href="#">Diff</a>
<a href="#">S. Dufour-Kowalski 2012-11-24</a>	samdk	2013-03-13 15:51:46	<a href="#">Diff</a>
<a href="#">bark</a>	goeau	2013-02-19 11:56:41	<a href="#">Diff</a>
<a href="#">habit</a>	goeau	2013-02-19 11:56:29	<a href="#">Diff</a>
<a href="#">leaf</a>	goeau	2013-02-19 11:55:48	<a href="#">Diff</a>
<a href="#">bark</a>	goeau	2013-02-19 11:55:45	<a href="#">Diff</a>
<a href="#">habit</a>	goeau	2013-02-19 11:55:41	<a href="#">Diff</a>
<a href="#">leaf</a>	goeau	2013-02-19 11:53:42	<a href="#">Diff</a>
<a href="#">flower</a>	goeau	2013-02-19 11:53:38	<a href="#">Diff</a>
<a href="#">habit</a>	goeau	2013-02-19 11:53:33	<a href="#">Diff</a>
<a href="#">leaf</a>	goeau	2013-02-19 11:52:53	<a href="#">Diff</a>

# Données Tabulaires



The screenshot shows the DataManager web interface. The browser address bar displays the URL: `data.plantnet-project.org/reunion_observations/design/datamanager/database.html#/viewtable/mm_887cfd7a2bcc93466ef9a6daa008b5f/0j_id/0j/0j/0j`. The interface includes a navigation menu on the left with sections for Organization, Modules, Views, and Queries. The main content area is titled "Table view for .obs" and displays a table with the following columns: author, date, location, taxa, and note. The table contains 25 rows of observation data.

author	date	location	taxa	note
E. Mouisset	2012-11-24	St Philippe Mare Longue	Calophyllum tacamahaca Willd.	
E. Mouisset	2012-11-24	St Philippe Mare Longue	Calophyllum tacamahaca Willd.	
E. Mouisset	2012-11-24	St Philippe Mare Longue		63643 ONF
E. Mouisset	2012-11-24	St Philippe Mare Longue		03654 ONF
E. Mouisset	2012-11-24	St Philippe Mare Longue		S7 LABSA 70 (etiquette en alu)
E. Mouisset	2012-11-24	St Philippe Mare Longue		03481 ONF
E. Mouisset	2012-11-24	St Philippe Mare Longue		03484 ONF
E. Mouisset	2012-11-24	St Philippe Mare Longue		03479 ONF
E. Mouisset	2012-11-24	St Philippe Mare Longue		03355 ONF
E. Mouisset	2012-11-24	St Philippe Mare Longue		03142 ONF
E. Mouisset	2012-11-24	St Philippe Mare Longue		03141 ONF
E. Mouisset	2012-11-24	St Philippe Mare Longue	Polyscias repanda (DC.) Baker	Bois de papaye
E. Mouisset	2012-11-24	St Philippe Mare Longue	Diospyros borbonica L.Richardson	Bois Noir des Hauts
E. Mouisset	2012-11-24	St Philippe Mare Longue	Labourdonnaisia calophylloides Bojer	Petit Natte
E. Mouisset	2012-11-24	St Philippe Mare Longue	Homalium paniculatum (Lam.) Benth.	Corce Blanc
E. Mouisset	2012-11-24	St Philippe Mare Longue	Sideroxylon borbonicum DC.	Bois de Fer Bâtard
E. Mouisset	2012-11-24	St Philippe Mare Longue	Hypophorbe indica Gaertn.	Palmiste Cochon
E. Mouisset	2012-11-24	St Philippe Mare Longue	Labourdonnaisia calophylloides Bojer	Petit Natte
E. Mouisset	2012-11-24	St Philippe Mare Longue	Tambourissa elliptica (Tul.) A.DC.	Bois de Bombarde
E. Mouisset	2012-11-25			pandanus bord de la mer st philippe
E. Mouisset	2012-11-25	St Philippe Basse vallée	Bulbophyllum occlusum Ridl.	
E. Mouisset	2012-11-25	St Philippe Basse vallée	Bulbophyllum occlusum Ridl.	
E. Mouisset	2012-11-25	St Philippe Basse vallée	Nephrolepis biserrata (Sw.) Schott	

# ou en arbre

The screenshot displays the DataManager v0.8.1 interface in a Chromium browser. The main content area shows a tree view for the 'bdtre' model. The tree structure is as follows:

- model: bdtre (2)
  - Règne : *Plantae* Haeckel (1)
    - Classe : *Equisetopsida* C.Agardh (8)
      - Sous-Classe : *Cycadidae* Pax (1)
      - Sous-Classe : *Equisetidae* Warm. (1)
        - Ordre : *Equisetales* DC. ex Bercht. & J.Presl (1)
          - Famille : *Equisetaceae* Michx. ex DC. (1)
            - Genre : *Equisetum* L. (1)
              - Espèce : *Equisetum ramosissimum* Desf.
      - Sous-Classe : *Lycopodiidae* Bek. (2)
        - Ordre : *Lycopodiales* DC. ex Bercht. & J.Presl (1)
        - Ordre : *Selaginellales* Prantl (1)
      - Sous-Classe : *Magnoliidae* Novák ex Takht. (45)
      - Sous-Classe : *Marattiidae* Klinge (1)
      - Sous-Classe : *Ophioglossidae* Klinge (2)
        - Ordre : *Ophioglossales* Link (1)
          - Famille : *Ophioglossaceae* Martinov (3)
            - Genre : *Cheiroglossa* C.Presl (1)
              - Genre : *Ophioderma* (Blume) Endl. (1)
                - Espèce : *Ophioderma pendula* (L.) C.Presl
              - Genre : *Ophioglossum* L. (4)
        - Ordre : *Psilotales* Prantl (1)
      - Sous-Classe : *Pinidae* Cronquist, Takht. & W.Zimm. (3)
      - Sous-Classe : *Polypodiidae* Cronquist, Takht. & W.Zimm. (7)
        - Espèce : *Rondeletia landia* (Poir.) Spreng.

# Détails et modification

reunion\_observations @ data - Chromium

data.plantnet-project.org/reunion\_observations/\_design/datamanager/database.html#/viewdoc/mm\_887cfd7a2bcc93466ef9a6daa0008b5##183fa94597d2e97dbd1d9d7783060976

DataManager v0.8.1 reunion\_observations @ data / 13156 docs Database menu | samdk admin

Database overview | Model | Doc view | mousset | Select a structure | Search

Structures: Dictionary | Structure: pni\_observations | New Structure | Delete Structure | + | - | [Icons]

Organization | Modules | Views | Queries | Stats: 3559 docs

### View document

[Icons]

**.obs : E. Mouisset 2012-11-26**

author	E. Mouisset
date	2012-11-26
location	<a href="#">St Leu Les brules de St Leu</a>
taxa	<a href="#">Erica galioides Lam.</a>

Created on 2013-02-03 20:17:17 by mouisset

**.obs.img\_set : flower**

Drop files here... [Grid of 18 flower images]

type flower

Created on 2013-02-03 20:17:24 by mouisset

**.obs.img\_set : leaf**

Drop files here... [Grid of 5 leaf images]

# Recherche “texte” ou par requête complexe

The screenshot shows a web browser window with the URL `data.plantnetproject.org/reunion_observation_design/datamanager/database.html#/viewlist/lucene/mouysset/0/mouysset/0`. The page title is "DataMgr" and the version is "v0.8.1". The search bar contains the text "mouysset". Below the search bar, there is a "Query: mouysset" section with a list of 8 search results. Each result is a record with fields for author, date, location, and taxon.

Database overview > List view

Search: mouysset

Query: **mouysset**

- .obs - E. Mouysset 2012-11-27**  
author E. Mouysset  
date 2012-11-27  
location St Pierre Canal St Etienne
- .obs - E. Mouysset 2012-11-27**  
author E. Mouysset  
date 2012-11-27  
location St Pierre CIRAD 3P  
note kay de passage
- .obs - E. Mouysset 2012-11-24**  
author E. Mouysset  
date 2012-11-24  
location St Philippe Mare Longue  
note 03481 ONF
- .obs - E. Mouysset 2012-11-26**  
author E. Mouysset  
date 2012-11-26  
location St Leu Les brules de St Leu  
taxa Pseudognaphalium luteoalbum (L.) Hilliard & B.L.Burt
- .obs - E. Mouysset 2012-11-25**  
author E. Mouysset  
date 2012-11-25  
location St Philippe Basse vallée  
taxa Antirhea borbonica auct. non J.F.Gmel.  
note Bois d'osto
- .obs - E. Mouysset 2012-11-25**  
author E. Mouysset  
date 2012-11-25  
note pandanus  
bord de la mer  
st philippe
- .obs - E. Mouysset 2012-11-22**  
author E. Mouysset  
date 2012-11-22  
location St Pierre CIRAD 3P
- .obs - F. Mouysset 2012-11-22**

# Vue des documents associées

reunion\_observation @ data - Chromium

data.plantnet-project.org/reunion\_observation/\_design/datamanager/database.html#/images/mm\_B87cfd7a2bcc93466ef9a6daa008b5/0/0/0

DataManager vo.8.1 reunion\_observation@ data / 13170 docs Database menu | samdik admin

Database overview | Model | Image view | mouysset | Select a structure | Search

Structures: Dictionary | Structure: pni\_observations | New Structure | Delete Structure | +

Organization | Modules | Views | Queries | Stats: 3559 docs

### Pictures gallery for pni\_observations

 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_02_1...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_02_2...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_02_4...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_03_0...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_04_1...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_04_3...
 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_04_5...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_06_2...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_06_4...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_06_5...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_07_4...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_08_0...
 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_08_2...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_08_4...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_09_1...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_09_2...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_09_5...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_10_1...
 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_10_3...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_10_4...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_10_5...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_11_0...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_11_1...	 <a href="#">view data</a> <a href="#">source</a> EM_19-11-2012_15_11_3...

# ou sur une carte...

reunion\_observations @ data - Chromium

data.plantnet-project.org/reunion\_observations/\_design/datamanager/database.html#/map/mm\_c93bf80b587e89e30bc032e21b02d53b

DataManager v0.8.1 reunion\_observations @ data / 13170 docs Database menu samdk admin

Database overview Model Map view

Structures: Dictionary: geo Structure New Structure Delete Structure + -

Organization Modules Views Queries Stats: 19 docs

## Map for geo

Add a map layer

Map | Satellite | OSM

Google 10 km 10 mi Map data ©2013 Google - Terms of Use

# Configuration d'une base

The screenshot shows the DataManager web interface for configuring a database. The browser address bar shows the URL: `data.plantnet-project.org/bourbon12/_design/datamanager/database.html#/editmm/mm_887cfdb7a2bcc93466ef9a6daa0008b5`. The interface includes a navigation bar with 'General', 'Modules', and 'Layout' tabs. The 'Modules' tab is active, showing a list of modules: 'obs' (selected) and 'img\_set'. Below the modules list, there are buttons for 'Add new module', 'Remove module', 'Move up', and 'Move down'. The 'Properties' section for the 'obs' module includes fields for 'Name' (obs), 'Description', and 'Color'. It also has 'Index Template' and 'Label Template' fields. The 'Fields' section contains a table of fields with columns for Name, Display Label, Mandatory, Type, Default value, Hide, and Description. At the bottom, there are 'Save structure' and 'Cancel' buttons.

**DataManager** v0.8.4 bourbon12@data / 13172 docs

General Modules Layout

Add new module Remove module Move up Move down

**Modules**

- obs
- img\_set

**Properties**

Name: obs Description: Color: [Color Picker]

Index Template: \${field\_name}

Label Template: \${author} \${date}

With attachments

**Fields**

New field name Add field Remove field Move up Move down

Name	Display Label	Mandatory	Type	Default value	Hide	Description
<input type="checkbox"/> author	author	<input type="checkbox"/>	enum <small>Edit possible values</small>	Select a value	<input type="checkbox"/>	Description for this field
<input type="checkbox"/> date	date	<input type="checkbox"/>	date	yyyy-mm-dd	<input type="checkbox"/>	Description for this field
<input type="checkbox"/> location	location	<input type="checkbox"/>	ref geo	<input type="checkbox"/> Force existing values or empty	<input type="checkbox"/>	Description for this field
<input type="checkbox"/> taxa	taxa	<input type="checkbox"/>	ref bdtre	<input type="checkbox"/> Force existing values or empty	<input type="checkbox"/>	Description for this field
<input type="checkbox"/> note	note	<input type="checkbox"/>	longtext	Your long text by default.	<input type="checkbox"/>	Description for this field

Save structure Cancel

# Synchronisation P2P

bourbon12 @ data - Chromium

datamanager @ data | bourbon12 @ data

data.plantnet-project.org/bourbon12/\_design/datamanager/database.html#/replicate/\_

DataManager >> v0.8.4 | bourbon12@ data / 13172 docs

Home | Tools | sdufour

Home | Data synchronization | Quick Search | Select a structure | Search

## Data synchronization

Current synchronizations | [New synchronization](#)

### Incoming

From (source database)	Nickname	Status	Achievement	%	Mode	Actions
There are no incoming synchronizations at the moment						

### Outgoing

To (destination database)	Nickname	Status	Achievement	%	Mode	Actions
<a href="#">herbiercolcerrado</a>	Structure.initale	completed	<div style="width: 100%; background-color: #007bff; height: 10px;"></div>	100	one-shot	? <span style="color: green;">✓</span> <span style="color: red;">✗</span>

# Limites

Il faut définir son modèle

Pas de moteur de requêtes SQL

(mais un moteur full-text + moteur interne)

La **généricité amène de la complexité...**

Technologie récente (source de bug)

Nécessite un accompagnement pour démarrer



# Qui utilise le logiciel ?

Gestion d'observations Pl@ntNet-Identify

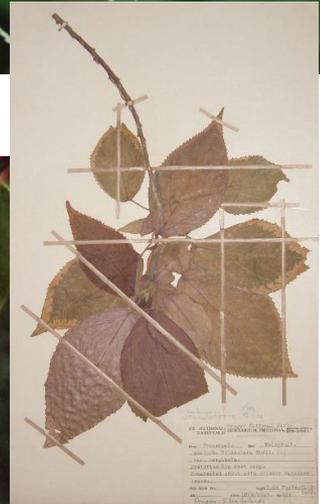
Collections botaniques (herbiers)

Gestion de référentiels taxonomique (TaxRef)

Cas d'étude Pl@ntNet

Plantes invasives, Arboretum,

Collecte d'observations...



# Deployment actuel

Serveur à

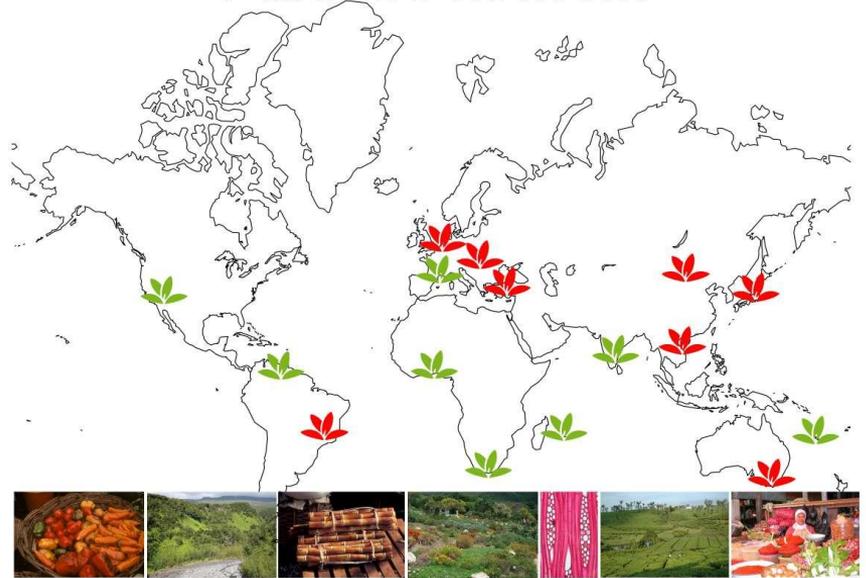
Montpellier

Inde

Afrique du Sud

Guadeloupe (à venir)

Partners network



Installeurs version locale:



# Des liens...

Projet : <http://www.plantnet-project.org>



<http://community.plantnet-project.org/datamanager>



GitHub <https://github.com/plantnet>



**Open-Source et sous license libre (Cecill V2)**