Pl@ntNet

http://www.plantnet-project.org/

Pl@ntNet,

Feedbacks on a large-scale citizen science participatory initiative on plant observation

Pierre Bonnet & al.
Montpellier, France

agropolis fondation

AMAP

Tela Botanica

informatics mathematics Inria

Accurate knowledge of **plants** (distribution and ecology) is essential for **sustainable agriculture** and **biodiversity conservation**

But accessing basic information is still challenging

Botanical data are:

- *decentralized* and *heterogeneous*
- *complex* (un-structured tags, empirical measurements,…)
- *sparse* and *incomplete*
  - *huge & unknown number of species*
  - *“long tail distribution” (1 record per species !)*

agropolis fondation

- Main bottlenecks concern:

  ✓ Plant identification

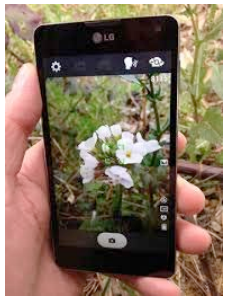
  shortage of botanists and taxonomists
  Identifying plants is very difficult even for professionals: farmers, rangers …

  ✓ Accumulation and diffusion of basic data models and knowledge on plant distribution and production

- Possible solutions:

  ✓ Collaborative Information Systems, based on Crowdsourcing multimedia

  ✓ Multimedia IR & Identification Tools & Mobile tech.

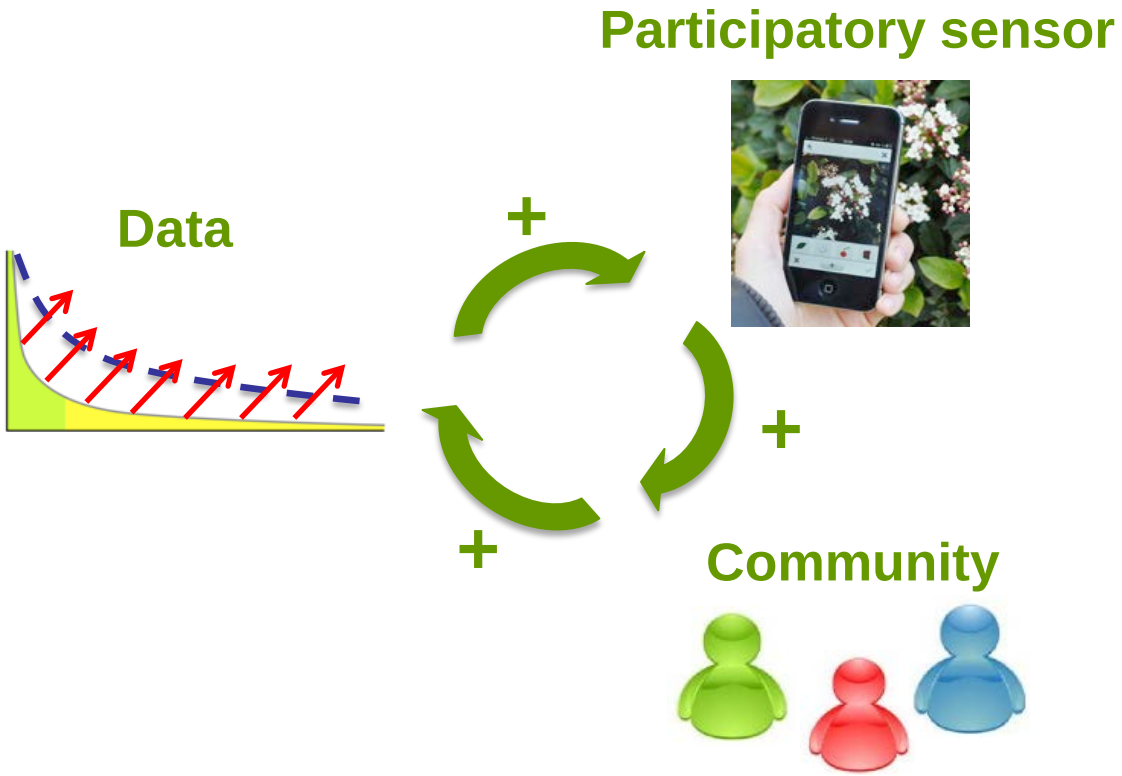


- Notably images are now much more easy to acquire by anyone
- Visual contents are very informative for characterization
- Mobile acquisition allows to aggregate huge volumes of *simple* data

An autonomous participatory sensing plateform

[Joly & al., Ecological Informatics 2014]

- An **interactive** and **collaborative** workflow
  - ✓ 1 user + app provides an observation
  - ✓ System queries a social network to validate / correct obs.
  - ✓ Observation enriches the learning data base



Pl@ntNet Workflow

- Image sharing and retrieval app for plant identification
- Shared observations (Creative Commons)

Collaborative validation and annotation

Contribution

Pl@ntNet mobile identify Web

Response

Request

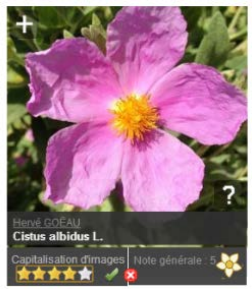
Search

Indexation

Maestro/IKONA

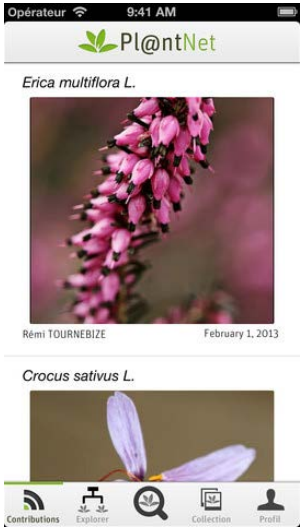
IdentiPlante

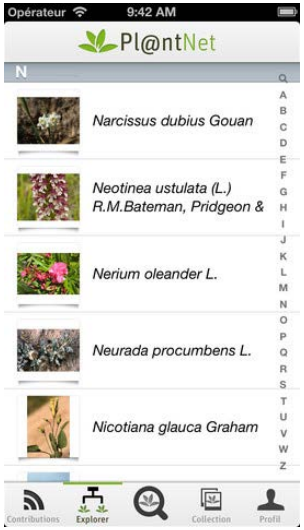
PictoFlora

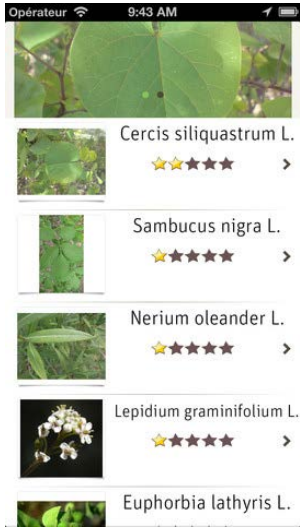


Pl@ntNet mobile app

- Goëau & al., 2013. ACMM
- Goëau & al., 2014. ICMR







Public version

177 000 pictures
5 700 species

BETA

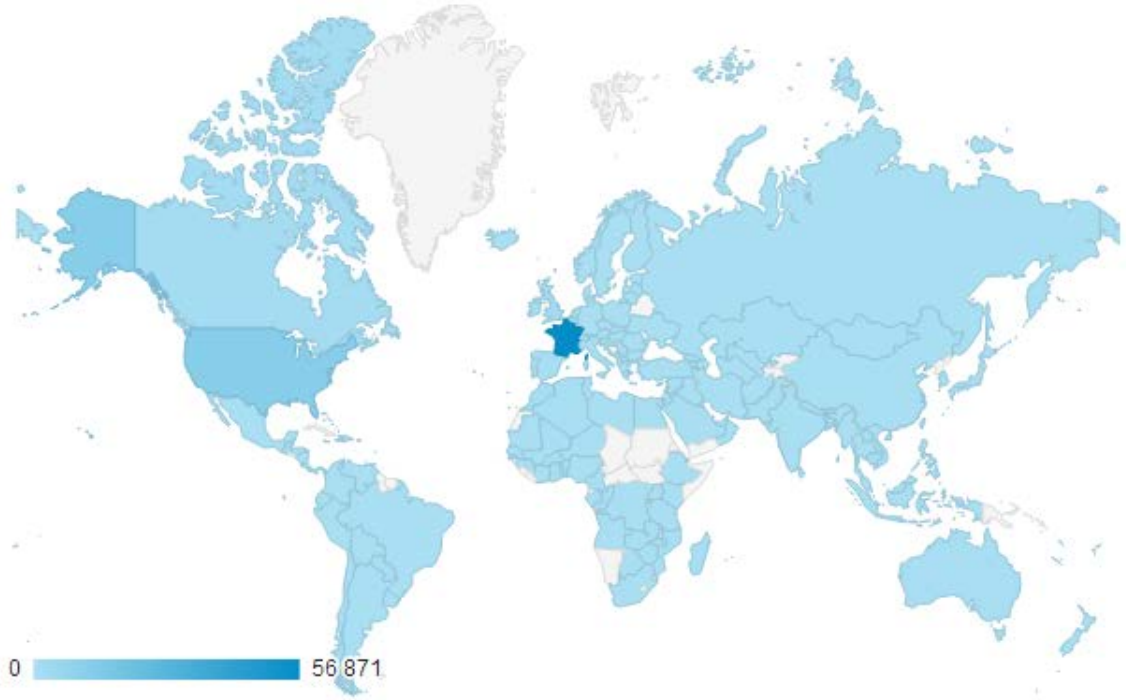
France, Réunion, Guyane
6 000 / 800 / 500 sp.

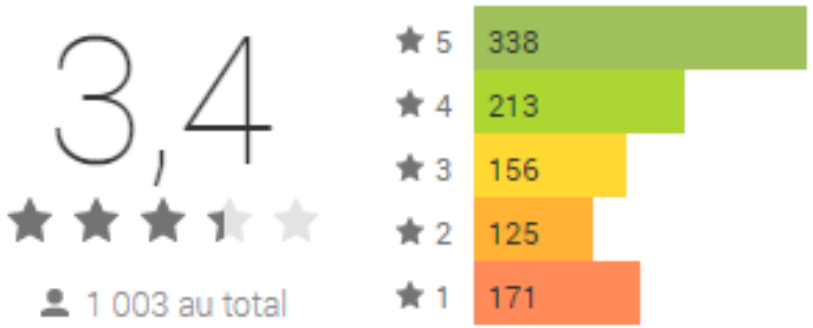
Impact

android iPhone

More than 370 K downloads
2.6 K users/day in 08/2014

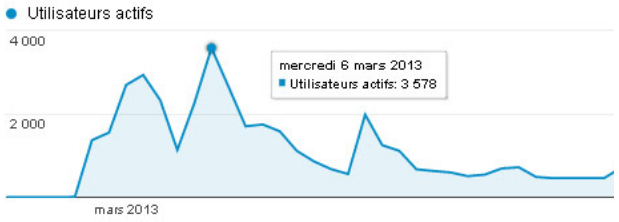
In 150 Countries

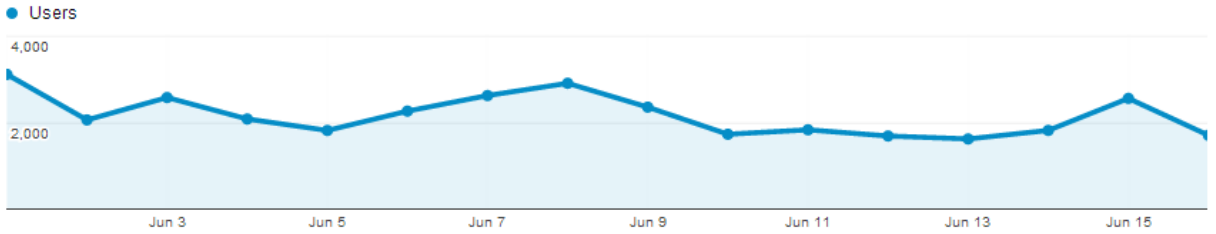




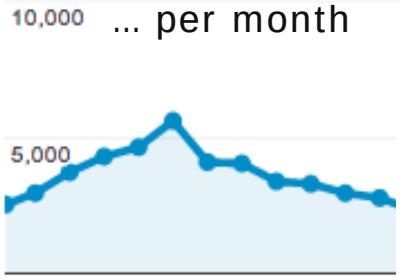
Uses analysis

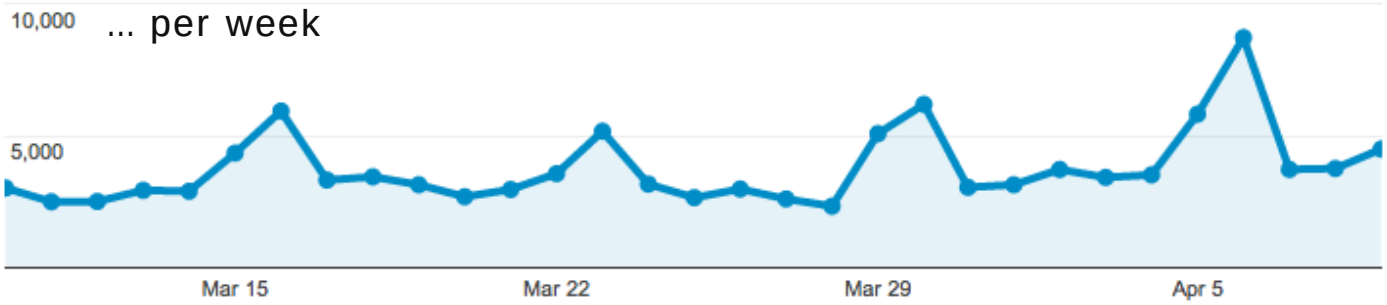
Temporal and spatial requests: 900 K img./25 months





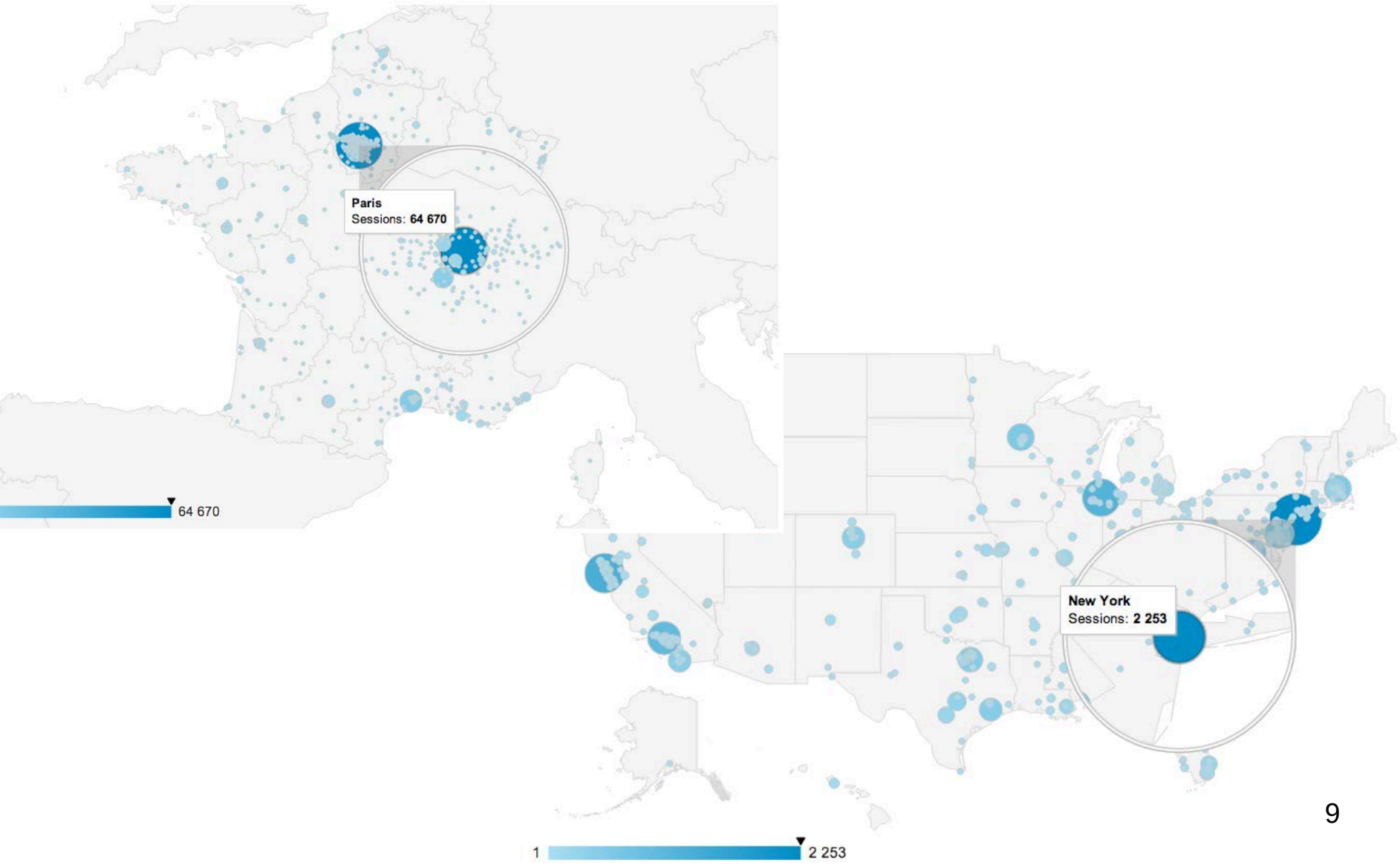
Sessions number





Uses analysis

Temporal and spatial requests: 600 K img./18 months



Uses analysis

Temporal and spatial requests: 900 K img./25 months

93% in-scope pictures

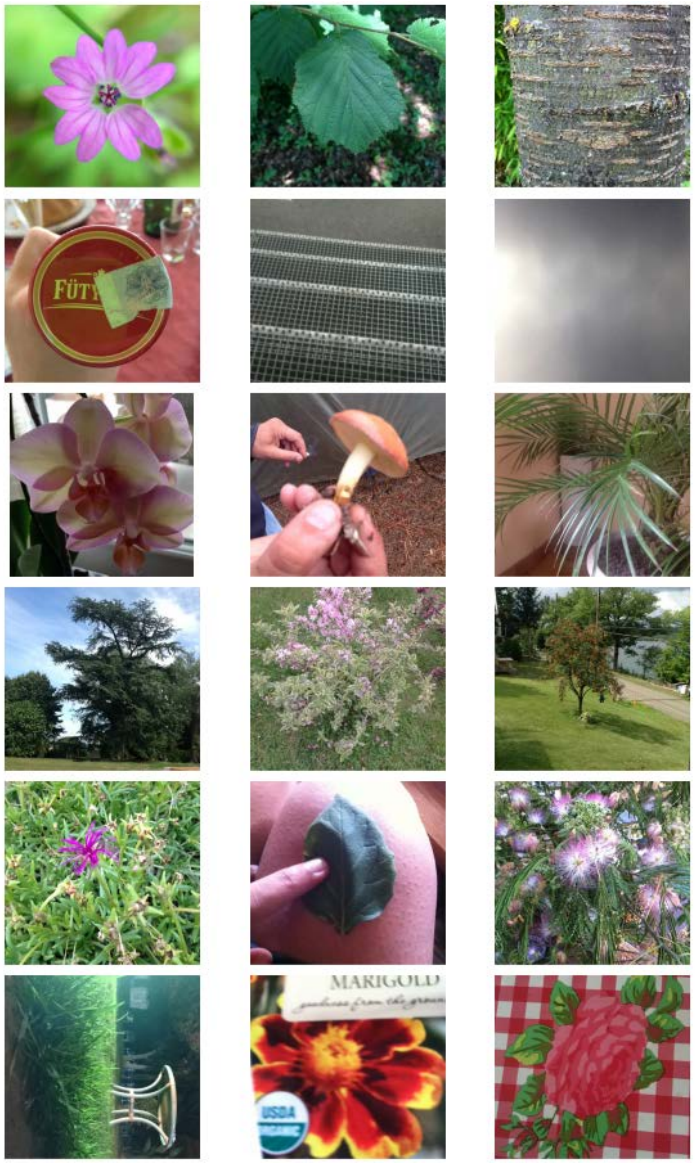
1% without plant

1% Out of the considered flora

3% Entire view

1% Very hard

1% Funny



Contribution gap

Only **3%** of the **900 K requests are explicitly shared**, and **1,5%** validated due to :

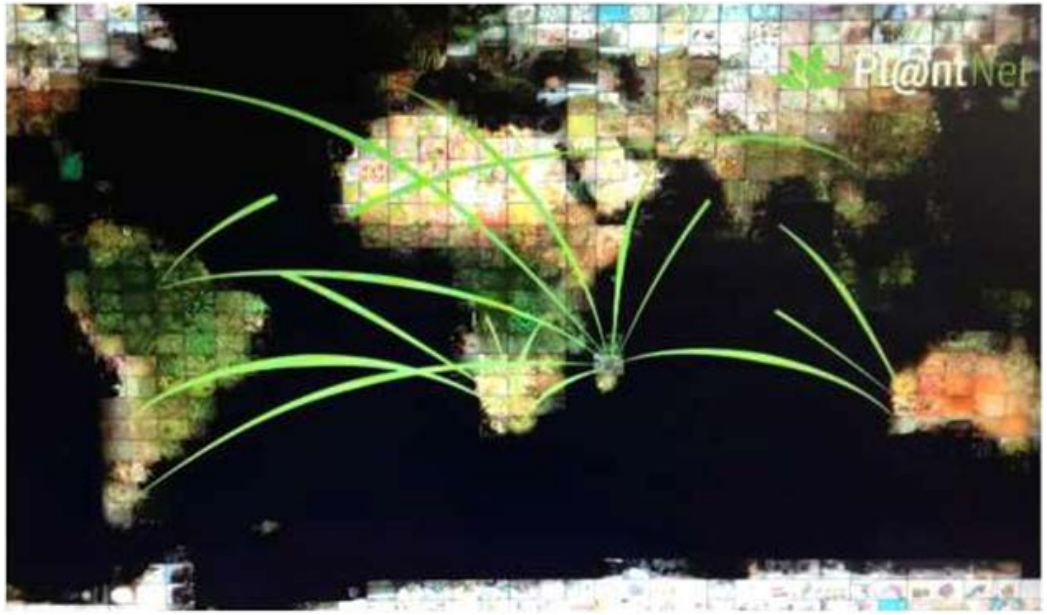
- Unsuccessful identification,
- Difficulties to take good pictures (small plants, damaged plants, etc.)
- Lack of confidence in the result,
- Fear to share mistakes,

A HUGE potential of improvement !!!

Next steps

Improvement of the collaborative workflow

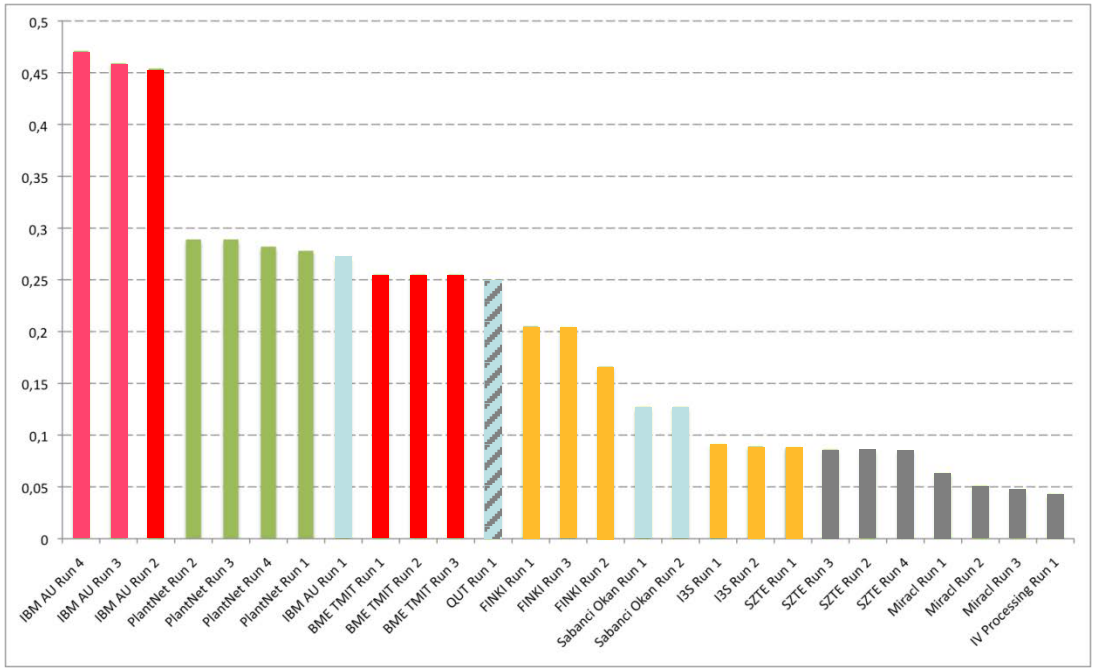
- ✓ **Enlarge community of validators**
- ✓ Improvement of the identification efficiency by the use of :
  - ❖ **richer datasets** (Indian ocean, South America)



Next steps

Improvement of the collaborative workflow

- ✓ **Enlarge community of validators**
- ✓ Improvement of the identification efficiency by the use of :
  - ❖ **new technologies**



www.lifeclef.org

This year :

1 000 species
More than 1.6 K contributors
More than 100 teams

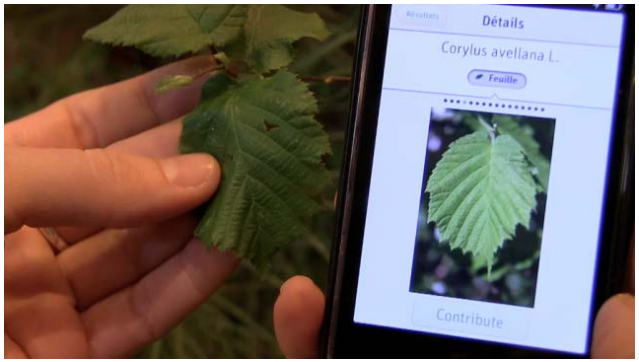
Long term perspectives

- Education / Training
  Schools, local authorities,

- Agro-biodiversity
  . Rice
  . Grapes
  . Maize

- Ecological monitoring / Plant protection
  Partnership with Réunion island,
  in French Guyana, …

Thank you !



cirad

agropolis fondation

IRD
Institut de recherche pour le développement

INRA
SCIENCE & IMPACT

Tela Botanica

informatics mathematics
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