



« National citizen science strategies »

VIGIENATURE
Un réseau de citoyens qui fait avancer la science

65 MO
65 MILLIONS
D'OBSERVATEURS



MUSÉUM
NATIONAL D'HISTOIRE NATURELLE



VIGIENATURE

Un réseau de citoyens qui fait avancer la science

National monitoring of biodiversity
through citizen science

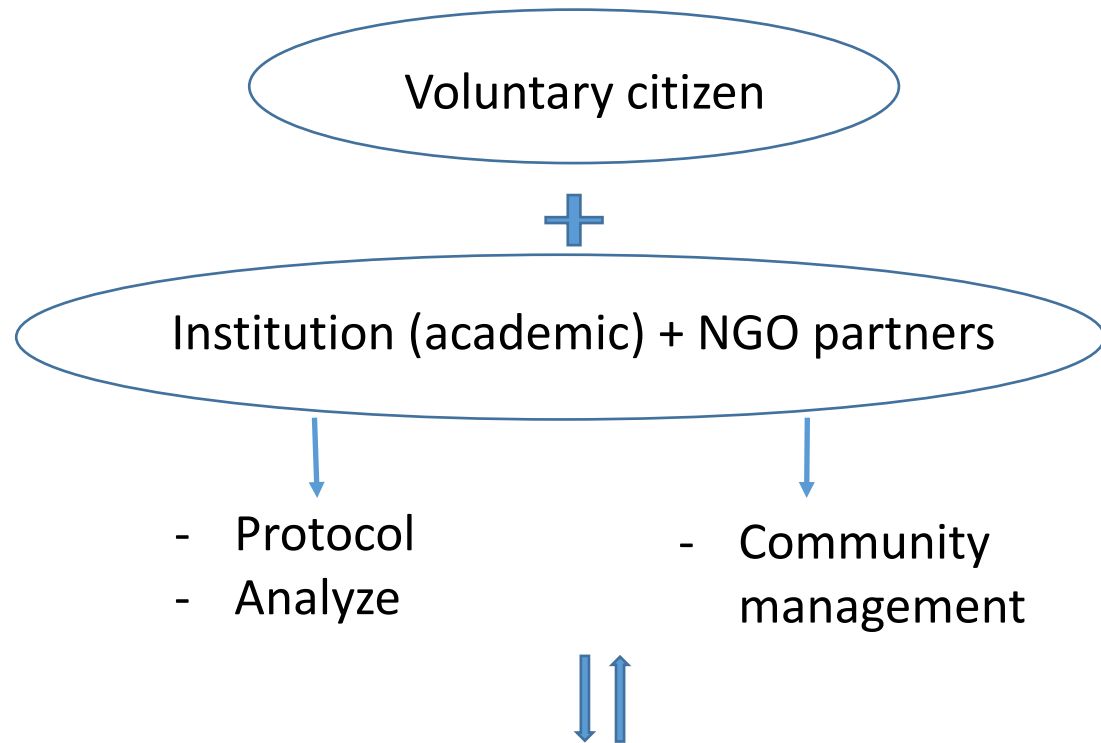
- ⇒ 15 years of experience
- ⇒ 15 CS projects (skilled amateurs, ordinary public, teachers, farmers...)
- ⇒ >100 scientific international publications
- ⇒ 15 000 active participants each year

Data for research
Biodiversity indicators for decision makers
Empowerment of participants



MUSÉUM
NATIONAL D'HISTOIRE NATURELLE

“Institutional” citizen science:



Other stakeholders: State, local government and municipality, education, nature protection...

Structured data / based on protocol

- Data at spatial or temporal scales that need network of observers (« **big data** »)
- and/or*
- Situated data, enriched with participant local knowledge and own experience (« **quality data** »)

VIGIENATURE

Un réseau de citoyens qui fait avancer la science

National monitoring of biodiversity
through citizen science

- ⇒ 15 years of experience
- ⇒ 15 CS projects (skilled amateurs, ordinary public, teachers, farmers...)
- ⇒ >100 publications
- ⇒ 15 000 active participants each year

Data for research
Biodiversity indicators for decision makers
Empowerment of participants



Toward a national digital
infrastructure for Citizen
science projects

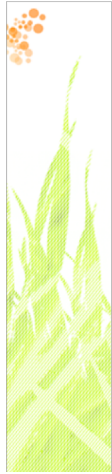
5 years: 2015-2019
4,3 millions € investment

*1 year to record wishes and
needs across 100 citizen
science projects*

⇒ **Web sites for facilitating
coordination and improving
participant experience**





Two lessons from our experience



Suivi Photographique des Insectes POLLinisateurs

ASTER 2010

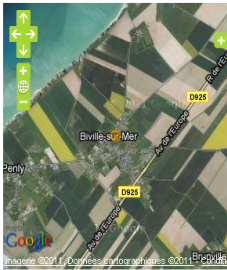
PRÉCÉDENT SUIVANT RETOUR À LA LISTE




AFFICHER

2010-09-17
Nom de la fleur: Taxon inconnu de la clé (aster)
Il s'agit d'une fleur: plantée
Il s'agit d'un habitat: jardin privé /
BIVILLE-SUR-MER (76098), SEINE-MARITIME (76),
HAUTE-NORMANDIE (23)
par : étamines


TOUTES SES COLLECTIONS DANS LES GALERIES






Dernière(s) identification(s):
Les Mouches à damier

AFFICHER




Dernière(s) identification(s):
La Syrénite piaulante

AFFICHER



Dernière(s) identification(s):
Les Mégachiles rayés

AFFICHER



Dernière(s) identification(s):
Les Mouches aux reflets métalliques

AFFICHER

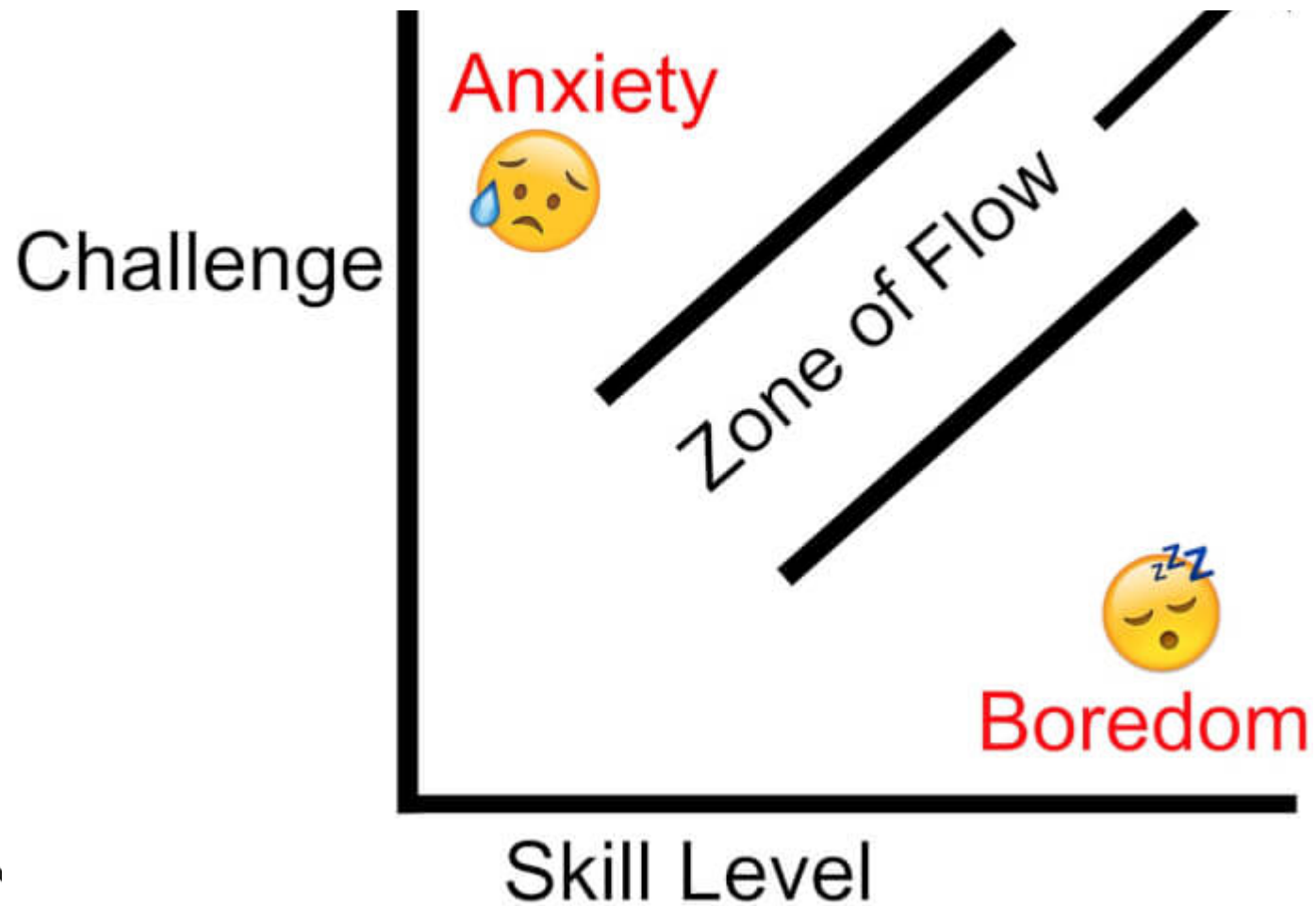


MUSÉUM
NATIONAL D'HISTOIRE NATURELLE

Projet 65 MO – Présentation CNB – 19 mars 2019



Find the optimal Optimal experience
(Csíkszentmihályi Mihály) :



MUSÉUM
NATIONAL D'HISTOIRE NATURELLE





AFFICHER

2010-09-17

Nom de la Fleur: Taxon inconnu de la clé (aster)

Il s'agit d'une fleur : plantée

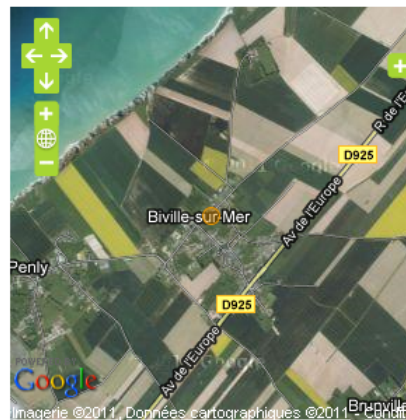
Il s'agit d'une habitat : jardin privé /

BIVILLE-SUR-MER (76098), SEINE-MARITIME (76),

HAUTE-NORMANDIE (23)

par : étamines

[TOUTES SES COLLECTIONS DANS LES GALERIES](#)



Dernière(s) identification(s):
Les Mouches à damier

AFFICHER



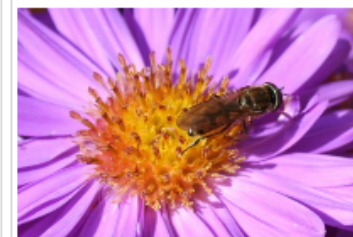
Dernière(s) identification(s):
La Syrritte piaulante

AFFICHER



Dernière(s) identification(s):
Les Mégachiles rayés

AFFICHER



Dernière(s) identification(s):
Les Mouches aux reflets métalliques

AFFICHER

COMMENTAIRES DES INTERNAUTES

par : cybelle 2011-04-23

Superbe votre collection Etamines, les insectes se bouscuaient pour vous faire plaisir, vous avez dû vous régaler.

par : Fernand 2011-04-23

Très belles photos. Les fleurs sont magnifiques et les insectes également. Beau travail étamines .

The importance of the social platform

- Imitation
- Advices
- Social control

The power of social interaction among participants for developing data quality control

=> structured data (participations) are **visible by all** (they then serve as tutorial for new comers), **commentable by participants**, and may be eventually **modified by the author** (a new version is then created and old ones stored)

1 project = 1 web site

Coordinator space:
News edition;
newsletter

Administrator space :
Dashboard (participants and
data)

News, etc.

Recent
participations

DataViz directly
connected to the
CS-DBMS

Public space

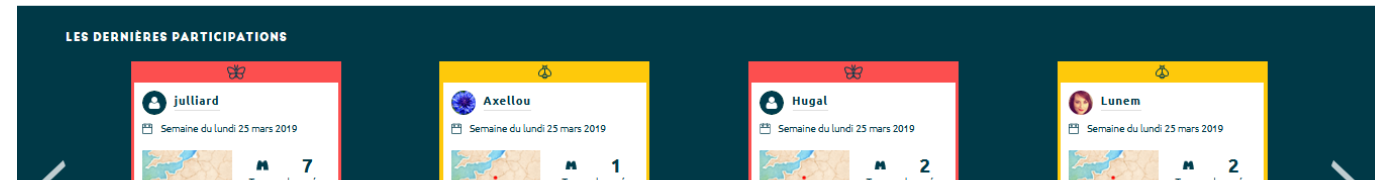
Registration: login, avatar,
password, email. Valid for all
sites

New data (online form)

Commenting each-others
participations

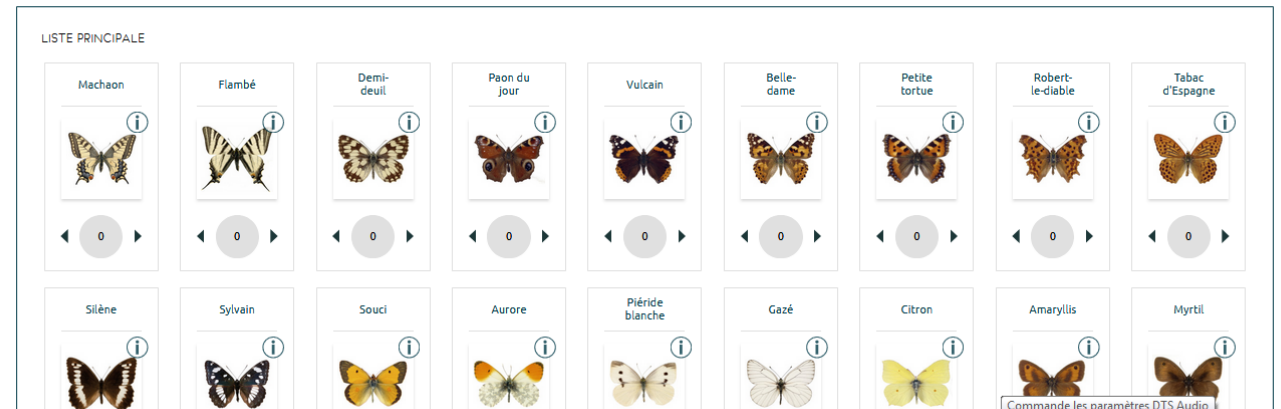
My data: modification of
commented participations

Private space



COMPTABILISEZ VOS OBSERVATIONS

N'hésitez pas à soumettre votre participation même si vous n'avez pas observé de papillons cette semaine !



Standard websites for CS local coordination

1 local coordination = 1 web site

Coordinator space:
News edition;
newsletter

Administrator space :
Dashboard (participants and
data)

News, etc.

Recent
participations from
the local network

DataViz directly
connected to the
CS-DBMS, from the
local coordination
area of interest

Public space

Registration: login, avatar,
password, email. Valid for all
sites

Project selection

New data (online form)

Commenting each-others
participations

My data: modification of
commented participations

Private space

Many local stakeholders may use CS as a tool for engaging citizen, with various aims (producing data, education, contributing to creating social links, contribution to a local project...).

The diversity is large: municipalities, local government, local NGO, sport or cultural clubs, private company...).

CS local coordination are very efficient to find and engage people, but need their own web site to manage their network of participants.

Local coordination do not have their own CS project, but may propose a selection of existing CS projects to their network.

Participants recruited by a local network may access project's main website they are participating to.

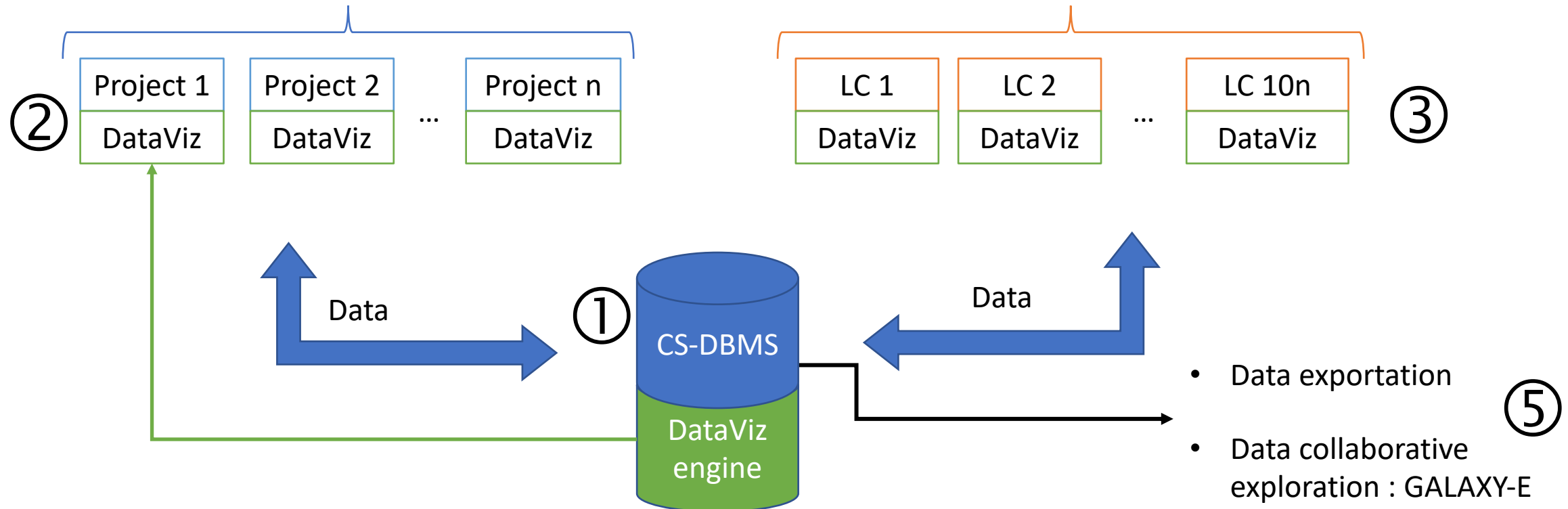
Local coordination may access through the CS-DBMS to data collected on their area of interest (e.g., county) by participants not registered in their local network.

A web infrastructure for citizen science projects

- ④ CS projects portal : shared communication ; resource center ; search facilities, mapping projects and local coordination ; some **dataViz** from the DBMS ; redirection to individual CS web sites

n CS (large scale) projects functionally independent with dedicated coordination.
1 project = specific protocol(s) = 1 web site

~10 x n local coordination (LC) for CS projects, typically promoting several existing projects (i.e. protocols)



CS projects portal : shared communication ; online resource center ; search facilities, mapping projects and local coordination ; some **dataViz** from the CS-DBMS ; redirection to individual CS web sites

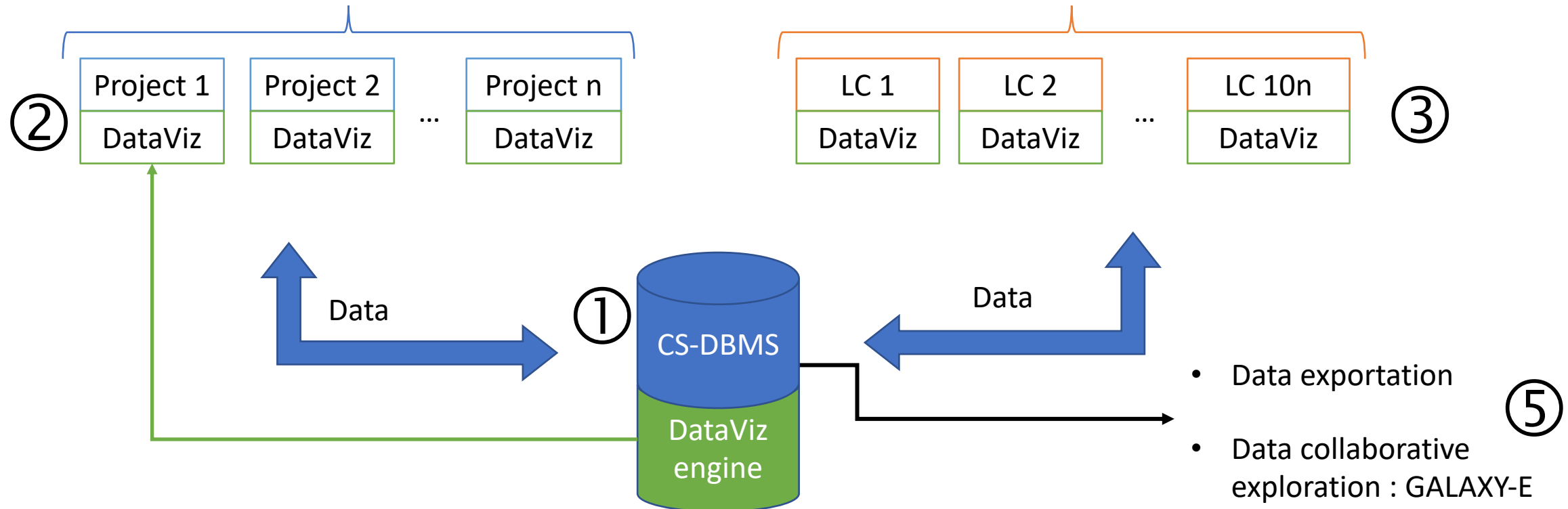


A web infrastructure for citizen science projects

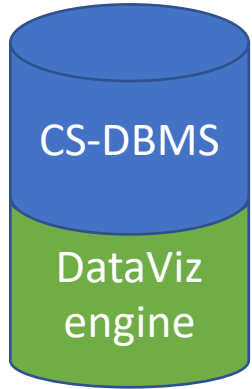
- ④ CS projects portal : shared communication ; resource center ; search facilities, mapping projects and local coordination ; some **dataViz** from the DBMS ; redirection to individual CS web sites

n CS (large scale) projects functionally independent with dedicated coordination.
1 project = specific protocol(s) = 1 web site

~10 x n local coordination (LC) for CS projects, typically promoting several existing projects (i.e. protocols)



The DataBase Management System for Citizen Science projects



CS = Structured data are collected according to a protocol, that is a set of rules on how to collect and report data in a standardized way

=> Our CS-DBMS allows to describe such rules and to check that stored structured data are indeed in conformity with the rules imposed by the protocol.

This has many virtues: (1) it allows a permanent quality control on the data allowing to re-distribute standardized structured data ; (2) it allows to pool data collected through different interfaces but with the same protocol into a common database ; (3) it is a necessary condition for stabilizing protocols, a key issue for any monitoring purpose.

Because there is so many ways to document biodiversity and environmental settings, adopting a common referential for all possible protocols is a nightmare.

The CS-DBMS has been designed to store specific referential for each protocol whenever necessary.

The DBMS has an internal data visualization device allowing to generate maps, histograms, graphs that are dynamically synchronized with the data stored in the DBMS. These DataViz can be directly implemented on any web sites, with some interactions with users (ex., data filter, contextualization of DataViz to user attributes).

- Collaborative data exploration platform: GALAXY-E

There is a high political and social demand for opening data. It is an implicit promise of CS (data produced by the crowd should go back to the crowd). Yet, the matter is not only accessing data but also accessing data analytic tools.

Another issue is to share data analysis, not only the final output, but also the data analysis workflow. This allows to built on previous experiences (e.g. avoid pointless analysis already done).

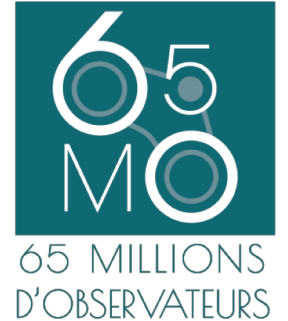
Based on the existing international open-source GALAXY project, developed by and for bio-informatics (genomic), we developed GALAXY-E(cology). [It offers an online workspace with data access and data analysis tools facilities \(workflows\). Everything can be stored and shared.](#)

The current workspace needs statistical skills. It is particularly useful for analyzing datasets from different origins (a posteriori interoperability).

We are developing a user-friendly interface for a wider community of participant (POC: end 2019)



Perennation : toward a national ressource centre « methods and tools » for citizen science



A team of 15 people covering all needed IT skills:

- *Data-base management and administation (3)*
- *Web design UX/UI (2)*
- *Product Owner (2)*
- *web Développement PHP (2)*
- *web Développement React (4)*
- *projet Coordination (2)*

A web infrastructure for citizen science projects

- ④ CS projects portal : shared communication ; resource center ; search facilities, mapping projects and local coordination ; some **dataViz** from the DBMS ; redirection to individual CS web sites

n CS (large scale) projects functionally independent with dedicated coordination.
1 project = specific protocol(s) = 1 web site

~10 x n local coordination (LC) for CS projects, typically promoting several existing projects (i.e. protocols)

