Learning process for a taxonomic identification key in citizen science

xper³ & Mkey +

Xper3 and Mkey+ constitute a versatile web platform dedicated to descriptive data management and interactive identification.

Xper3 is a platform dedicated to taxonomic descriptions and computer-aided identification. It requires no special computer skills. It is user-friendly for amateur naturalists who want to identify a specimen with an already made application, as well as for the professional taxonomist who creates new applications.
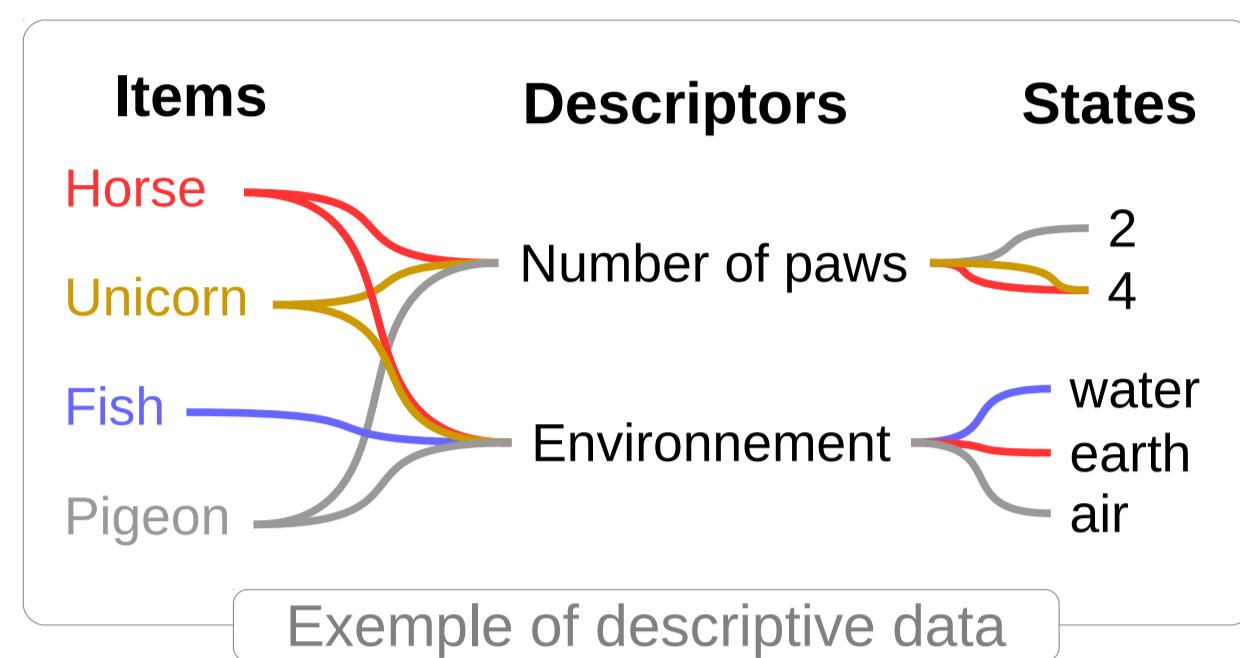
A very simple representation of descriptive data in Xper3
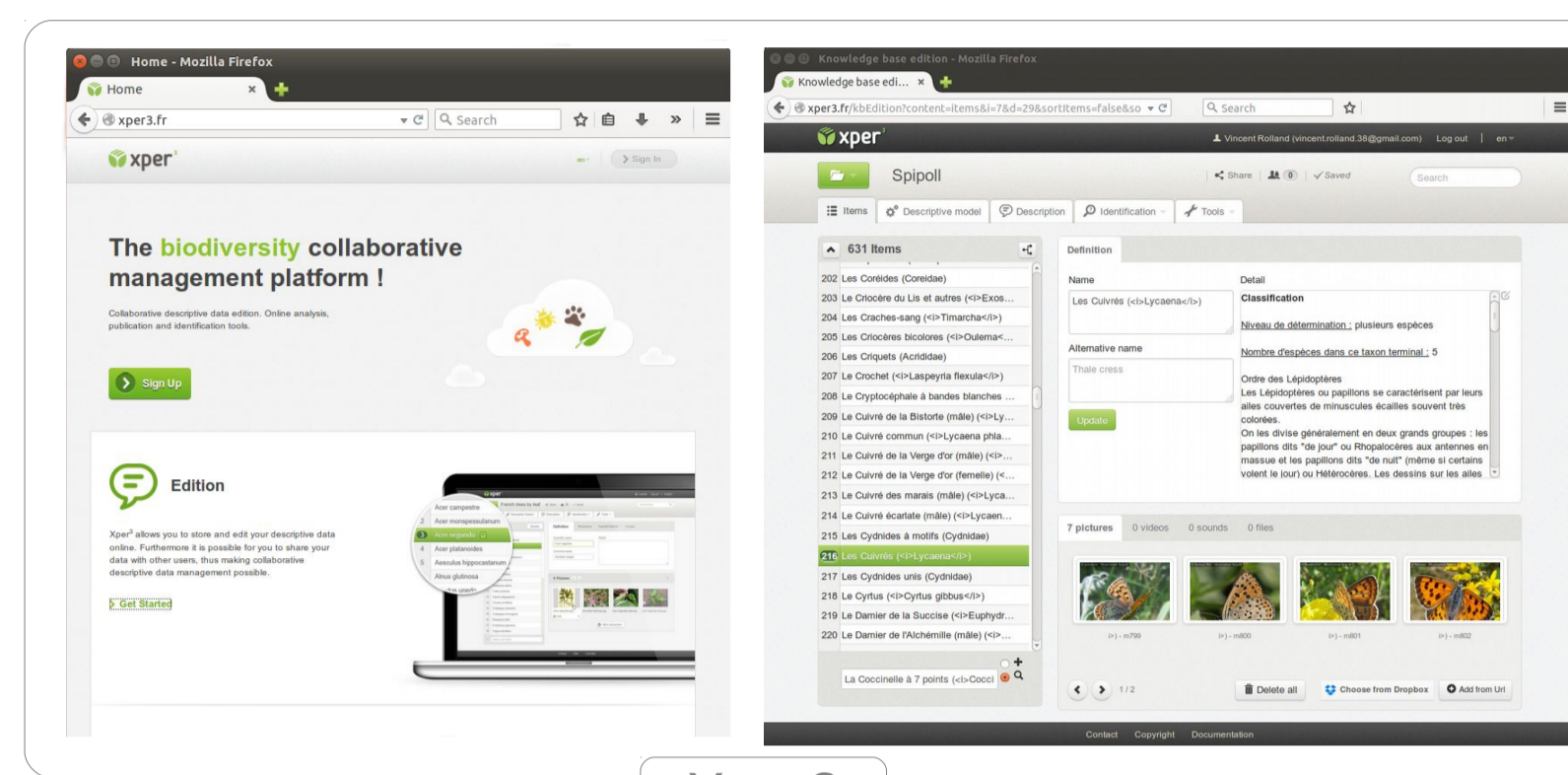
On Xper3, users can edit, analyse, share their descriptive data online.
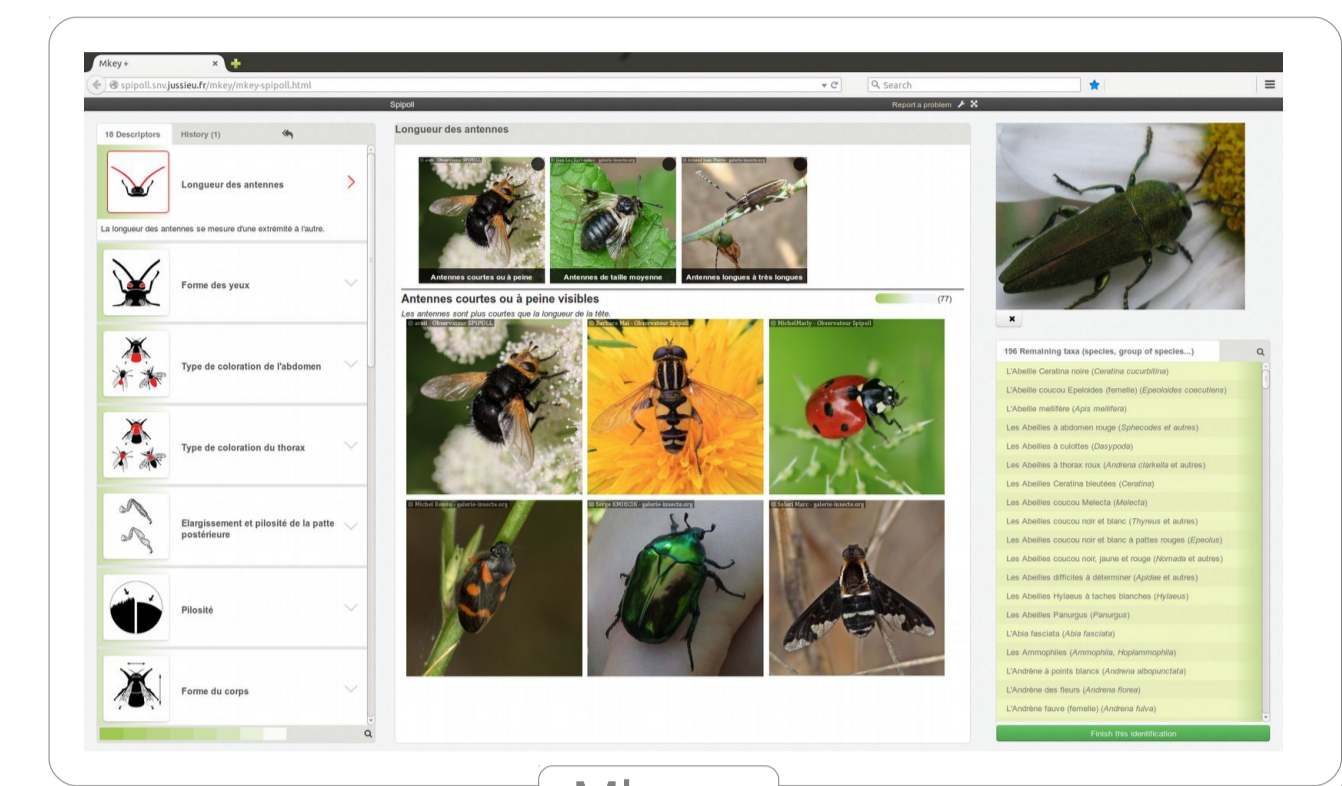
Mkey+ generates the identification key according to an Xper3 database

Xperience

To provide a better interactive identification, Mkey+ provides a learning process named Xperience. This new module checks the behavior of users using interactive identification. The aim is to make Mkey+ suggest, without imposing, an improved procedure to minimize identification errors. This is done by a formula computing the best characters according to the taxonomic context. The experts can also retrieve the behaviours information to correct manually the Xper3 database (the key content) by adjusting the pictures, explanations, or modifying descriptors/states.

The mechanism works in three different steps :

1. **Identification**
2. **Validation**
3. **Analyse**
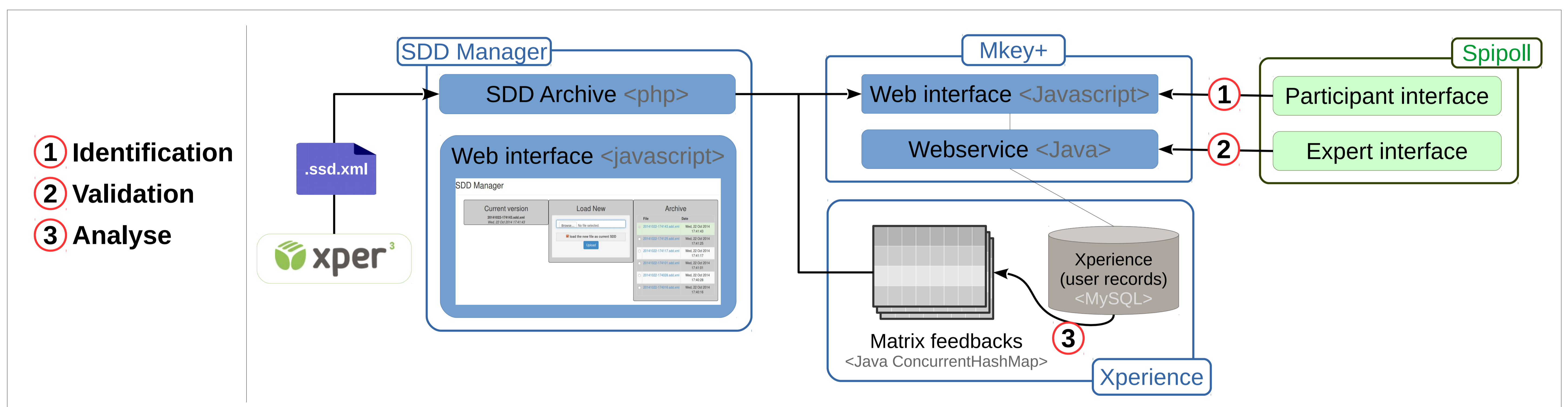
SPIPOLL using Xperience

To illustrate this mechanism, we will see how it works with Spipoll, a French citizen science program (www.spipoll.org in french).

Spipoll aims to gather a large amount of information about pollination on a national scale. Following a simple and entertaining protocol, everyone can photograph insects and spiders on flowers, identify them, and then add the pictures and their associated species or group of species names in the Spipoll database.

To help the participants to identify their insects, the Spipoll interface has a link to a Mkey+ interactive identification **(1)**. When the user finishes his identification procedure, he chooses a taxon which is sent back to the Spipoll server to fill the form of the participants interface. In the same time, this identification (taxon chosen and descriptors/states chosen) is stored in a database in Xperience.

Periodically, Spipoll experts validate the participants' identification **(2)**. These validations are sent to Xperience through the Mkey+ webservice.

For each new validation, the whole analyse is updated. **(3)**

Vincent Rolland (MNHN), Aurélie Froger (MNHN), Colin Fontaine (MNHN), Grégoire Lois (MNHN), Romain Julliard (MNHN), Mathieu de Flores (OPIE), Régine Vignes Lebbe (UPMC)

Contact : webmaster-lis@snv.jussieu.fr