Xper²: an open tool to manage descriptive data!

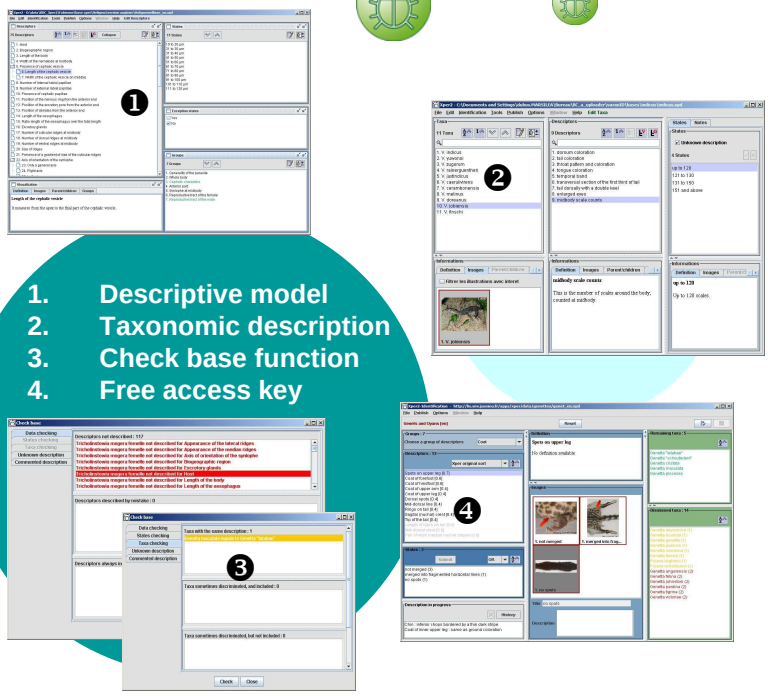
Formalization of knowledge is the main difficulty for taxonomists. How to structure and organize different types of data? How to keep the scientific sources of the data in order to maintain traceability? Xper² is designed to manage this rich and heterogeneous information. Divided into four modules, Xper² allows taxonomists to either access the descriptive environment, the taxonomic description module, the management tools or the free access key:

➲ **Descriptive model:** here, one can edit a standardized description model, it means the list of descriptors or characters, their possible states or values expressed in a unified terminology, groups and logical dependencies.

➲ **Taxonomic description:** in this module, one can enter all the characteristics of the taxa (name, descriptions and any additional comments, external links or pictures).

➲ **Management tools:** Xper² offers the possibility to control and prevent inconsistencies by providing a check base function. One can also have a completeness summary of the knowledge base created.

➲ **Free access key:** the last possibility is the creation of Interactive Identification Keys (IIK)



What's new?

Xper² version 2.0 focuses on interoperability between systems. It can now import and export into the main standard formats.

- Xper² supports SDD standard (import/export)
- HTML export
- NEXUS export
- More tools to analyse and to compare descriptive data

Improvement of interoperability and diffusion of knowledge!
Xper² is a wide-open system!

Xper² is a powerful tool for editing and managing taxonomic descriptions. Freely download your Windows™ Mac™ or Linux version in French, English or Spanish at

http://lis-upmc.snv.jussieu.fr/

Our mailing-list facility provides users with full support.
Publish and distribute your work in CD or on-line.

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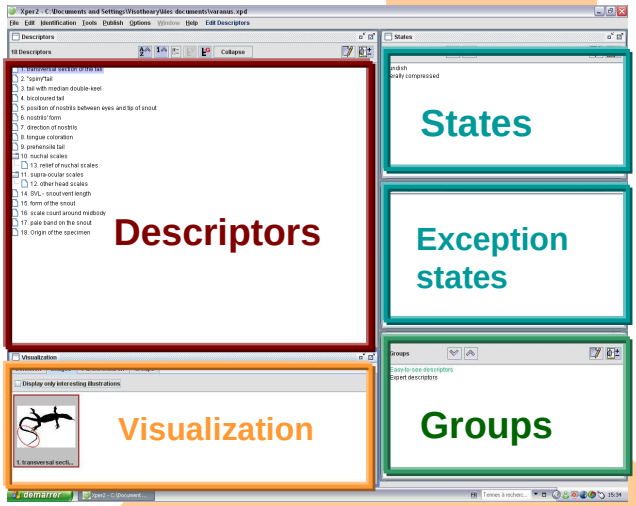
Xper²: How to edit a knowledge base?

Descriptive model

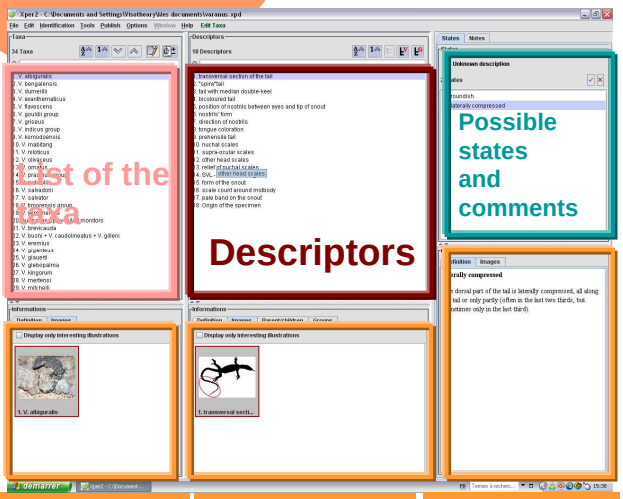
Xper² can be used in two different modes: one can edit all the descriptors and the other one the taxa depending on which kind of treatment to realize.

Mode: Edit Descriptors



In the Descriptor Edition mode, one can display all the descriptors (with their description and commentaries in the visualization window, and their dependencies), their character states, the exception ones (if applicable) and groups (if defined).

Mode: Edit Taxa



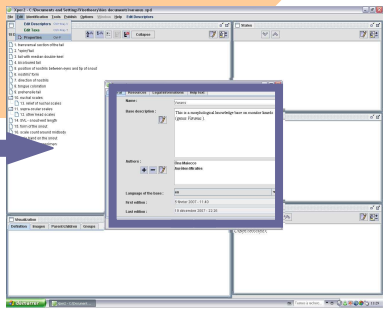
In the Taxa Edition mode, one can see at a glance the taxa and their descriptors and states. Commentaries (text, images, legendes, html links…) can be associated with each entry, providing a complete traceability of the sources of data.

Traceability of sources
Interactive text (HTML):
links to databases, collections, bibliography, sequences…

Informations:
-Definition
-Images

Informations:
-Definition
-Images
-Parent/children
-Groups

Informations:
-Definition
-Images



Metadata

The properties of the base:

- name
- authors
- date of creation
- number of taxa
- number of descriptors

The Edition mode:

- **Describe your taxa**
- **Define your descriptors**
- **Illustrate everything**
- **Keep a full traceability of your sources**
- **Complete your taxonomist work by linking your base to external data**

Just be descriptive and informative!

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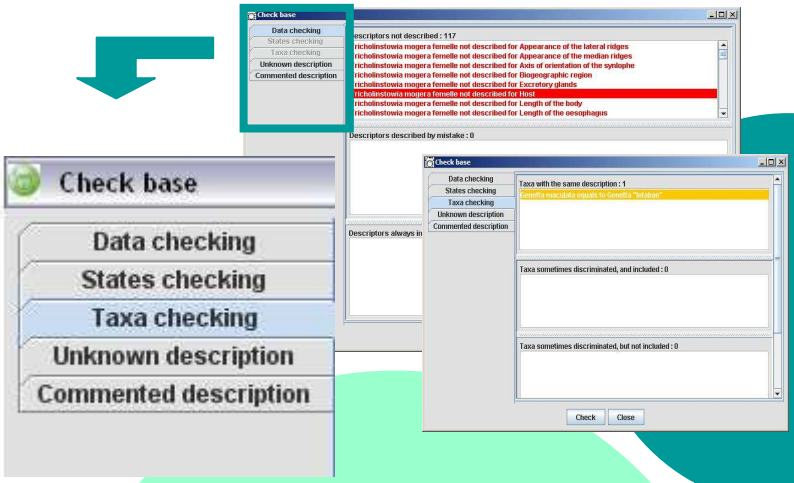
Xper²: How to analyze my descriptions?

Managing descriptive data is the first aim of Xper².
Xper²'s functionalities allow an easy analysis of your descriptions.

The « Check Base » function

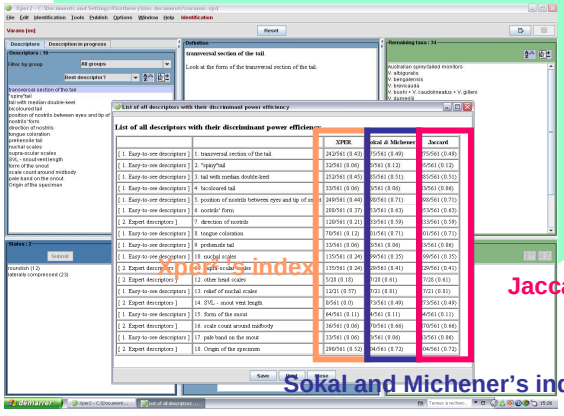


Prevents you from inconsistencies.
Check if there are inconsistencies in the base, Xper² helps you to cut them off.

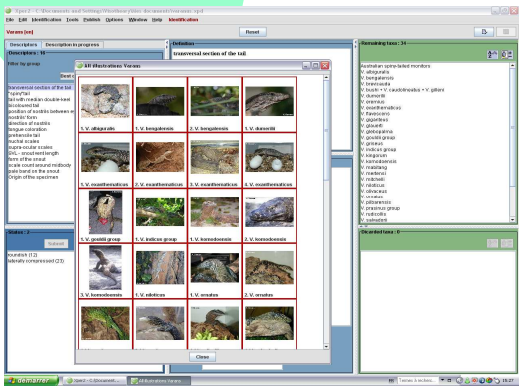
Comparison of the taxa

Publish your descriptions in a spreadsheet and compare them easily! Xper² shows your descriptive data in a table of taxa (row) x descriptors (column)

Discriminant power of the descriptors



Quick visualization of all the pictures



Use Xper²'s own discriminant index or one of the two other available measurements to choose your best descriptor!

.

Xper²'s index= (for one descriptor)

$$\frac{\text{Number of couples with no common values}}{\text{Total number of couples}}$$

Xper² functionalities:

- **Prevents you from inconsistencies**
- **Visualization simplified in a matrix**
- **Sort your descriptors according to their discriminant power**
- **Summary of your base**

Just be consistent and powerful!

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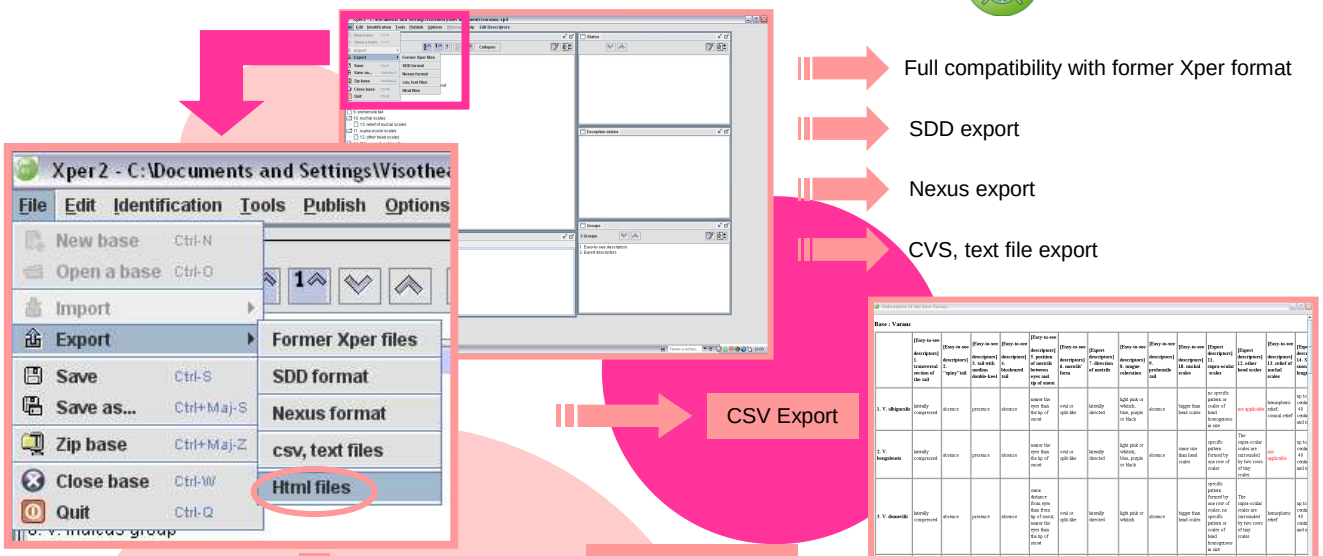
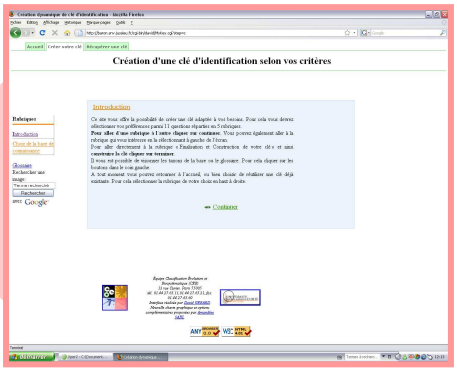
Xper²: How to import/export from/towards other formats?

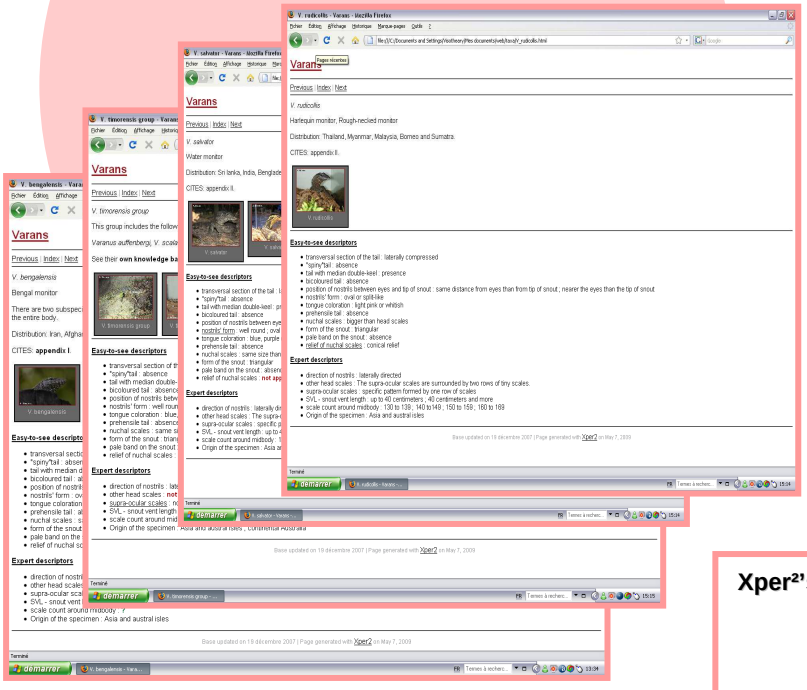
Exporting Xper² files towards other formats



Descriptive data in a matrix



Dynamic creation of identification key



Views extracted from the Monitor Lizards's knowledge base

Xper²'s functionalities:

- **Visualization in a spreadsheet, in a table…**
- **Compatible with other systems via the SDD export**
- **Wild open towards phylogenetics via the NEXUS export**
- **On-line diffusion simplified**
- **Benefit from other Xper tools: creation of keys, conversion into natural language**

Increase your chance to be relevant!

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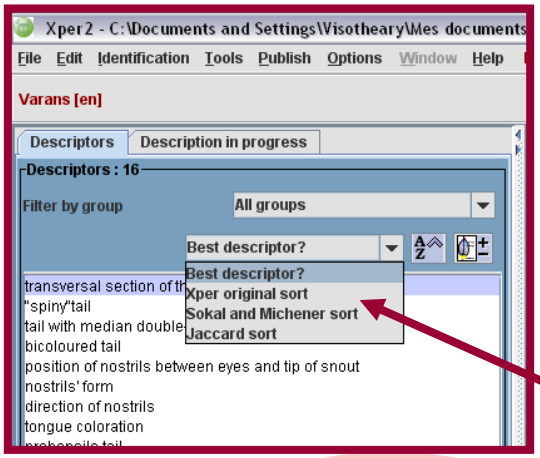
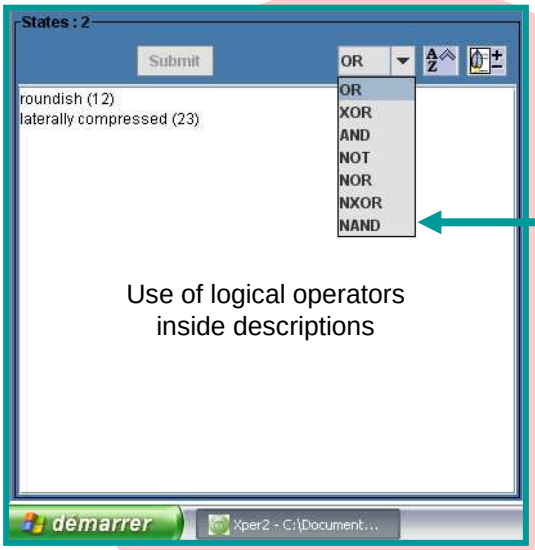
Xper²: How to identify?

Free access key

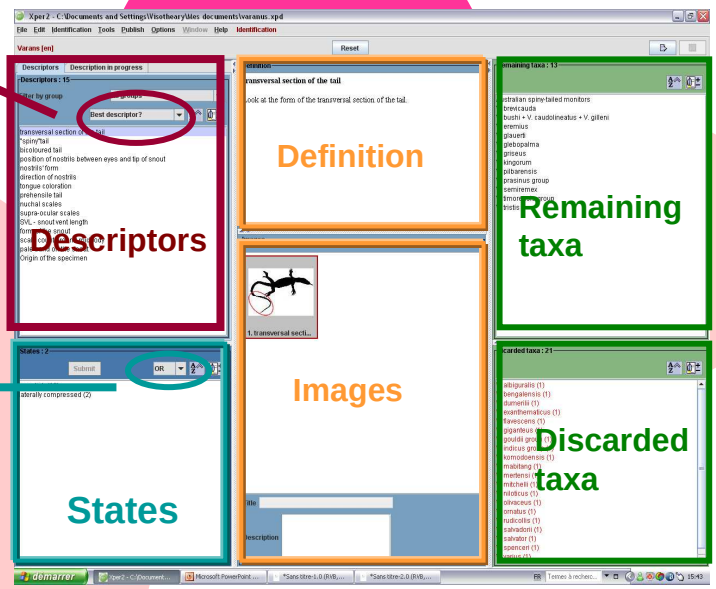


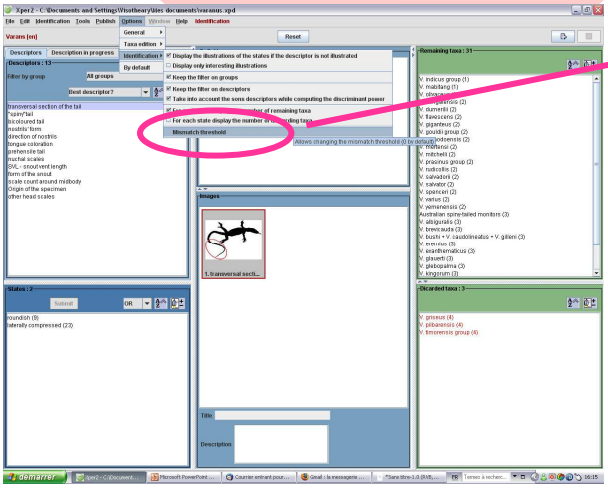
What is the best descriptor? One can sort them according to their discriminant power

- Xper² original sort
- Sokal and Michener sort
- Jaccard sort



Use of logical operators inside descriptions





Mistmatch threshold: one can define a different threshold according to his expertise level

Identification mode

- **Free access key (no pre established path)**
- **Going back to a previous state in the key**
- **Sorting options**
- **Use of logical operators (treatment of polymorphism…)**
- **Discarded taxa and the reasons why**
- **Illustrations**
- **Possible to have only this separate module**

A quick and easy way to identify taxa!

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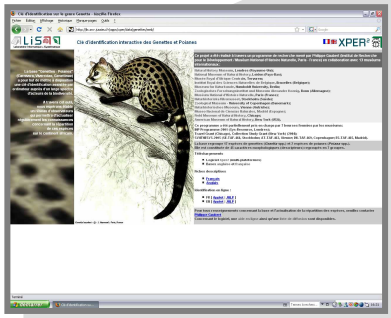
Xper²: different examples

Here are some examples of collaborative research with botanists and zoologists.
Each has a dedicated web site hosted in our servers.

The world of Echinoderma
Discover echinoderms of French coasts!

Palm-ID: identify the palms of the Old World

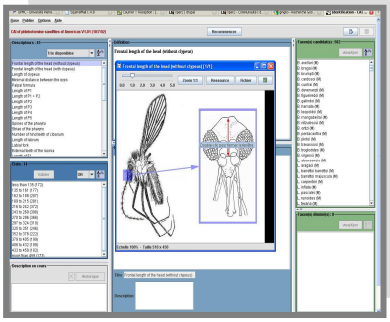
Varan-ID: the only interactive identification key for monitor lizards!



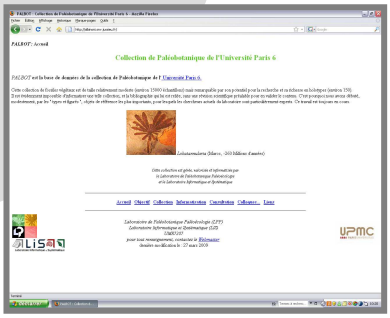
***Genetta* Interactive Identification Key**

FLOW: Fulgoromorph Lists on the Web, a taxonomic referential dedicated to planthoppers

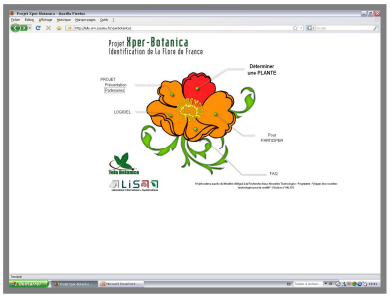
Knowledge base of the Mascarene's corals



CIPA project: Interactive Identification Key of Sandflies in America



Paleobotanical Collection of Pierre and Marie Curie University



Interactive Identification of the Angiosperms of French Flora

Very diverse uses of Xper²:

- **Classical taxonomic use (identification, …)**
- **Medical diagnosis**
- **Species protection**
- **Scientific collections**
- **Diffusion of knowledge**
- **Popular science for general public**

Join us!

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