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PREMS / ELVIS : A local plant biological resource management system ELVIS PREMS

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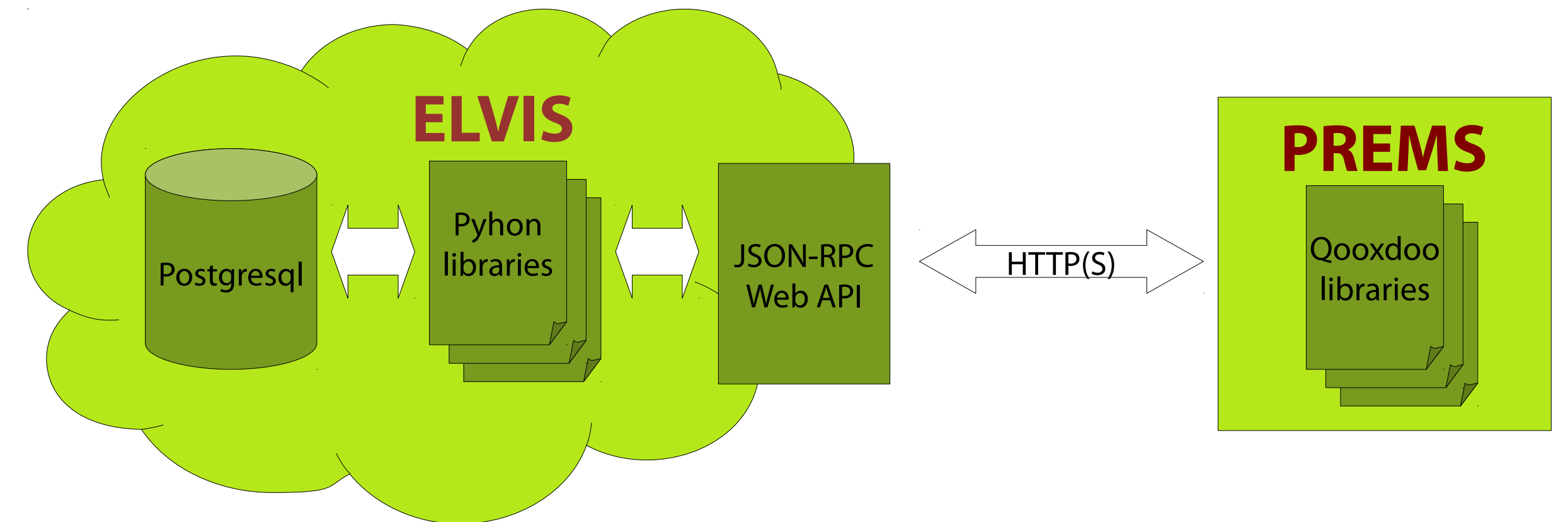
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The management of biological resources collection is a major key for quality of research results. It is also mandatory to keep trace from data to studied organism through every experimental steps including sampling, culture conditions and description of the subject of the study. To achieve this goal in the context of plant science, there are some notable software such as Doriane Labkey and GreenGlobal. After evaluating these solutions with other laboratories we ended with the conclusion that, for different reasons, neither fulfill our needs especially when dealing with perennial plants such as fruit trees (apple or pear trees) or ornamental bush (rose). We then decided to provide our own solution based on the needs and feedbacks from the different teams of the IRHS in the fields of biological resources management, breeding, genetics, molecular biology, physiology and phenotyping.

We introduce here two pieces of software:

- **ELVIS**: an information system that takes care of data management and provides an extensible set of python libraries to interact with. These libraries are used here to provide a JSON-RPC API exposed as web services. This is the foundation of the LIMS of our laboratory.
- **PREMS**: a dynamic web interface for biological resources management. This is one of the interfaces developed to interact with ELVIS.



ELVIS

The laboratory information system

Plant management:

- Denomination with typing (varietal names, vernacular names, nicknames...) with synonyms and timestamp.
- Three classical levels: Variety, Accession, Lot with descriptors
- Geolocation using arbitrary scales (ex: plot, row, position in the row, GPS coordinates)

Description / Notations:

- Extensible generic system for notation
- Notation with constraints (list, range...)
- Who / When

Breeding:

- Cross
- Family

Samples and experiments:

- Link between sample and lots
- Sample manipulation / transformation
- Storage

Ontology:

- Concepts and contexts
- Terms

User management:

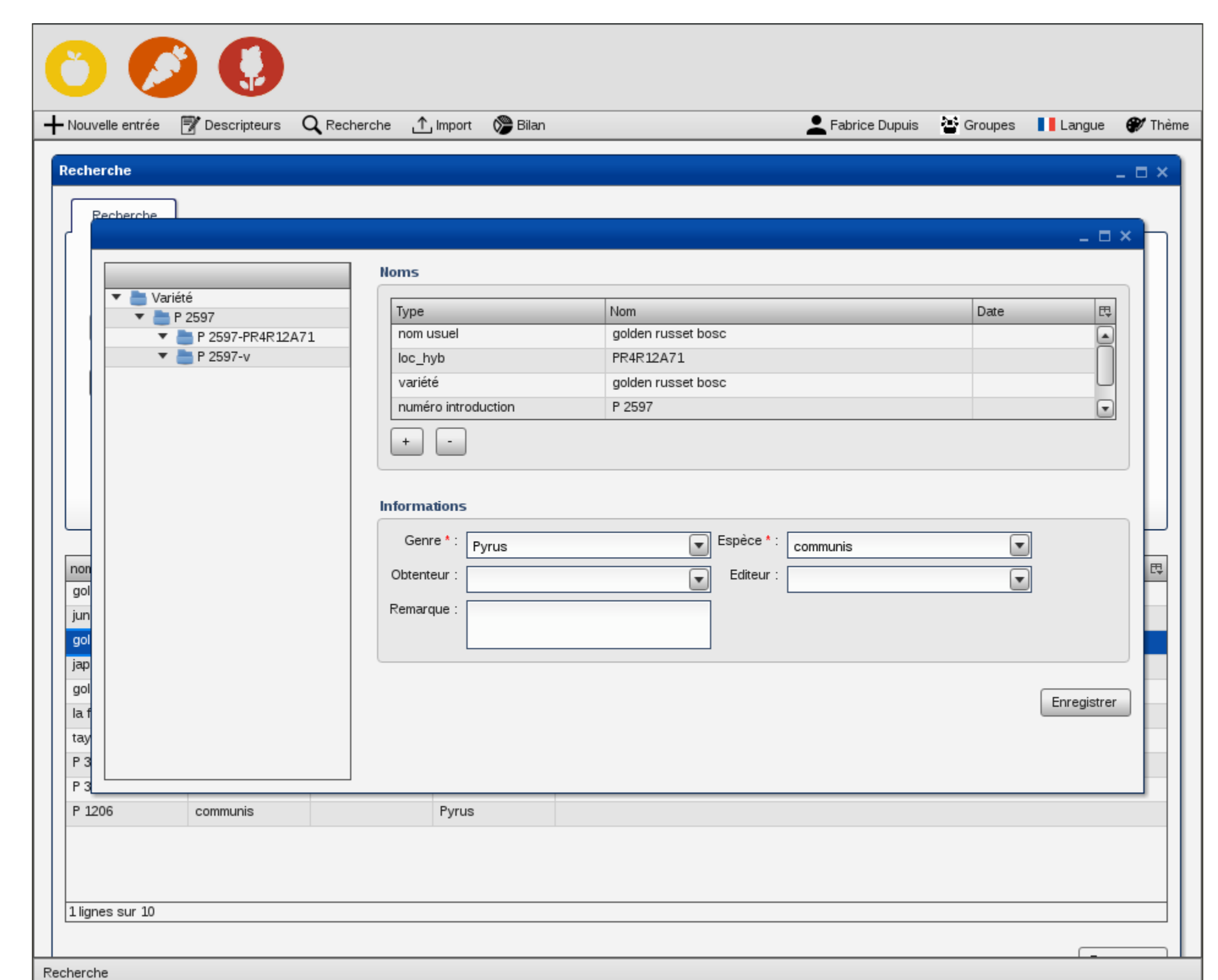
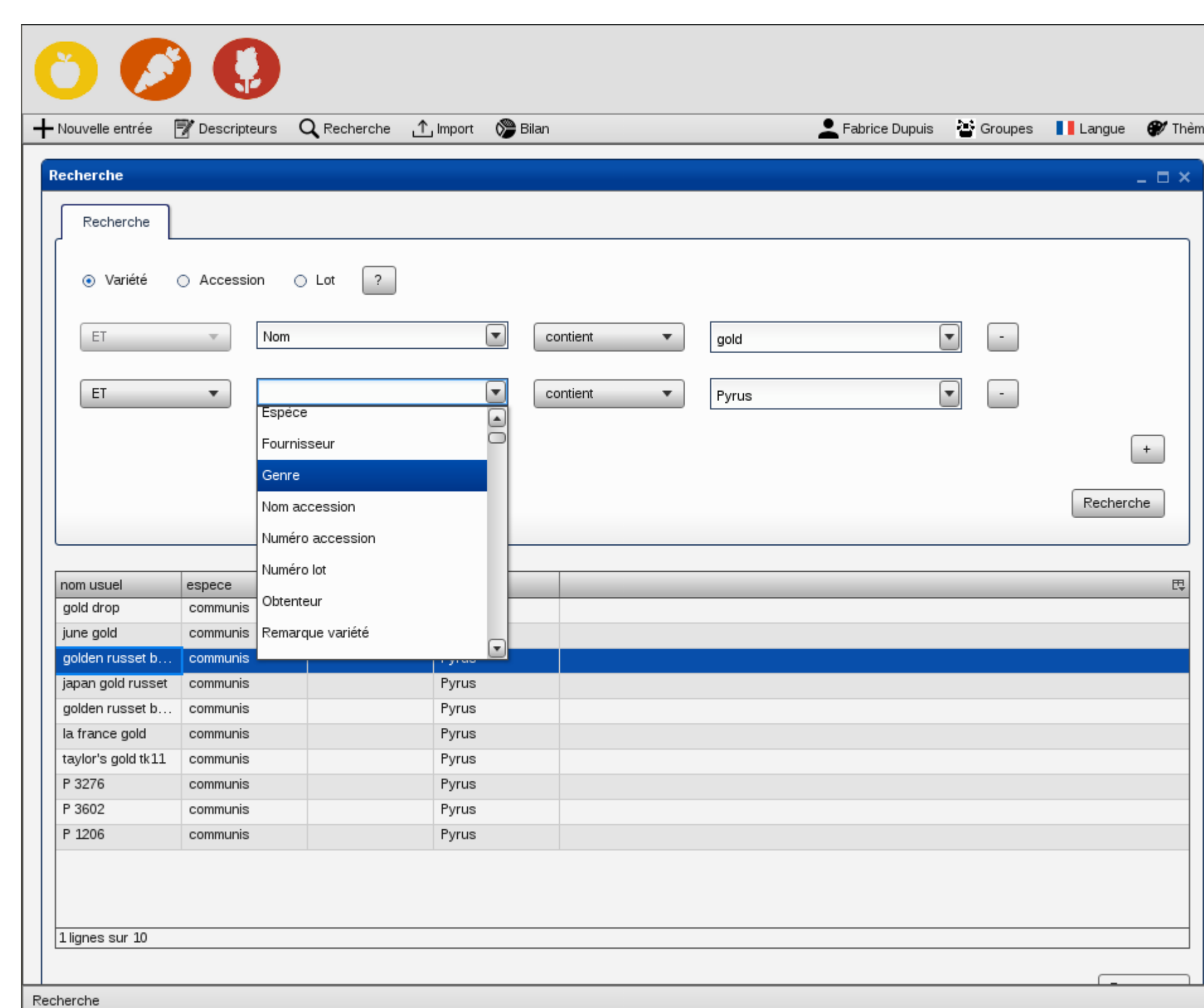
- Users / Groups
- Multilevel authentication (application, user)

In progress:

Experiments, Documents, Equipment, Biological material exchanges

Technology:

Postgresql, Python (no framework, limited dependencies)



Multi-criteria Variety search gives a list of Varieties. A selection in that list displays a detailed view of the Lots and Accessions for that Variety. This view provides quick access to denomination and passport data.

PREMS

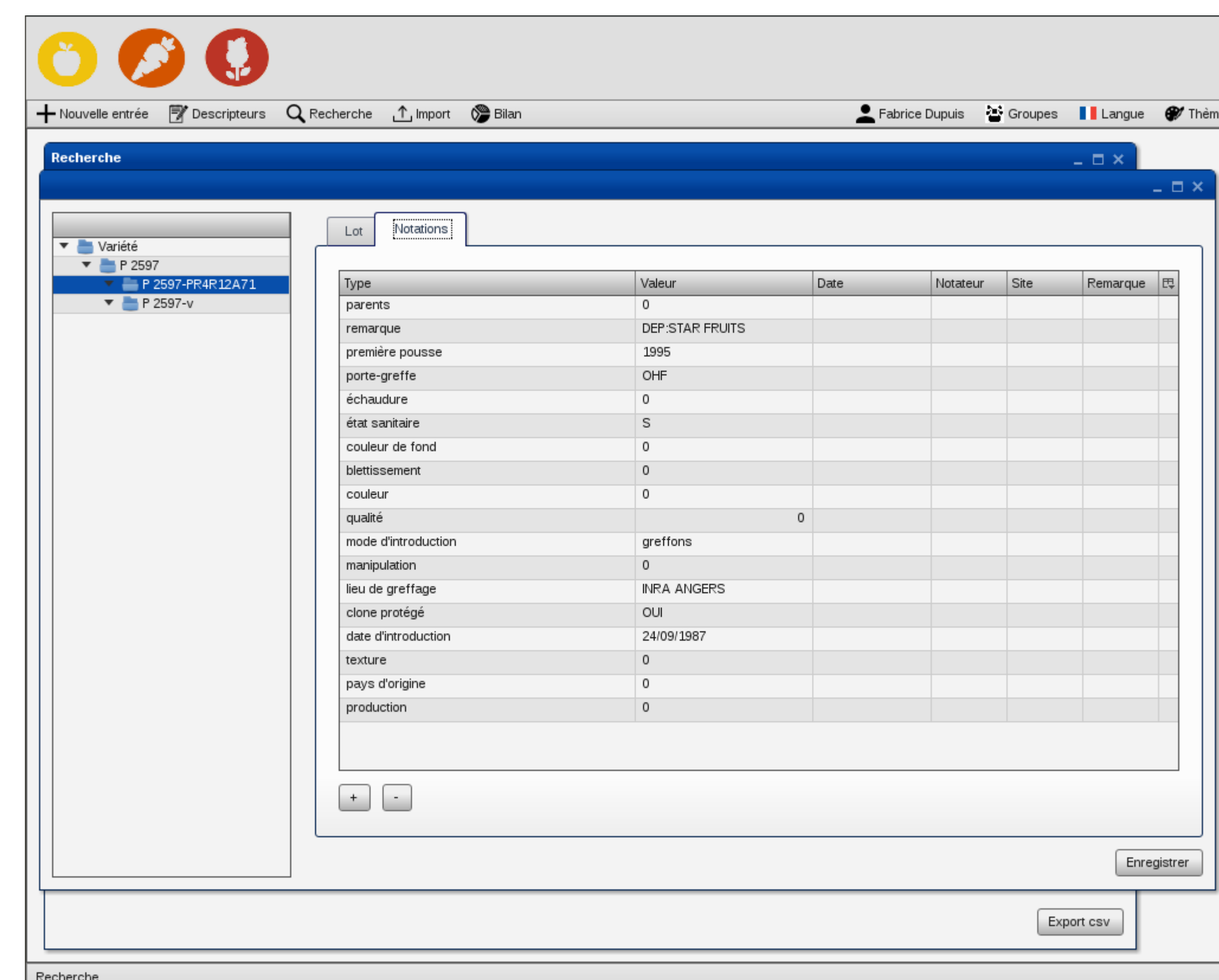
The plant resource management system

Main features:

- 3 levels of storage: Variety, Accession, Lot (as plant or seeds)
- Notations on each level
- Grouping of lot for actions (notation, transfer)
- Multi-criteria search
- Usergroup level data partitioning
- Single value or batch importation for material introduction
- Single value or batch notations with the ability of exporting field notation forms that can be uploaded back in the database

Technology:

Qooxdoo (Javascript framework)



On Lots, the view gives access to phenotyping notations and location of the plants or the seeds bag. The user can also enter new notations.

ELVIS and PREMS are made available to the community through the SourceSup forge under CeCILL license. ELVIS can provide access to the data by implementing compatible API to interact with other tools. For instance, we are deploying a PHIS installation with the integration of IRHS team in the PHENOM project and are working on ways to make the two applications interact.



ELVIS

<https://sourcesup.renater.fr/projects/elvis/>



PREMS

<https://sourcesup.renater.fr/projects/prems/>