Managing Banana Genetic Resources and Genomic Information with the Triplet Drupal/Tripal/Chado

Valentin Guignon[1], Max Ruas[1], Gaëtan Droc[2], Alexis Dereeper[3], Julie Sardos[1], Yann Hueber[1], Jean-François Dufayard[2], Nicolas Roux[1] and Mathieu Rouard[1]

(1) Bioversity International, Commodity Systems & Genetic Resources, F-34397 Montpellier, France,   (2) CIRAD, UMR AGAP, Montpellier, France,   (3) IRD, UMR RPB, F-34394 Montpellier, France

Questions? Find me!
v.guignon@cgiar.org

Rationale

Unraveling the genetic diversity held in genebanks on a large scale is underway, thanks to the advances in **NGS-based technologies**. Here we present the information systems strategy that has been implemented to **handle various data** related to **germplasm accession**, including genotyping (e.g. genomics of gene banks).

Technical aspects

CMS: **Drupal** 7 with **Tripal** 2
Database: PostgreSQL 9 with **CHADO** 1.2
Theme: based on **Zen** theme (HTML5, responsive,...)
Use of:
- Drupal views
- Drupal template override
- Tripal materialized views
- a homemade script to load data into CHADO
- a homemade Drupal module for some features

Germplasm Collection Data
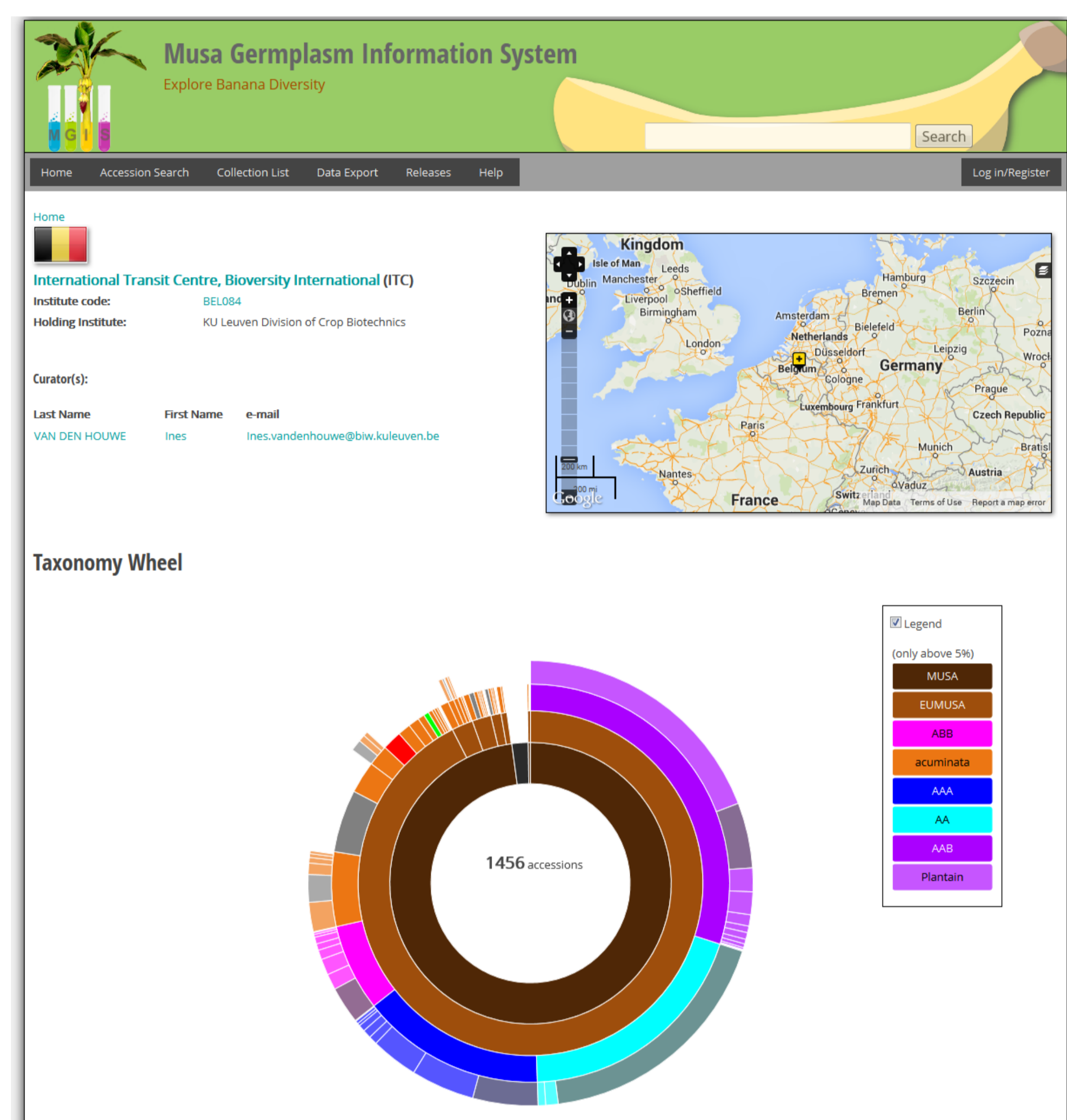
Each collection has a "*taxonomy wheel*" representing its accession diversity.

Technologies

jQuery — write less, do more.
OpenLayers
Data-Driven Documents

Accession Search

Accessions can be searched using **elasticsearch** engine which enables **fuzzy** and **facet** searches.

Technologies
Search API module
Search Facets module

elasticsearch.

Accession Details

Mobile Application

Each accession has a page exposing its details through a user-friendly interface taking advantages of **jQuery** technology.
Standard ontologies such as **Crop Ontology** and **Multi-Crop Passport Descriptiors** are used.

Features
Crop Ontology
Multi-Crop Passport Descriptors
Mobile application for field
(work in progress)
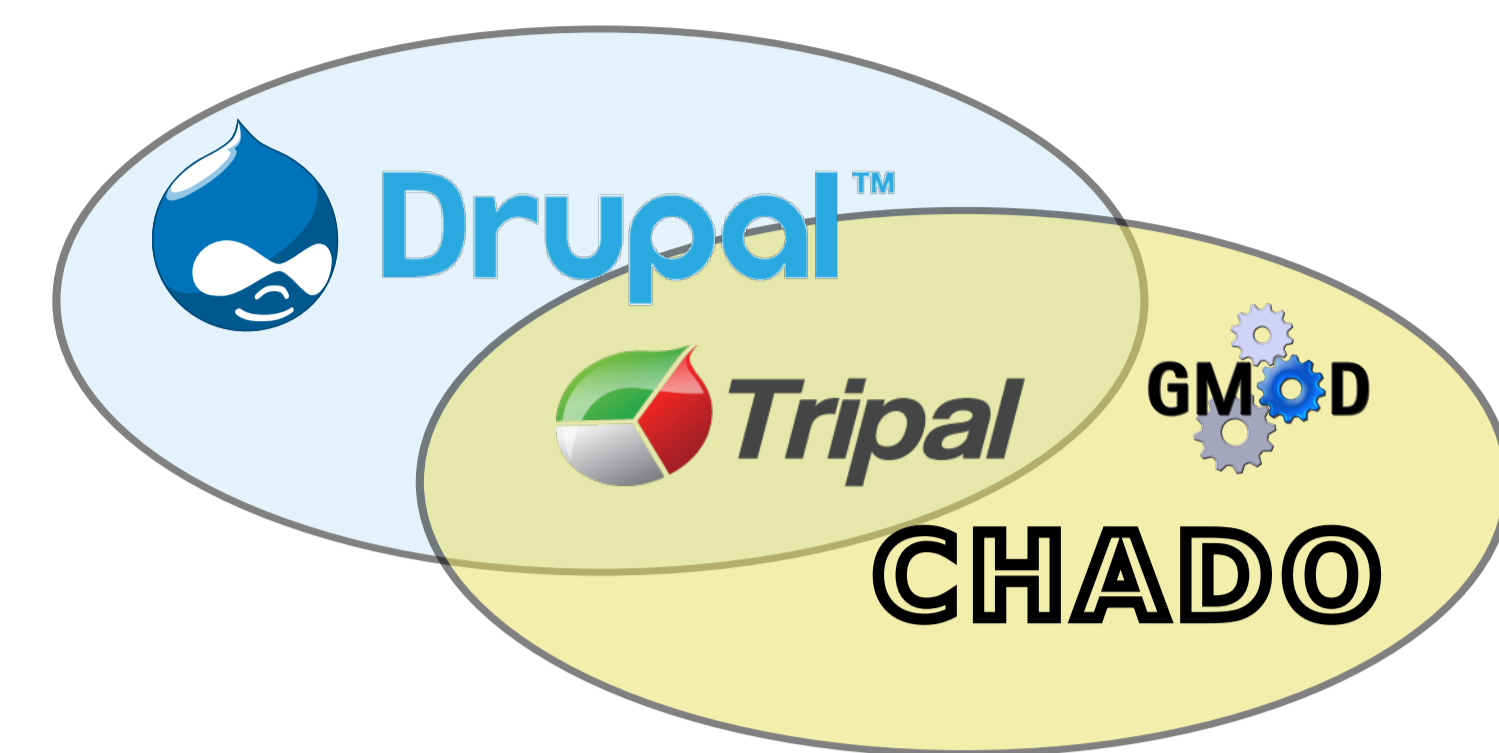
Online Request

Technologies & Features
Flag module
Webform module
Views PDF module
Rules module

The International Treaty on Plant Genetic Resources for Food and Agriculture

International Transit Center (**ITC**) accessions can be requested through the website.
An agreement following the **International Treaty** is generated in **PDF** format and **automated e-mails** are sent.

From Genotyping Study to Genomic Context

One can go from genotyping studies to the genomic context using the tree browser "*inTreeGreat*", the **chromosome viewer** and the **JBrowse** of the **Banana Genome Hub** that includes **SNP** tracks.

Technologies & Features
Biblio module   **Chromosome Viewer**
inTreeGreat   **SNP**

JBrowse

P0944