Report of the GRIN-Global Workshop 2017 for European Genebanks

29-31 August 2017, Prague, Czech Republic

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Participants in the workshop

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INTRODUCTION

The GRIN-Global Workshop took place 29-31 August 2017 at the Crop Research Institute (CRI) in Prague, Czech Republic.

This Activity was sponsored by the Government of the Federal Republic of Germany and it was organized in collaboration with the Crop Trust who covered the costs of the trainer and also funded a few additional participants from other countries. The workshop's purpose was to present and familiarize genebanks with the GRIN-Global documentation system (the first version, 1.0.7, was released in December 2011 in a joint effort by the Global Crop Diversity Trust, Bioversity International, and the Agricultural Research Service of the United States Department of Agriculture (USDA/ARS).

GRIN-Global is a software enabling genebanks to store and manage information associated with plant genetic resources and to deliver that information globally. Researchers, educators and breeders around the world can request germplasm through the GRIN-Global websites. Knowing how to use and apply GRIN-Global could solve the "documentation issues" of many genebanks in Europe, thus improving the quality of documentation and reducing the associated costs. There are no licensing fees for providers and the system operates on open source software. For global use there is an option to display the system in any language when translation is provided. It also provides access to a worldwide plant taxonomy database and the possibility to document not only *ex situ* collections but also *in situ* and on-farm collections.

Twenty-five participants had the opportunity to try GRIN-Global in a test environment installed on the CRI server under the guidance of specialized trainers. The workshop was opened by Martin Reisinger from the National Germplasm Resources Laboratory of the USDA and Matija Obreza from the Crop Trust. Pavel Cermak, director of the Crop Research Institute welcomed the participants. Thanks were expressed to ECPGR for funding the workshop through its Activity Grant Scheme (Fourth Call, 2016) and to the Crop Trust as well. Martin Reisinger also thanked the local hosts. All participants were asked to introduce themselves briefly.

PLENARY PRESENTATIONS

Two presentations were given during the workshop.

GRIN-Global modernization

Nick Martynenko, from IT-company AimProSOft (Ukraine), presented the possibilities of modernization of GRIN-Global and its connection with the database Genesys. The presentation is available online (https://docs.google.com/presentation/d/1S0ZIIhfUaEPHj_zdPih6t9ap53FGLYTMD1_6JyOkCVw/).

GRIN-Global Frontrunner

Juan Carlos Alarcon, from the International Maize and Wheat Improvement Center (CIMMYT), Mexico, introduced the GRIN-Global Help desk which is provided by CIMMYT and details about technical and installation support. New features of the GRIN-Global system (upgraded or new Wizards, Standard Material Transfer Agreement (SMTA) reporting, using bar codes, etc.) were mentioned. The presentation is available online (http://www.ecpgr.cgiar.org/working-groups/documentation-information/grin-global/).

HANDS-ON SESSION

The workshop was organized in line with the prepared agenda (see Annex1). Training environment was prepared on the CRI server to enable participants to follow a practical training on the GRIN-Global database. Individual parts of the GRIN-Global system and their function were introduced to participants.

Participants learned how to use the GRIN-Global (GG) Curator Tool software to manage their genebank data, including accession, inventory, germplasm requests, and characterization data. They also became acquainted with the GG Public Website, including features reserved for internal, authorized genebank staff. Participants got to know how to customize the codes and other configurable components to meet their organization's germplasm curatorial needs. An important element of the workshop was to become familiar with the overall environment, including the database schema and the supporting programs used by the GG administrator.

GRIN-Global overview

GRIN-Global (GG) is a software suite of programs designed for management of plant genetic resources collections in genebanks; the basic GRIN-Global package is available free of charge and should be adjusted to conditions in different countries.

The GG system is a new and scalable software version of the Germplasm Resource Information Network (GRIN), used by the USDA/ARS National Plant Germplasm System. The GG system is built using the well-established three-tier architecture design pattern consisting of a Presentation Tier, Business Tier and Data Tier (Figure 1):

1. the Data Tier is the database where all the PGR data is permanently stored. The GG system supports free database systems – MySQL, Microsoft SQL Server, and Oracle,
2. the Business Tier contains a full complement of web services (software modules that are accessible over the internet via standard messaging protocols) that enable the entire database repository to be made accessible to any other computer system connected to the internet,
3. the Presentation Tier can assume many different forms. Users access the data via different GG applications:
   - the Curator Tool (CT) is used by curators and users to create and manage genebank data, for viewing and manipulating GG data. In order for a PC to run the CT program, a copy of SQL Server Express must be installed on the user's PC when the CT is installed, regardless of what database product is used to run the main GG database hosted on the server. This SQL Server Express manages a set of lookup tables that are installed with the CT.
   - the Search tool (ST) for curators and users, can be launched from the Curator Tool, or launched directly.
   - the Admin Tool (AD) for GG administrators handles diverse functions including adding or modifying user accounts and their security permission, importing data and creating and editing data views,
   - the Public Website (PW) is designed for users who will query the GG database for germplasm information or who will be ordering germplasm to meet specific research needs.
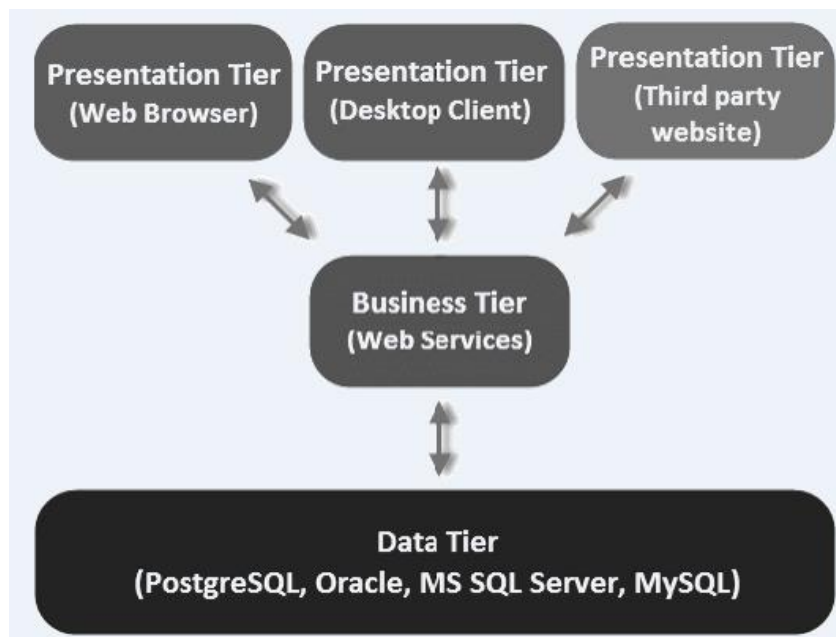
Figure 1. The three-tier architecture design pattern of the GRIN-Global system.

The main advantages of the GRIN-Global are the online access for the network of cooperating institutions and collection curators, user-friendly website, access to GRIN taxonomy, multi-language environment and the ability to adapt the GG system to local conditions.

DISCUSSION AND CONCLUSION

Future development

Further development of the system according to user needs was discussed. An upgraded version of the Curator Tool should be released by the end of 2017. More features are under development, e.g. assigning a DOI (Digital Object Identifier) or an Easy SMTA reporting.

Workshop feedback

At the end of the workshop, participants were encouraged to express their feedback and to join the GRIN-Global community. Most of the participants expressed satisfaction with the given information and indicated their intention to implement the system in their countries, e.g. Poland, Belarus, the Netherlands, Lithuania and Slovenia. Tunisia and Oman are already evaluating GRIN-Global in their genebanks.

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ANNEXES

Annex 1. Agenda

Day 1

1. Welcome and opening of the workshop
2. Nick Martynenko (AimProSoft): GRIN-Global modernization
3. GRIN-Global Environment: Software, Schema, and Supporting Materials
4. Curator Tool (CT) & Dataview Introduction
5. Search Tool Basics (ST)
6. Accessions – Creating /editing records
7. Drag & Drop Records to and from Excel
8. Static and Dynamic Folders
9. Accession & Related Tables / Accession Wizard

Visit of Genebank in the Crop Research Institute Prague

Day 2

1. Review of Day 1
2. Cooperators
3. Lookup Tables
4. Search Tool Advanced Searches
5. Inventory
6. Processing Germplasm Request Orders (PW & CT)
7. Public Website (PW); including Tools (SQL Queries, etc.) for Authorized Users

Day 3

1. Review
2. Recording Characterization Data: Observations & Descriptors (Traits)
3. Source Habitat Descriptors
4. Codes and Code Groups
5. Image and Document Handling
6. Reports
7. Security: Ownership and Permissions
8. Taxonomy Overview
9. Brief Overview of GG Administration & Preparing for an Organization's GG Installation
10. Juan Carlos Alarcon (CIMMYT): GRIN-Global Frontrunner

Annex 2. List of participants

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