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**Food and Agriculture
Organization of the
United Nations**



The International Treaty
ON PLANT GENETIC RESOURCES
FOR FOOD AND AGRICULTURE

Item 3.3 of the Provisional Agenda
INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE
THIRD MEETING OF THE SCIENTIFIC ADVISORY COMMITTEE ON THE GLOBAL INFORMATION SYSTEM
Rome, Italy, 21 – 22 June 2018
Masterplan for the Development of the GLIS Portal

I. INTRODUCTION

1. By Resolution 5/2017, the Governing Body requested the Secretariat to prepare a Masterplan for the Global Information System (GLIS) Portal describing prioritized desired functionalities of the GLIS for the review of the Scientific Advisory Committee.
2. This document provides an initial proposal for the Masterplan and also describes the conceptual framework aimed at better defining some of the core functions of the Masterplan for the GLIS Portal. The proposed Masterplan with the user-oriented functions will be translated later on into a collection of architectural and design principles for its implementation.
3. It also presents an analysis of the types of users and their needs and preferences in accessing and using PGRFA related information. Use Modules for the GLIS Portal are introduced as well as the listing and description of some of the major functions of the Portal. Finally, it invites discussion on how to maintain the relevance of the portal through the conduct of in-depth interviews.
4. The proposal takes into account inputs collected during the rounds of consultations for the design of the Programme of Work and during the early adoption phase. It also takes into account users' needs, as previously identified in the context of the implementation of the Programme of Work on Sustainable Use and contained in the "Context and Concept of the Toolbox on Sustainable Use" developed in 2016.¹ In doing so, it presents a functional proposal for the implementation of the GLIS Portal in the period 2018-2021 for the review of the committee.

II. MASTERPLAN DESIGN

II.1 Defining the use-oriented entry points

5. In adopting its Programme of Work for the Global Information System in 2015, the Governing Body indicated that the Portal should contain use-oriented entry points to PGRFA information.

¹ <http://www.fao.org/3/a-bo073e.pdf>

6. Developing information systems with a user-centred design process requires some general phases, namely:

- i) Identifying the target users, the people that will use the Portal, its services and the conditions for that use and a list of functions;
- ii) Identifying detailed business requirements, goals and expectations of the users, the specific needs to be addressed by the Portal;
- iii) Identifying solutions in a stage-wise approach, from a basic prototype to more and more sophisticated designs;
- iv) Evaluating and testing of the services of the Portal over time and incorporating user feedback and suggested improvements.

7. This approach is in line with the *agile software development approach* adopted during the first biennium for the development of module for the assignation of Digital Object Identifiers (DOIs).

8. By Resolution 5/2017, the Governing Body requested the Secretary to link GLIS to the following systems:

- i) PGRFA in *ex situ* collections documented in Genesys and FAO WIEWS;
- ii) On-farm management of PGRFA in the monitoring system of the Global Plan of Action;
- iii) open research data from DivSeek contributions.

9. Since the launch of the DOI Module efforts were put in place for the setting of pointers to Genesys.² There are also ongoing technical discussions for the connection of *ex situ* data published through FAO WIEWS with the PGRFA registered in the GLIS Portal.

10. Regarding the connection to on-farm data, the Secretariat seeks additional advice from the Scientific Advisory Committee on the expected functions. The Secretariat would also like to receive additional advice on the possible ways to connect to open research data from DivSeek contributors.

II.2 Uses of PGRFA Information

11. The Programme of Work adopted by the Governing Body contained a list of sources for PGRFA information, a wide range of activities along the value addition chain for PGRFA and a list of uses.

12. The initial use categories identified so far for the GLIS Portal on plant genetic resources, which are proposed for the development of use cases, are:

- i) Research
- ii) Breeding
- iii) Conservation
- iv) Management
- v) Farming
- vi) Administration, policy and legal
- vii) Training and education

13. According to the initial feedback received, research and breeding could be merged into a single module, and conservation and management could also be presented together. The use cases are presented in the form of five Use Modules contained in *Appendix 1*.

² The connection with this system is explained in document IT/SAC-GLIS-3/18/3.

II.3 Detailed Definition of the Functions

14. The method proposed for the collection of further user requirements consists of interviewing representatives of the various groups of target users,³ and asking them to provide simple questions using natural language (user stories)⁴ to document their needs and expectations, such as:

As a Genebank Manager, I want to be notified periodically of new publications and datasets related to the material we manage so that I can monitor the visibility and use of my collection

15. User stories are based on short sentences created by filling in the blanks in a predefined template.

As a (role), I want (something) so that (benefit)

16. This methodology helps, on the one hand, to articulate the needs of users in a simple, non-technical language. On the other hand, it contains valuable information for the design team: what is the role of the stakeholder, what is needed and for what reason.

17. Additional information can be obtained by, for instance, allowing users to assign a priority to their story. A simple "Low / Moderate / High" priority scale is recommended to keep the exercise simple and avoiding complex ranking procedures when the stories are analysed.

II.4 Improving the Use Modules

18. After collection, an attempt is made to group together all the feedback, observations and comments, describing the same need, although in a different language or for different roles, using the categories above, or any others to be suggested by this Committee.

19. User stories can be used in two main areas: scheduling and estimating. Scheduling corresponds to ranking the requirements expressed by the user stories according to some agreed assessment of the priority assigned to them.

20. The other area where user stories are helpful is in estimating the amount of effort required to implement the requirement expressed in them. The "Agile Software Development Approach" calls for frequent release cycles, i.e. the period when new functions are deployed and the design and development of the next set of functions is started. In the case of GLIS, three months is considered an appropriate release cycle duration. The estimated time required to implement a new functional request must not exceed the release cycle duration because, obviously, a function cannot be deployed if not fully developed.

21. In case of requirements that imply an effort exceeding the duration of the development cycle, the User Story may be broken into simpler components that can be implemented within one development cycle.

22. Where appropriate, collaboration with stakeholders could be sought to obtain additional details allowing the design team to more accurately estimate and schedule the User Story.

³ Reserchers, plant breeders, genebank managers, farmers, in-situ conservation specialists, policy makers and lawyers.

⁴ User stories are the preferred tool for extracting user requirements according to the agile software development approach.

III. ADVICE SOUGHT

23. The Scientific Advisory Committee is invited to take into consideration the information provided in this document and advise on the development of the Masterplan for the GLIS Portal, in particular on:

- i) the Uses Modules for the GLIS Portal described in *Appendix 1*;
- ii) the functional proposal for the GLIS Portal contained in *Appendix 2*;
- iii) the number and type of users' interviews to be conducted for the improvement of the Prototype Portal;
- iv) any other relevant advice for the development and consolidation of the Masterplan.

Appendix 1

Use Modules

User's Entry Points	Functions
<p style="text-align: center;">Plant Breeding and Research Module</p> <p style="text-align: center;">Module 1</p>	<ul style="list-style-type: none"> a) Browse by crop b) Search material that belongs to a certain crop across various databases c) Identify material held, particularly in evaluation research across sites d) Get access to various sources of physical material both <i>ex situ</i>, <i>in situ</i>, on-farm e) Get information on plant breeding technology f) Access to field trial datasets g) Access to phenotypic and genotypic data related to a certain material h) Get information from other sources on PGRFA held: pedigree, collection information, publications i) Get information on similar research work conducted by other projects or programmes j) Get information on crop standards for the documentation k) Information on analysis tools and services for data hosting and data exchange l) Access to publications and datasets relevant to a certain research topic and crop m) Innovative approaches for pre-breeding (e.g., using nested-association mapping – NAM, ‘speed breeding’ and double haploid technology) n) Search for information using the MCPD from further research and download in various formats o) Get email alerts when a material matching certain conditions is registered in GLIS
<p style="text-align: center;">Conservation and Ex Situ Management Module</p> <p style="text-align: center;">Module 2</p>	<ul style="list-style-type: none"> a) Permanently and uniquely identify material held b) Search for gap material in a collection according to crop and other parameters like geographic origin of the material c) Get information on a collection held elsewhere d) Guidelines on conservation and management e) Information on conservation techniques f) Training options on conservation and management of PGRFA g) Molecular studies and field procedures h) Tools and standards for practical PGRFA conservation and documentation i) Community seed banks and community-based seed production j) Taxonomic information on crop gene pools k) Information on phytosanitary permits l) Contacts of genebanks and PGRFA holders
<p style="text-align: center;">On-farm Management</p> <p style="text-align: center;">Module 3</p>	<ul style="list-style-type: none"> a) Information for on-farm production and management b) Crop planning c) Equipment d) On-farm conservation training e) Seed marketing f) On-farm management data available in WIEWS g) Seed distribution permits

<p>Policy and Legal Module</p> <p>Module 4</p>	<ul style="list-style-type: none"> a) Know all the material that is conserved <i>in situ</i>, <i>ex situ</i> and on farm b) Information on national PGRFA diversity c) Information on the material that is available in the Multilateral System d) Statistic on seed exchange e) Information on membership and contact points for the International Treaty, the CGRFA, the CBD and the Nagoya Protocol (single access) f) Information on the SMTA and other contractual arrangements to access PGRFA g) Material and information made available through GLIS by the projects of the Benefit-sharing Fund h) How countries are progressing in the implementation of the SDG Target 15.6 i) Access to national legislation on plant genetic resources
<p>Training and Capacity Development Module</p> <p>Module 5</p>	<ul style="list-style-type: none"> a) Training options and courses on various topics b) Funding opportunities

*Appendix 2***Functional Proposal for the GLIS Portal 2018-2021 (v.1)****A. Access Points to PGRFA through GLIS**

The GLIS Portal will facilitate access to external resources will also be offered in two ways:

i. Main Navigation Menu**ii. Topic Browsing**

- (a) Main navigation menu with *Use Modules*, based on the analysis of the uses categories (with some categories merged)
- (b) *Types of resources*: DOIs, institutions, contacts, publications, databases and information systems
- (c) *Crop list*
- (d) *Country*

iii. Search Box for free text searches (available directly in the homepage)**iv. Advanced Search Form** with entry points available in the DOI detail pages (linked from the homepage)**B. Main Navigation Menu**

1. The portal's main menu is envisaged to provide the following access points.

Menu link	Description/function
DOI: Identify your material	Provides access to the registration form of the DOI management module as well as to editing of existing PGRFA records
Search for PGRFA	Leads to the Advanced Search Form of the DOI management module. Information about the found PGRFA records will be downloadable in a variety of formats
Interactive relationship browser	Leads to the graphic browser where users can, for instance, generate neighborhood diagrams
Training resources	Allows the user to browse available training resources on DOIs and also submit a training event
Training events	Takes the user to a page where training events and resources on issues specific to GLIS can be found
Country Profile: Implementation of the Treaty at national level	Displays country pages with information on compliance and focal points

Statistics on DOI registration and PGRFA workflow	Displays statistics on DOI registration (e.g. by country, by crop etc.) as well as SMTA indicators from Easy-SMTA
SDG reporting	Links to information on the monitoring of the Target 15.6 from the ITPGRFA/FAO and the CBD
Documentation and Standards	Opens a page with the following main sections: <ul style="list-style-type: none"> • MCPD and GLIS descriptors • List of crop standards • Formats and protocols for system integration and data exchange
The Catalogue	Dynamic catalogue of information sources and scientific and environmental issues related to PGRFA.
Projects	Displays a page with links to the projects of supported by the Benefit-sharing Fund as well as third party projects related to PGRFA documentation and information exchange
Partners	Displays a page with detail son the institutions and initiatives that are collaborating with the Secretariat to design and promote GLIS. There will be two sections, one with highlighted partners.
Genebanks	Links to the genebanks listed in the WIEWS database on institutions
Genomics	Displays a page with links to documents and information resources on genomics and emerging issues. Link to DivSeek.
Legislation	National legislation and decisions on plant genetic resources for food and agriculture with a connection through FAOLEX
Help Desk	Allows users to access support resources such as FAQs and manuals on GLIS. A help-desk function will also be provided and it will be possible to submit feedback using a questionnaire