Final Results of the AHA on Development of specifications for a modern gene bank documentation software (CryoWEB 2.0) and further steps
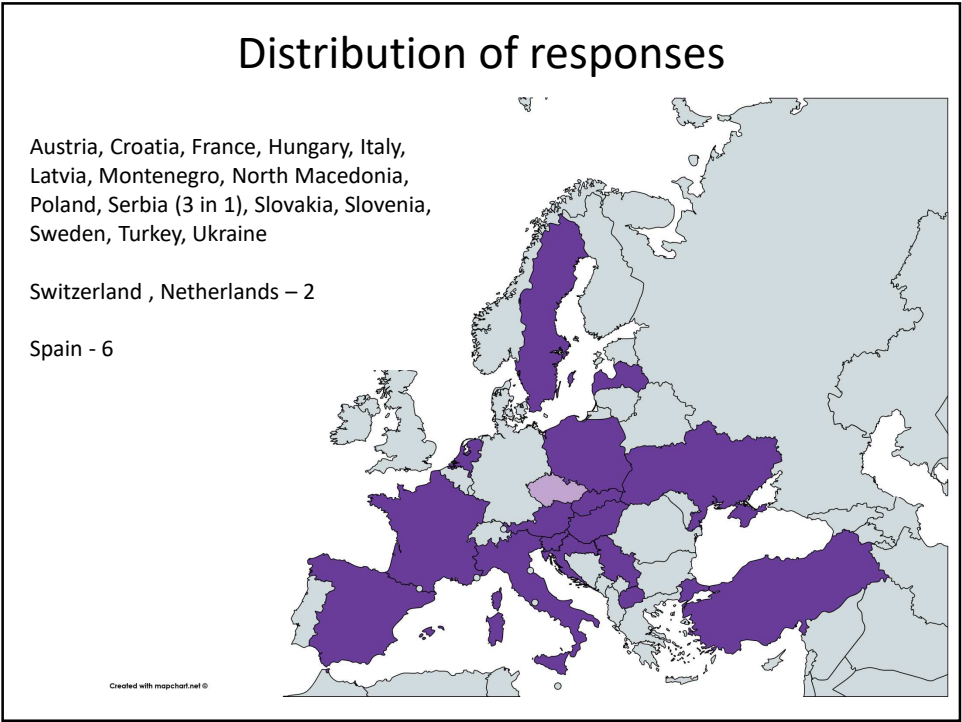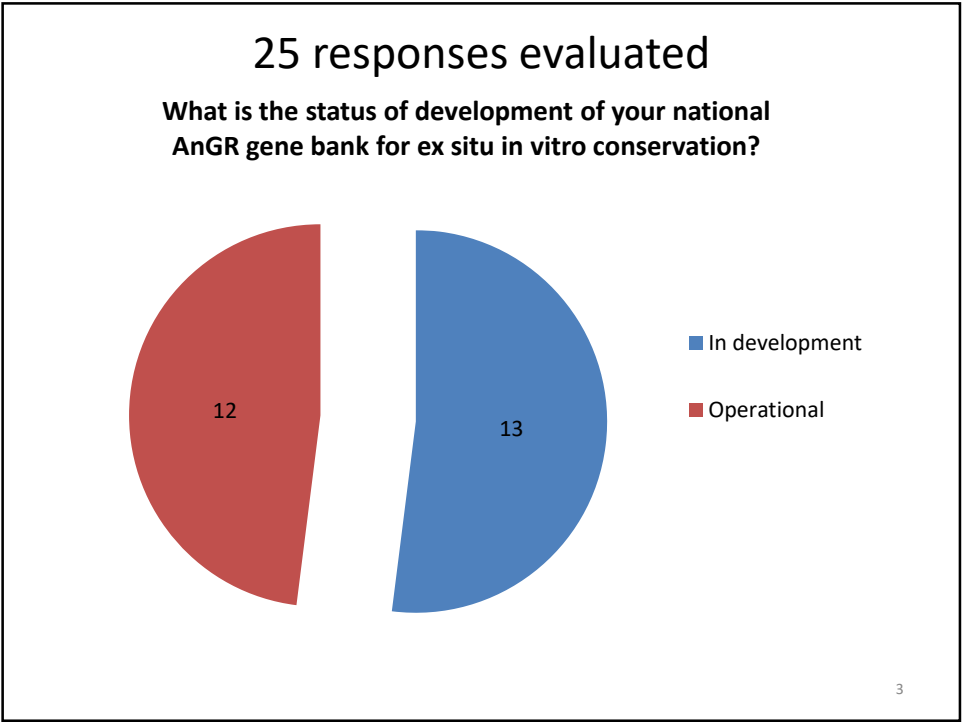
ERFP WG Ex situ conservation meeting

02.07.2021

1

Aim of the survey

- Review current status of documentation of farm animal gene banks (ex situ in vitro) across Europe
- Identify the information needs of the various countries
- Help preparing functional specifications for modern gene bank documentation software

2

25 responses evaluated

What is the status of development of your national AnGR gene bank for ex situ in vitro conservation?

- In development
- Operational

12 13

3

Distribution of responses

Austria, Croatia, France, Hungary, Italy, Latvia, Montenegro, North Macedonia, Poland, Serbia (3 in 1), Slovakia, Slovenia, Sweden, Turkey, Ukraine

Switzerland , Netherlands – 2

Spain - 6

Created with mapchart.net ©

Respondents grouped by number of breeds

Group A – 2 gene banks
- Breeds>140
- Species>10
- Donors>7000
- Samples>300000

Group C – 7 gene banks
- Breeds 10-20
- Species 2-7
- Donors ?-140
- Samples 250-60000

Group B – 5 gene banks
- Breeds 30-55
- Species 5-8
- Donors 400-4000
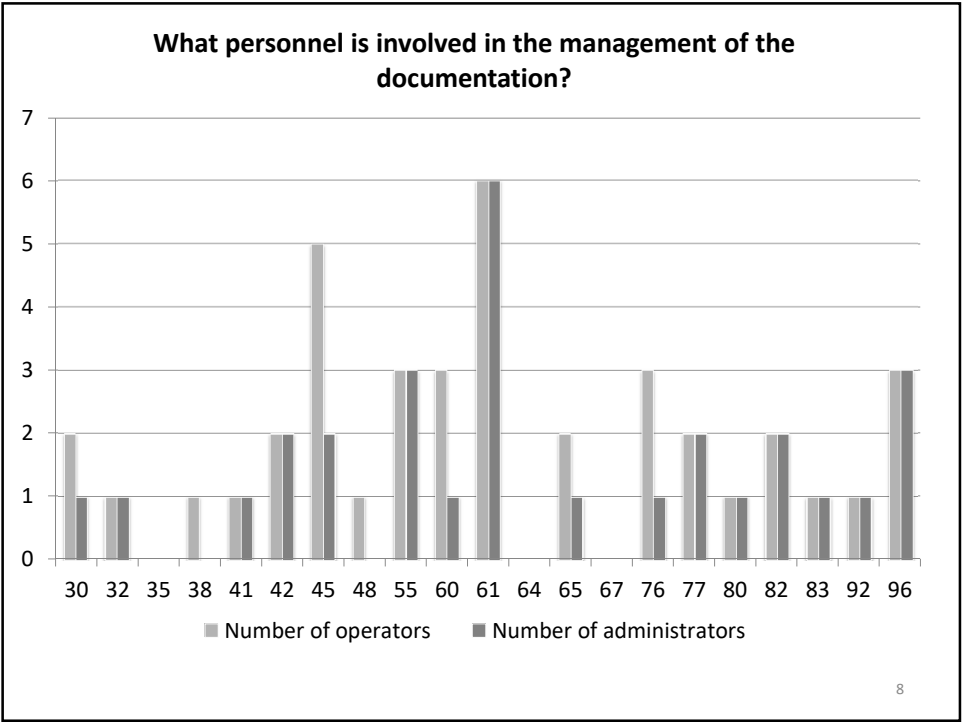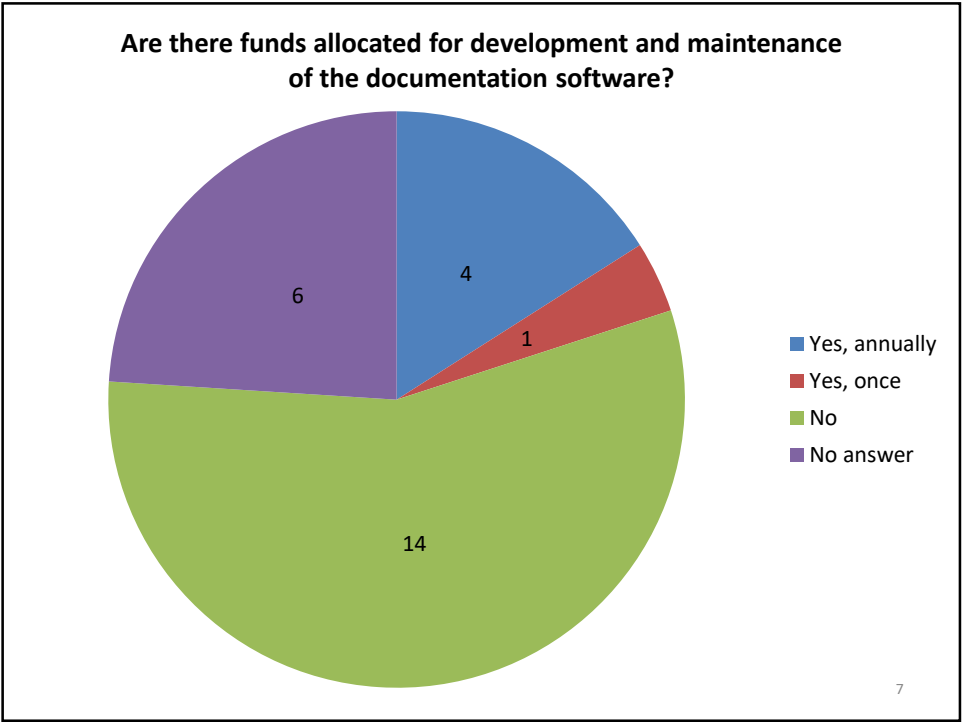- Samples 73000-205000

Group D – 11 gene banks
- Breeds 2-9
- Species 1-6
- Donors 20-1600
- Samples ?-52000

5

Persons employed by the national gene bank

- Most of the respondent gene banks report:
  - less than 6 employed persons
  - less than 3 full time equivalent persons

- The 2 larges gene banks report 2 or less full time equivalent persons

6

Are there funds allocated for development and maintenance of the documentation software?

- Yes, annually
- Yes, once
- No
- No answer

What personnel is involved in the management of the documentation?

Number of operators   Number of administrators

Setup and documentation

- Gene banks are very different in size and organization
- Material of choice – semen
- Mostly core collections
- Mostly centralized management by public institution
- Limited personnel
- Documentation is also heterogeneous
- Heavy usage of Spreadsheets
- Some data still on paper
- Data is not open to the general public
- No funds allocated for development and maintenance of documentation software

9

Wish list

- Data upload to EFABIS
- More flexibility in reports creation (e.g. reports by organization)
- Control of data access dependent on the user - creation of IS to serve more genebanks, so the users can only see their own data and samples
- Easy export functionality (CSV file)
- Counter to easily determine how many straws are still kept on the tank from a specific session and for each specific animal
- Interface deleting number of doses of multiple samples
- Genomic data storage - link to our genebank database
- The possibility to import data from a template spreadsheet (e.g. format xls)

10

No common action

	Country level	ERFP level
Costs	+++	+
Personnel	+++	+
Maintenance	+++	+

Each country develops the software it requires on its own

Individual country joins Animal-Grin as a full-member

11

Common action for all EUGENA members

	Country level	ERFP level
Costs	+	++
Personnel	+	++
Maintenance	+	++

ERFP develops simple software for gene bank documentation, in order for the EUGENA member countries to meet minimum data standards of documentation (i.e. CryoWEB 2.0).

12

Common action for all ERFP members

	Country level	ERFP level
Costs	+	+++
Personnel	+	+++
Maintenance	+	+++

ERFP develops and maintains a common software that can be used by all countries

ERFP joins Animal-Grin as representative for Europe and provides required permanent personnel.
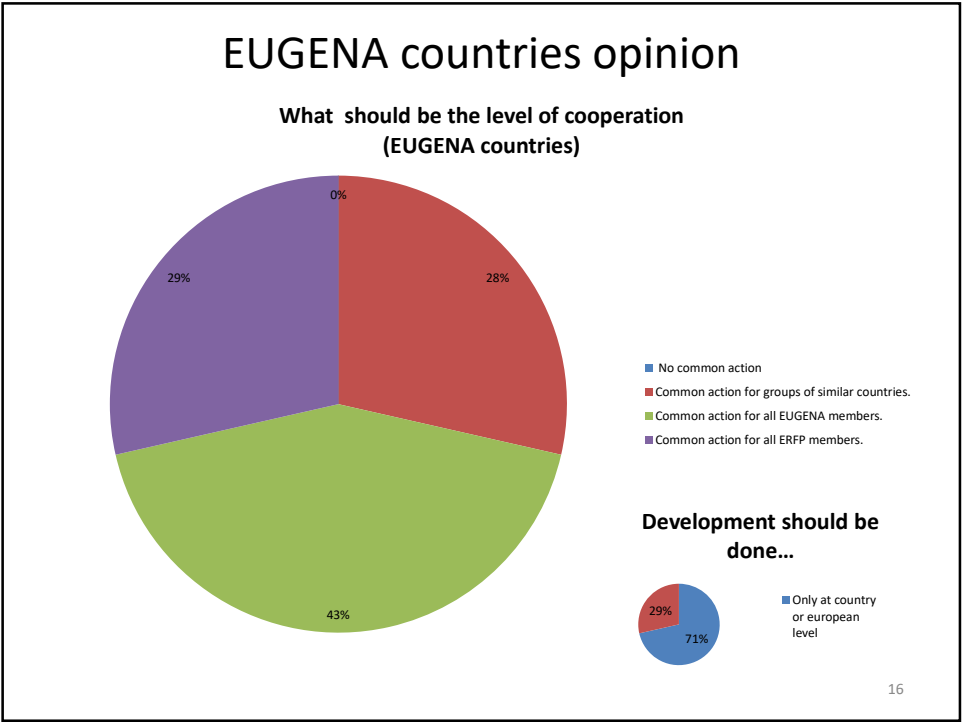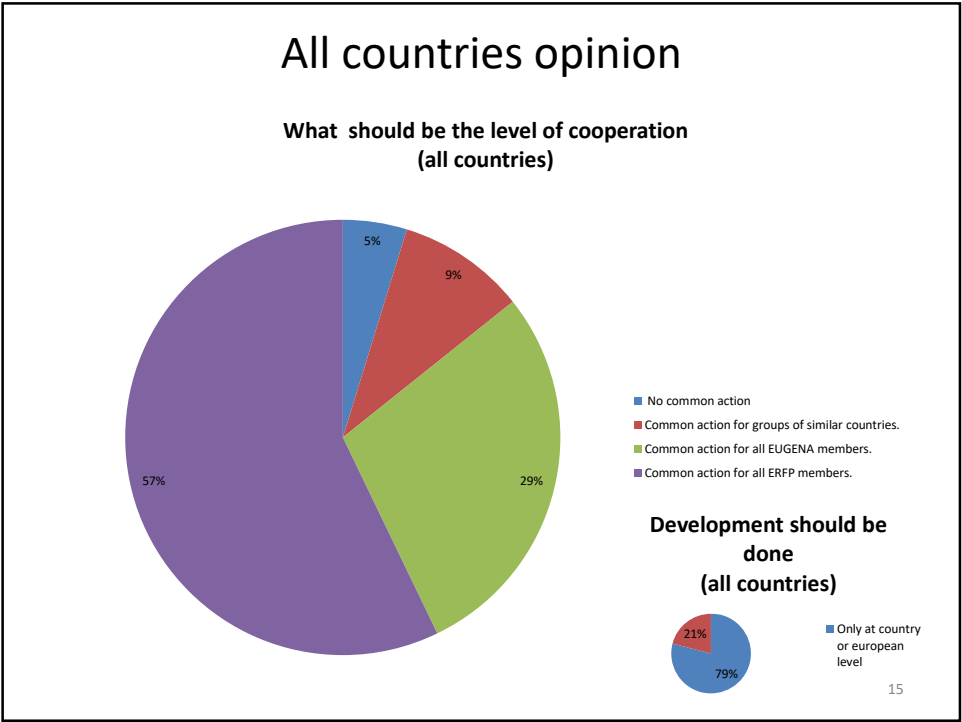
13

Common action for groups of similar countries

	Country level	ERFP level
Costs	++	+
Personnel	++	+
Maintenance	++	+

Groups of countries with similar requirements develop common software that suits their needs

Groups of countries with similar requirements join Animal-Grin

14

All countries opinion

EUGENA countries opinion

BASIC REQUIREMENTS

17

General requirements

- Open source
- Follow the FAIR principles
- User interface accessible via LAN or WAN over a secure connection (optional two-factor authentication)
- User interface in the national language
- All user actions should be recorded and kept in history
- Option to revert the last action

18

Modules

- Donor animals
- Storage facilities
- Samples
- Reports and queries
- Requesting of material
- Users management
- Journal log
- Backup and restore

19

Donor animals

- Registration of new
- Modification of donor data
- Deletion of an animal
- Search for animals with certain characteristics
- Adding other data fields to the donor record
- Visualization of the animals on the map with links to the animal data and stored material

20

Storage facilities

- Describe a storage facility by defining the number of levels, their types and identification
- Import storage facility structure from file
- Export selected storage facilities structure to file
- Move selected elements of one facility (with or without their germplasm content) to another
- Modify storage facility data (e.g. rename tank)
- Visualize the storage facilities, allowing the user to browse through the levels

21

Samples

- Record new sample with its distribution in the storage facilities
- Import new sample data from file into the database
- Move selected samples from one location another via the web interface
- Move samples to another location reading data from file
- Record sample usage (taking samples out from the gene bank)
- Modify sample data (e.g. correct vessel identification)
- Erase sample from the system
- Keep history of all sample movements and usage
- Search for a sample by number of parameters provided by the user (e.g. samples from a certain donor, all material stored on a certain date, etc.)
- Provide user with information about:
  - The location of a certain sample on a certain date
  - The content of a certain storage facility on a certain date
  - History of all movements of a sample

22

Reports and queries

- Drill down browsing of the collection starting from species->donors->samples
- Drill down browsing of the collection starting from certain storage facility
- Browsing the collection by starting from map of donor locations->samples
- Search for germplasm material by set of parameters (e.g. by species, by donor, etc.)
- Generate general statistics about donors per sample type, donors per breed and species, samples per location, samples per breed and year
- Export aggregated statistics data for upload in EFABIS/DAD-IS
- Export aggregated statistics data for upload in EUGENA
- Export all the information related to one level of the storage facilities (e.g. one tank) in structured format
- Export all the information related to one donor in structured format
- Export all the information related to one sample in structured format

23

Requesting of material

- Allow organizations and persons to request material from the gene banks

- Allow gene banks managers to approve or reject a request

- Allow reservation of material (after approved request) in order to block it from using for other purposes

24

Users management

- Adding new
- Modifying user
- Changing user access rights
- Blocking user

25

Journal log

- Provides the gene bank manager and administrator with information about the user activities
- Daily/monthly report with the log in and log out times of all users
- Report about the modifications done by a certain user
- Report about the modifications done in certain module

26

Backup and restore

- Archives all the data to external file on a regular interval
- Allows restoring of the database to its state at a certain date from external archive file

27

Ad hoc action members

- Francisco Javier Cuevas Gozalo - Spain
- Sipke-Joost Hiemstra - Netherlands
- Ina Hulsegge - Netherlands
- Eva-Marie Stålhammar – Sweden
- Ewa Sosin-Bzducha - Poland
- Delphine Duclos - France
- Nataliia Reznikova – Ukraine
- Danijela Bojkovski - Slovenia
- Zhivko Duchev - Bulgaria
- Fernando Tejerina Ampudia - Ex Situ WG

28