CryoWEB2.0 Survey Results

ERFP WG Ex situ conservation meeting

01.07.2020

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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

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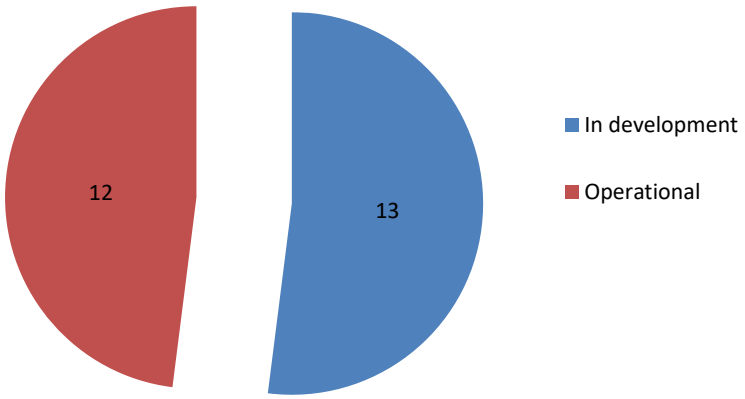
Survey structure

- 3 sections
  - Setup and Documentation (22 questions)
  - The Documentation Software (9 questions)
  - CryoWEB 2.0 Required Features (8 questions)
- Filled online (dedicated website prepared)
- PDF version sent also for convenience to the respondents
- Disseminated to all NCs, IMAGE participants, EX situ WG members

3

25 responses evaluated

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



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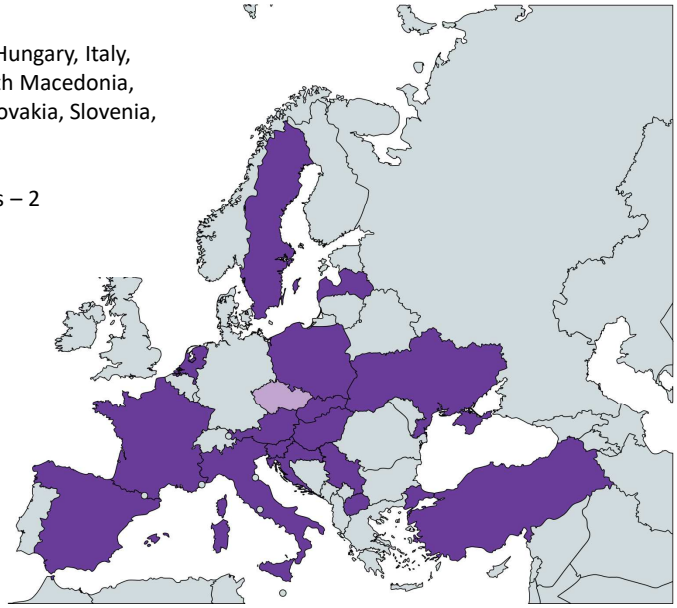
Distribution of responses

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

Switzerland , Netherlands – 2

Spain - 6



SETUP AND DOCUMENTATION

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Respondents grouped by number of breeds

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

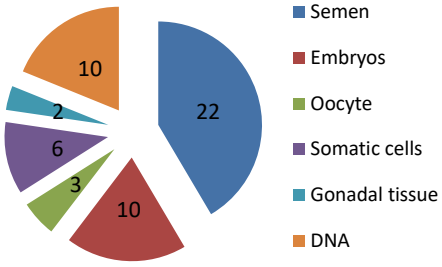
Group C – 7 gene banks
- Breeds 10-20
- Species 2-7
- Donors ?-140
- Samples 250-60000

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

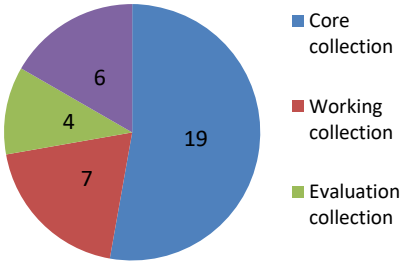
Group D – 11 gene banks
- Breeds 2-9
- Species 1-6
- Donors 20-1600
- Samples ?-52000

7

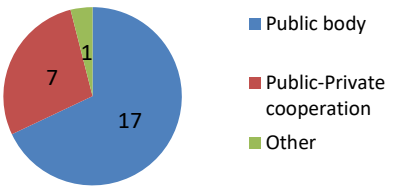
What type of material is stored in the gene bank?



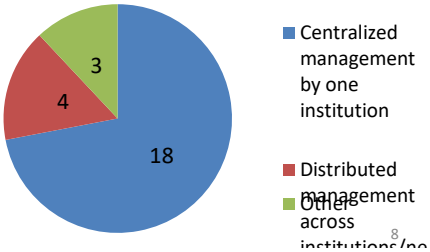
Type of collections



What is the institution managing the national gene bank?



How is the gene bank managed?



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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

9

Information recorded

- Donor
  - Complete: breed, species, id, owner
  - Sparse: phenotypes, pedigree, genotypes, breeding values
  - Missing: living environment, farm management system
- Material
  - Complete: sample id, collection date, location, sample quantity, storage, ownership
  - Sparse: semen quality, sanitary status

Only 11 gene banks report recorded sanitary status for all their samples

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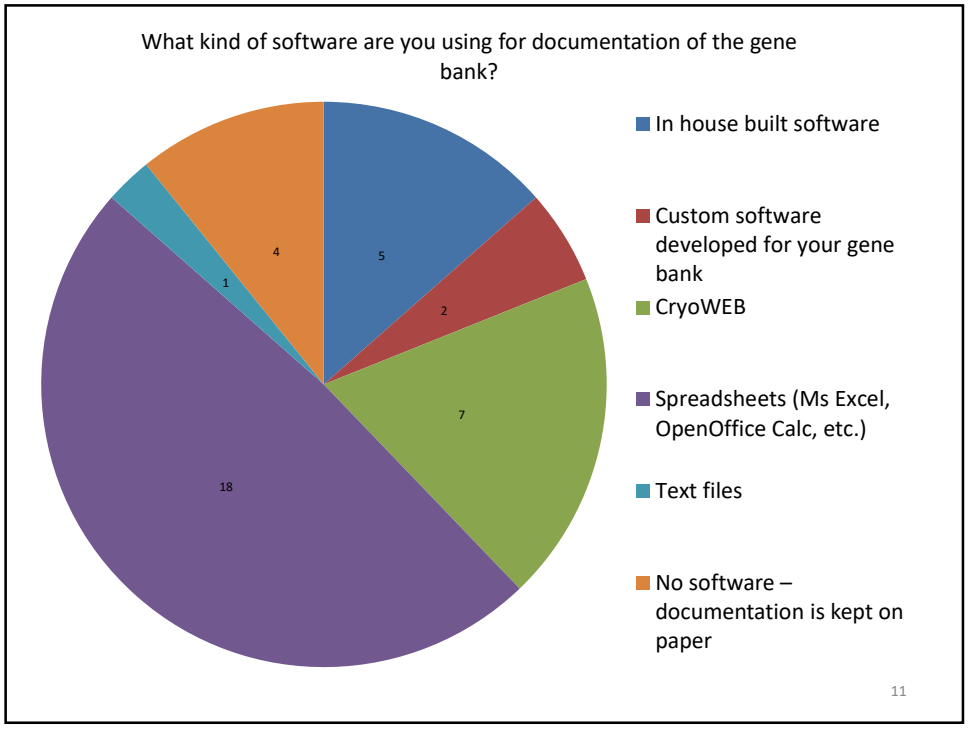
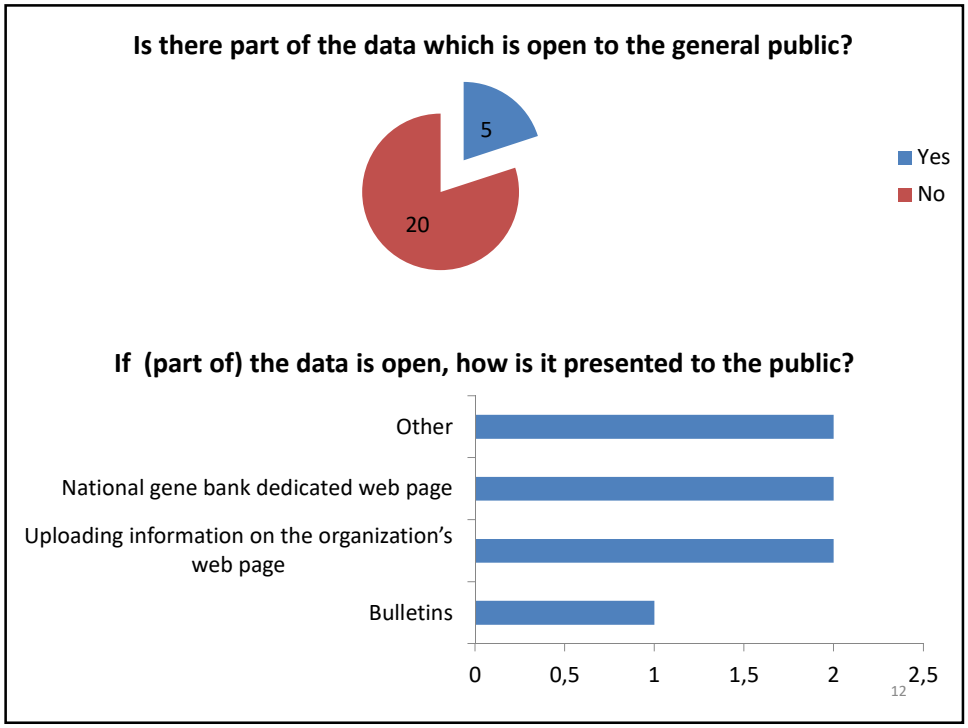
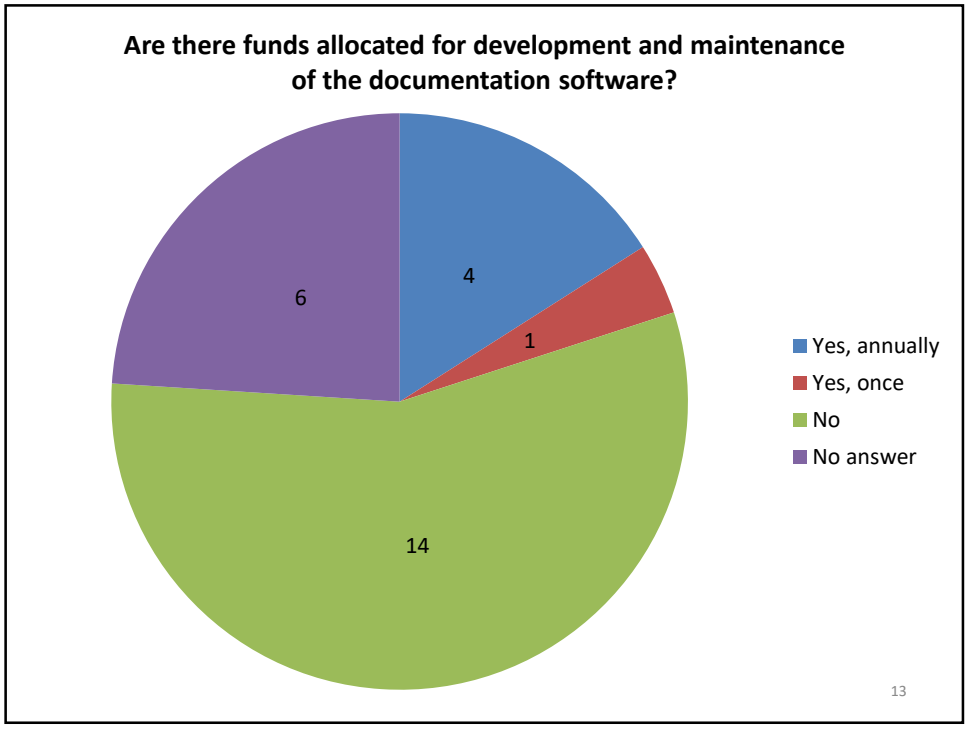

What kind of software are you using for documentation of the gene bank?
5
2
7
18
1
4
In house built software
Custom software developed for your gene bank
CryoWEB
Spreadsheets (Ms Excel, OpenOffice Calc, etc.)
Text files
No software – documentation is kept on paper
11


Is there part of the data which is open to the general public?
5
20
Yes
No
If (part of) the data is open, how is it presented to the public?
Other
National gene bank dedicated web page
Uploading information on the organization's web page
Bulletins
0
0,5
1
1,5
2
2,5
12



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

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DOCUMENTATION SOFTWARE

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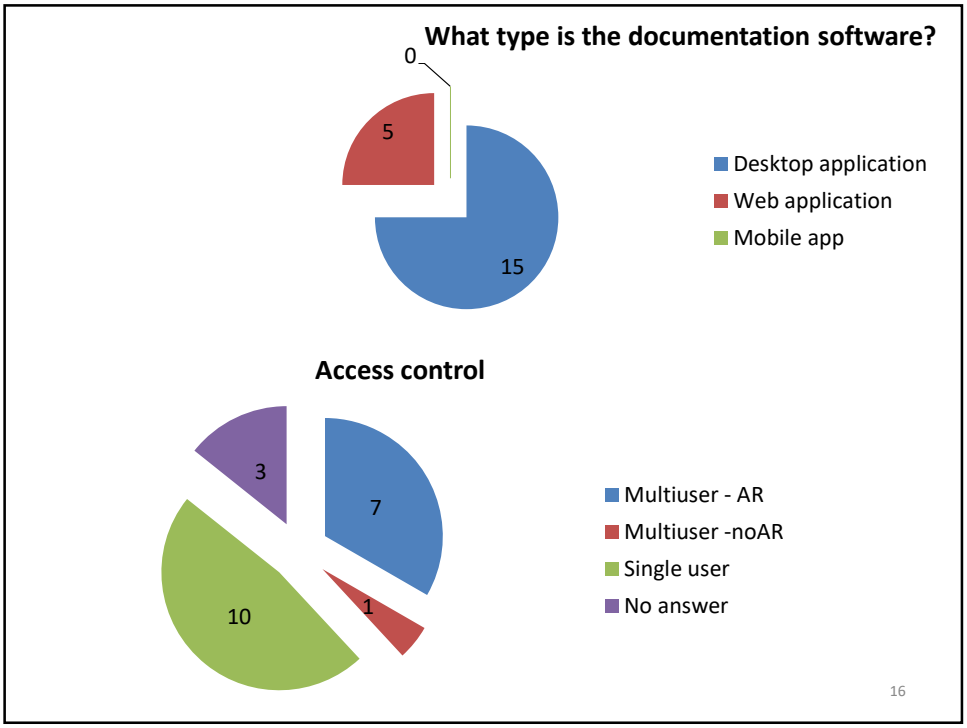

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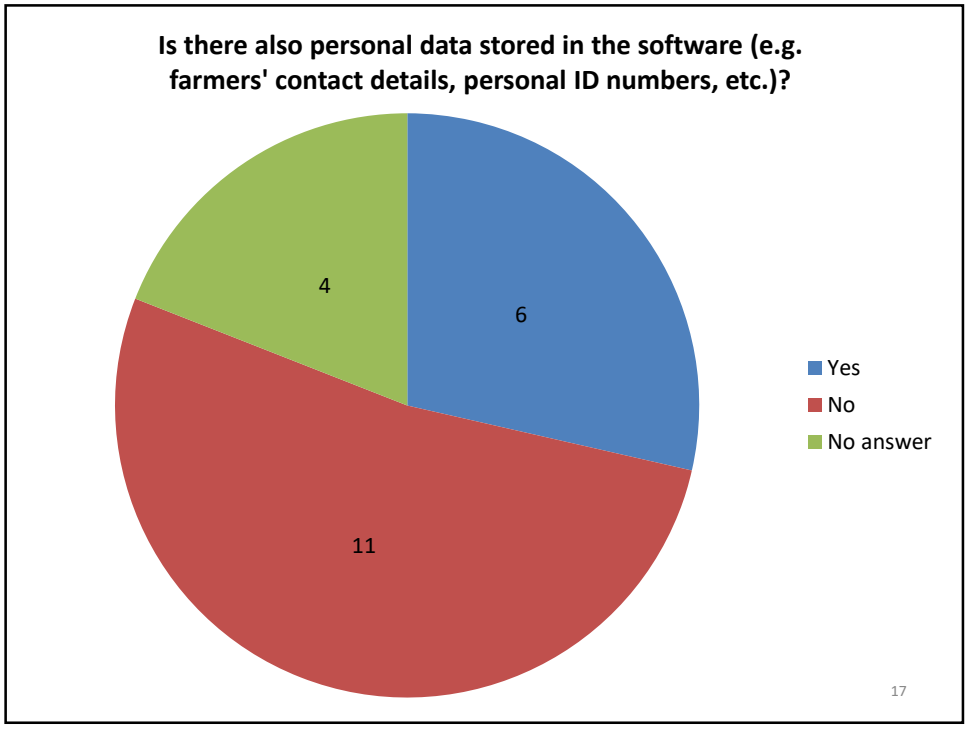
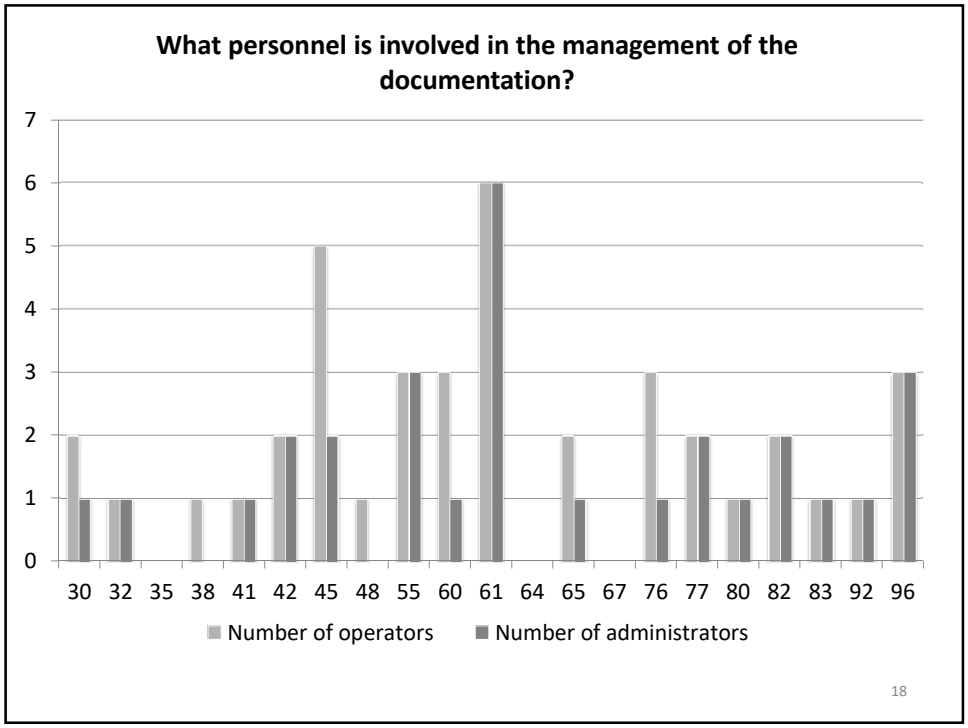
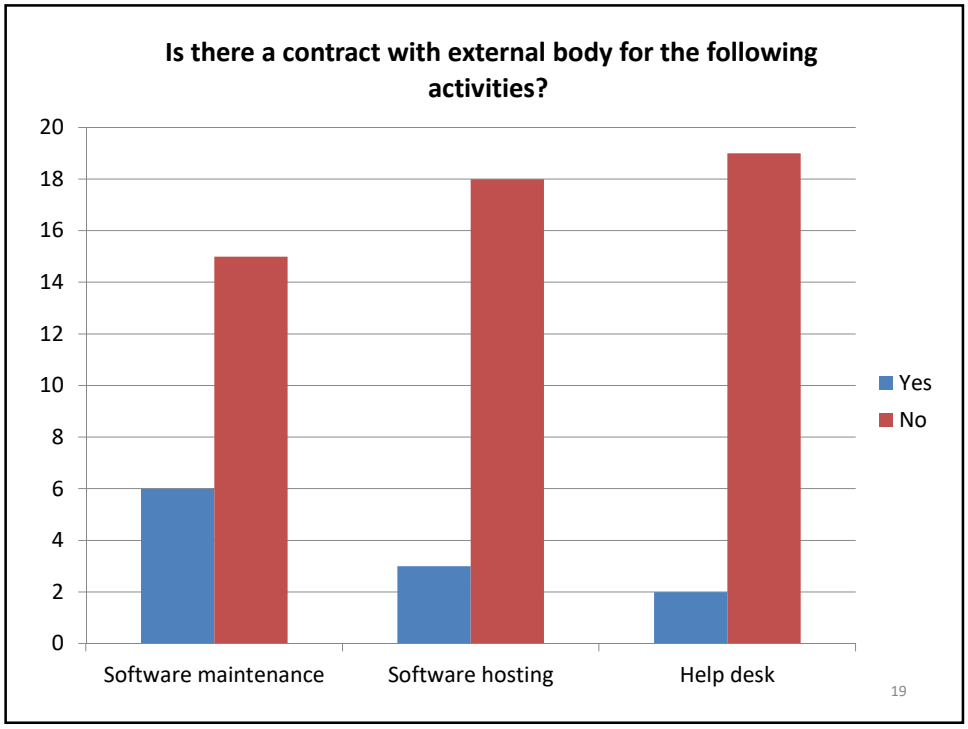
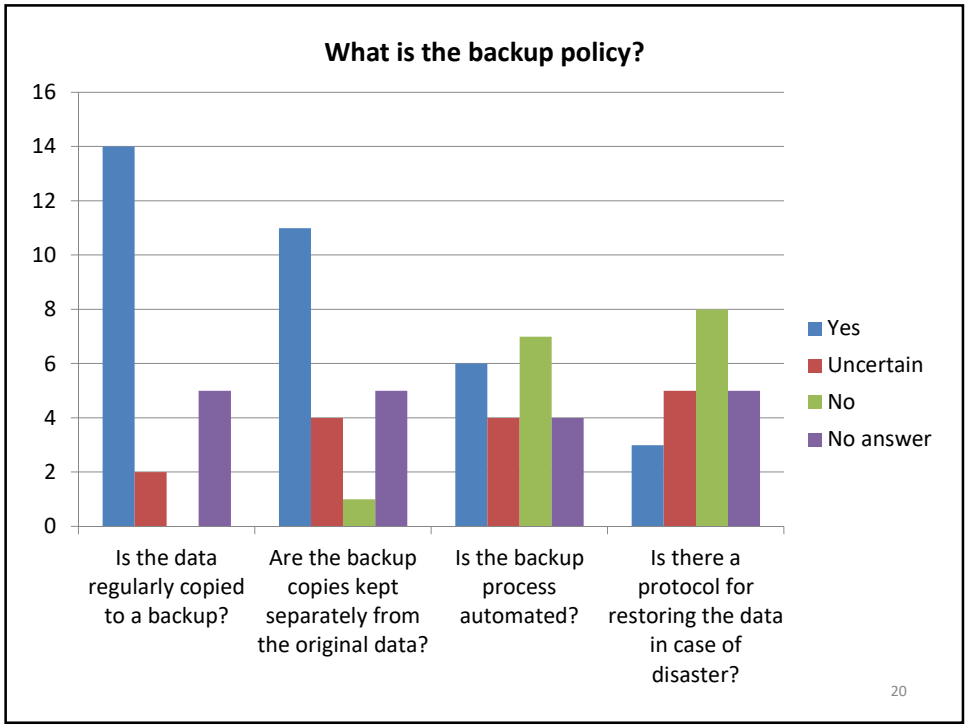

Is there also personal data stored in the software (e.g. farmers' contact details, personal ID numbers, etc.)?
6
11
4
Yes
No
No answer
17


What personnel is involved in the management of the documentation?
7
6
5
4
3
2
1
0
30 32 35 38 41 42 45 48 55 60 61 64 65 67 76 77 80 82 83 92 96
Number of operators
Number of administrators
18


Is there a contract with external body for the following activities?
20
18
16
14
12
10
8
6
4
2
0
Software maintenance
Software hosting
Help desk
Yes
No
19


What is the backup policy?
16
14
12
10
8
6
4
2
0
Is the data regularly copied to a backup?
Are the backup copies kept separately from the original data?
Is the backup process automated?
Is there a protocol for restoring the data in case of disaster?
Yes
Uncertain
No
No answer
20

Documentation software

- Single user desktop software
- Parallel use of spreadsheets and other software
- Not all documented data is stored in the software
- Personal data is kept in some of the gene banks
- Most of the respondents rely only on their own resources for maintenance, hosting and help desk
- Limited export functionality
- Data has been backed up in most cases

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REQUIREMENTS

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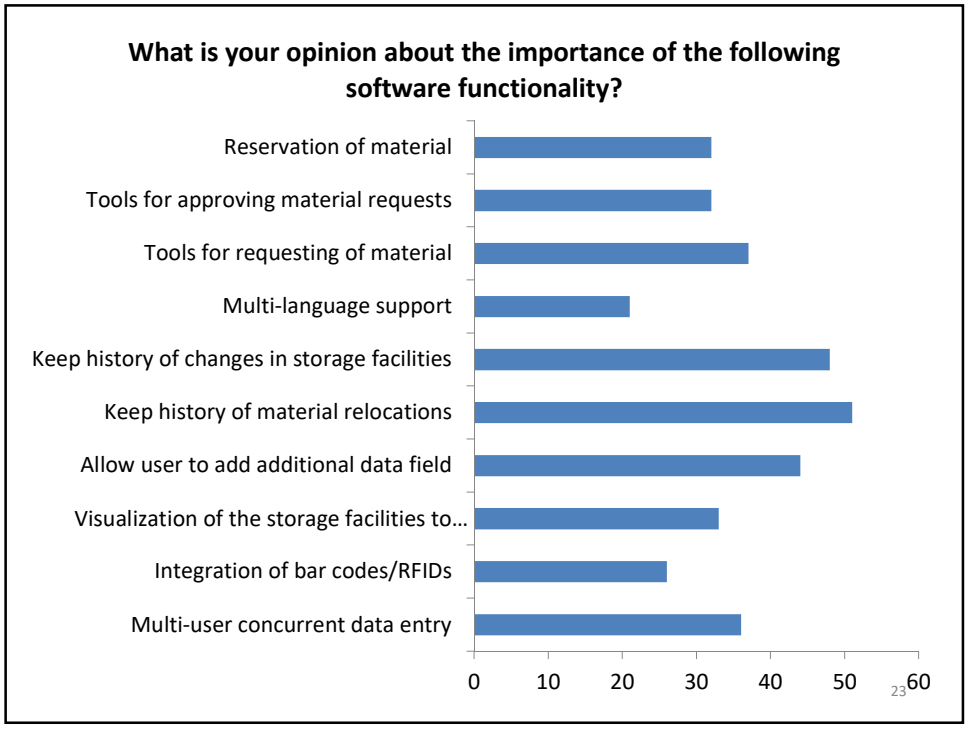
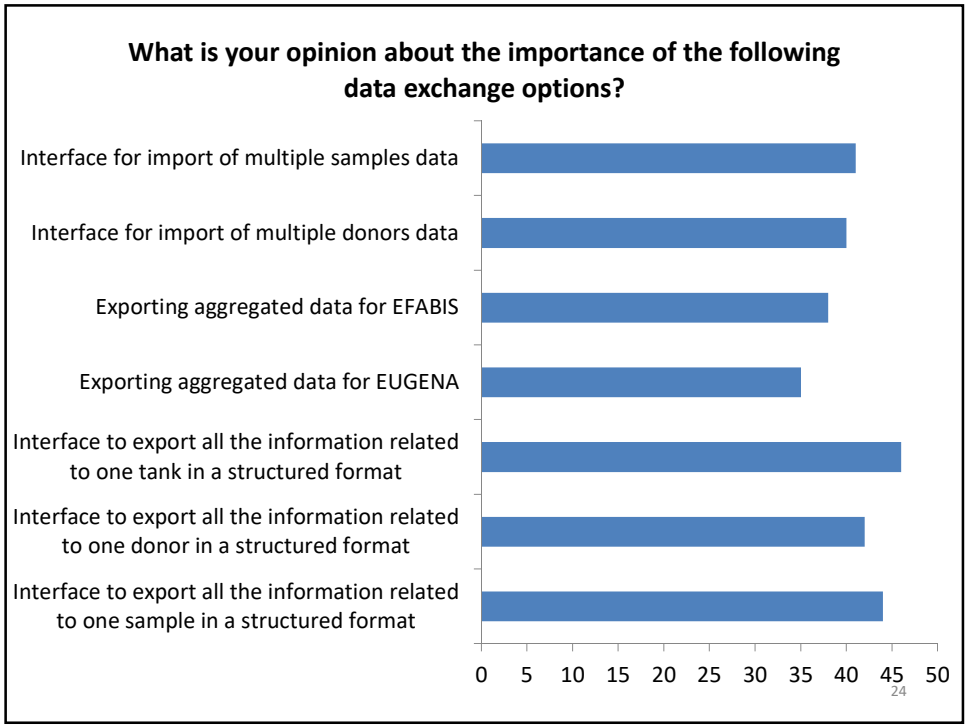

What is your opinion about the importance of the following software functionality?
Reservation of material
Tools for approving material requests
Tools for requesting of material
Multi-language support
Keep history of changes in storage facilities
Keep history of material relocations
Allow user to add additional data field
Visualization of the storage facilities to...
Integration of bar codes/RFIDs
Multi-user concurrent data entry
0
10
20
30
40
50
60
23


What is your opinion about the importance of the following data exchange options?
Interface for import of multiple samples data
Interface for import of multiple donors data
Exporting aggregated data for EFABIS
Exporting aggregated data for EUGENA
Interface to export all the information related to one tank in a structured format
Interface to export all the information related to one donor in a structured format
Interface to export all the information related to one sample in a structured format
0
5
10
15
20
25
30
35
40
45
50
24

Wish list

- Data upload to EFABIS
- More flexibility in reports creation (e.g. reports by organisation)
- 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)

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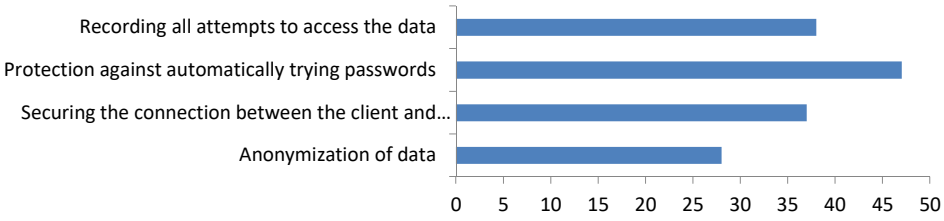
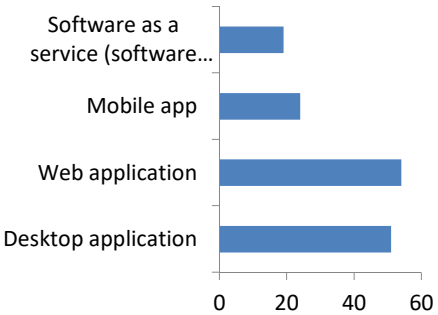
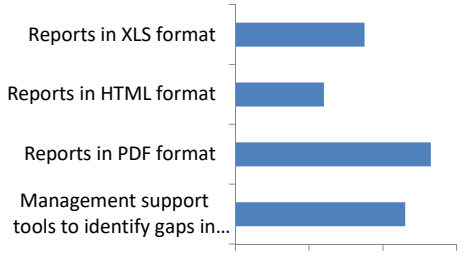
What is the importance of the following security measures?



What type should be the documentation software?



What modern reporting and management tools should be available to the user?



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Requirements

- Heterogeneous requirements
- Important for everyone:
  - Web application software
  - Keeping track of material and storage
  - Adding fields by user
  - Security and logging of users actions

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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

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Quick feedback

http://94.26.59.52/index.php/686548

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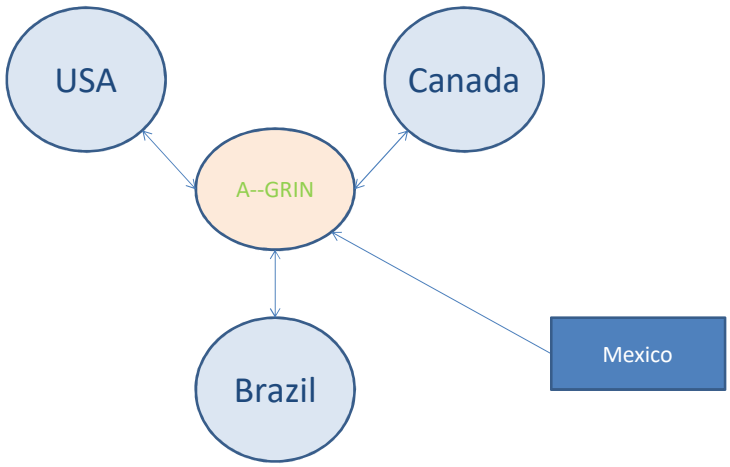
An example - Animal-GRIN



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Content

- Sample data
- Pedigree data
- Phenotypic data
- Breeding values
- Genomic data
- Private and public data

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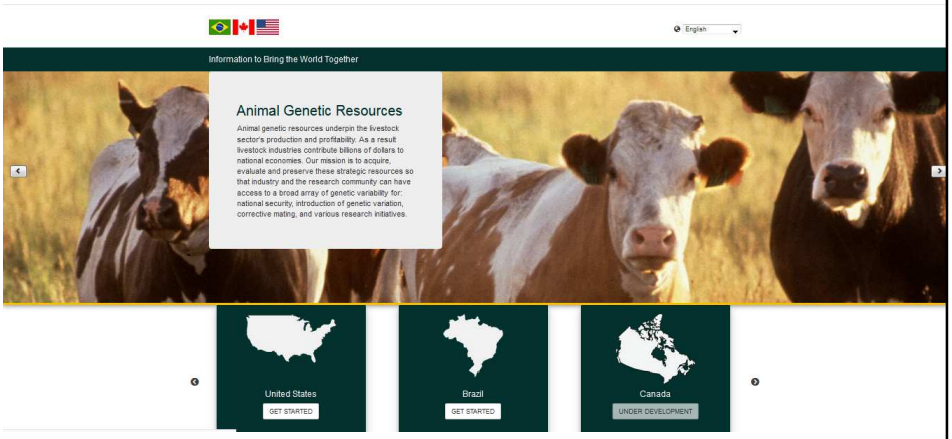
Website for the public data



https://agrin.ars.usda.gov/database_collaboration_page_dev

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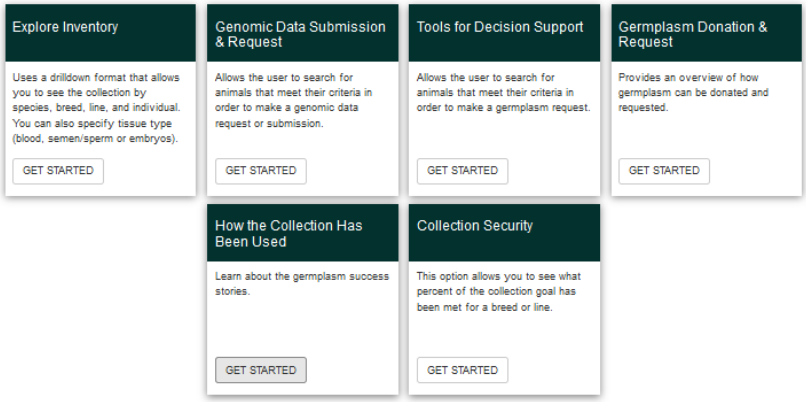
Website functionality



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Organization

- Each full member country provides:
  - Full time developer
  - Subject experts
  - Local installation
  - Funds for annual meetings of the teams
- All changes in the core code:
  - Have to be approved by all members
  - Implemented for all members
- Non-full members (Mexico)
  - Allowed to use the infrastructure for entering data
  - Have no vote
  - Have to provide funds in case of extra development

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Options for the future in Europe

- No common action
- Common action for groups of similar countries
- Common action for all EUGENA members
- Common action for all ERFP members

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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

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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

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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).

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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.

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What is your feeling about these options?

DISCUSSION

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