CryoWEB2.0 Survey Results

ERFP Ad hoc action meeting

11.03.2020

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

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

25 responses evaluated

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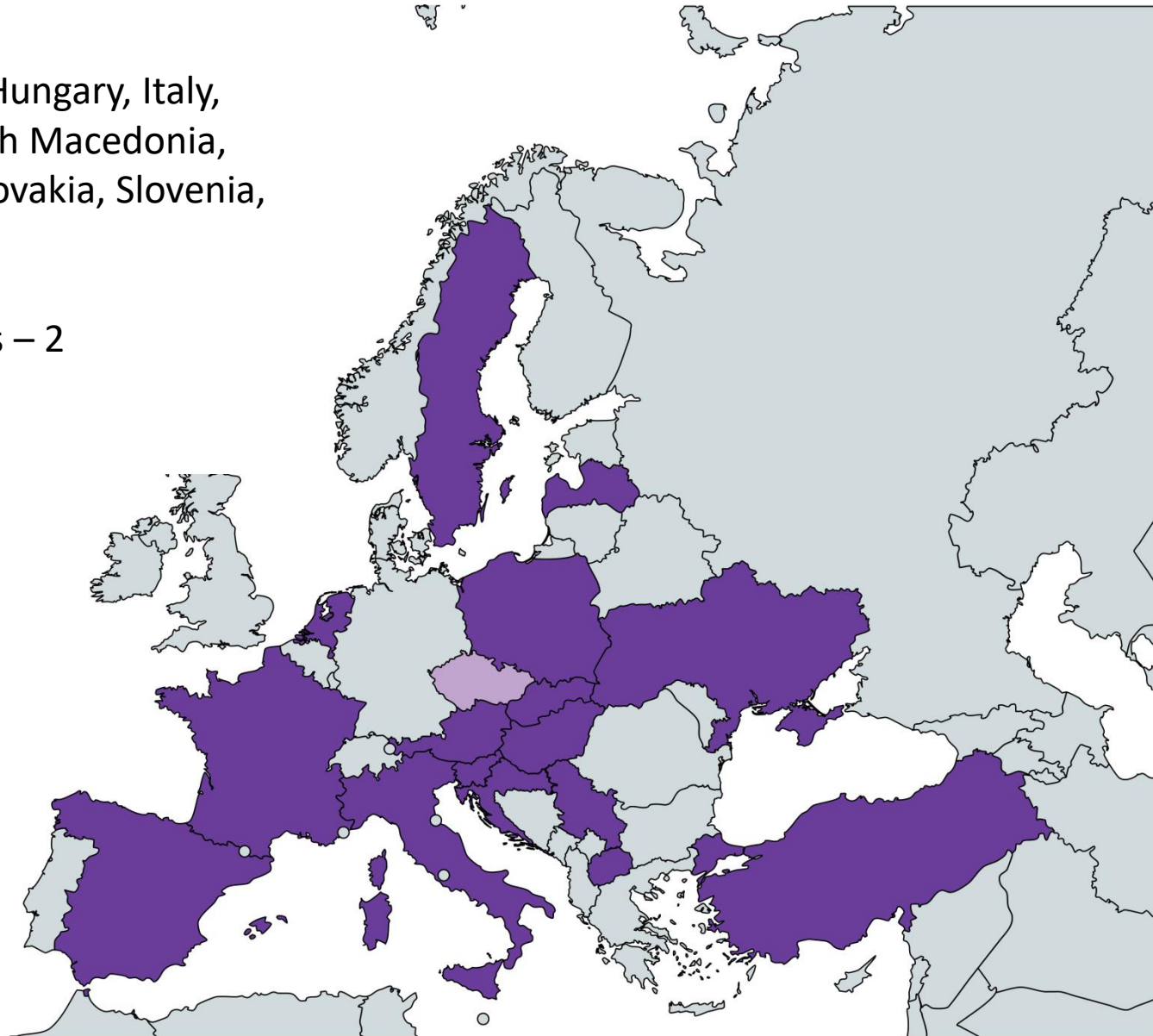

- In development
- Operational
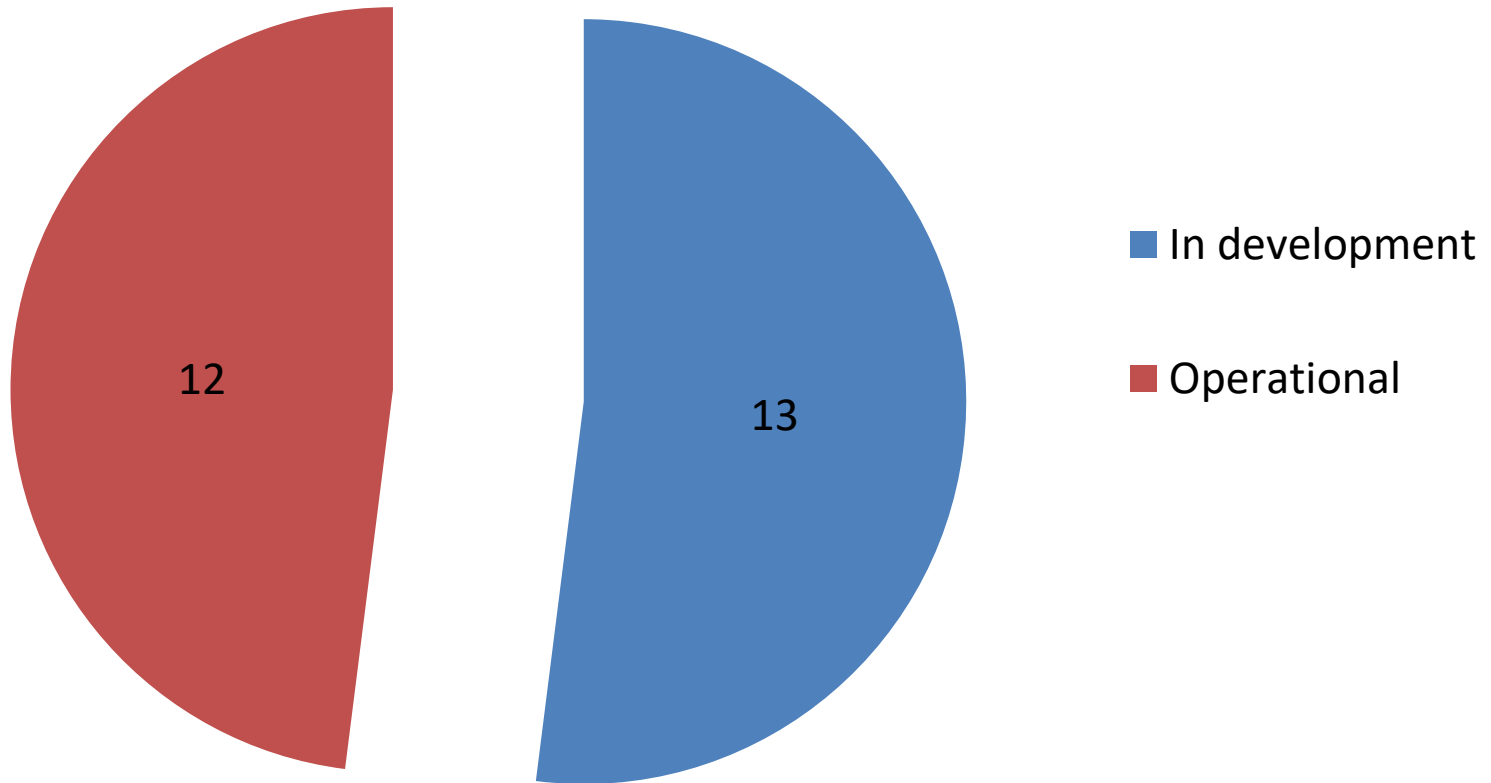
Distribution of responses

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

Switzerland , Netherlands – 2

Spain - 6

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SETUP AND DOCUMENTATION

Respondents grouped by number of breeds

Group A – 2 gene banks

- Breeds>140
- Species>10
- Donors>7000
- Samples>300000

Group B – 5 gene banks

- Breeds 30-55
- Species 5-8
- Donors 400-4000
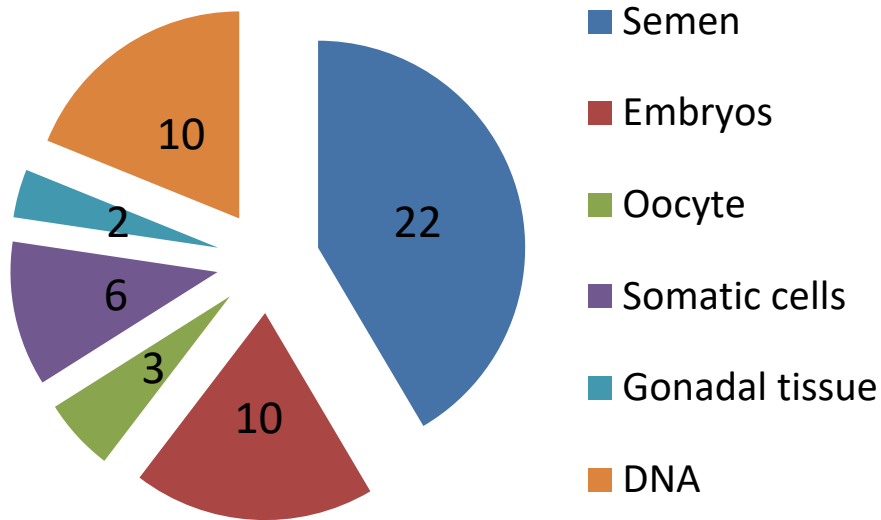- Samples 73000-205000

Group C – 7 gene banks

- Breeds 10-20
- Species 2-7
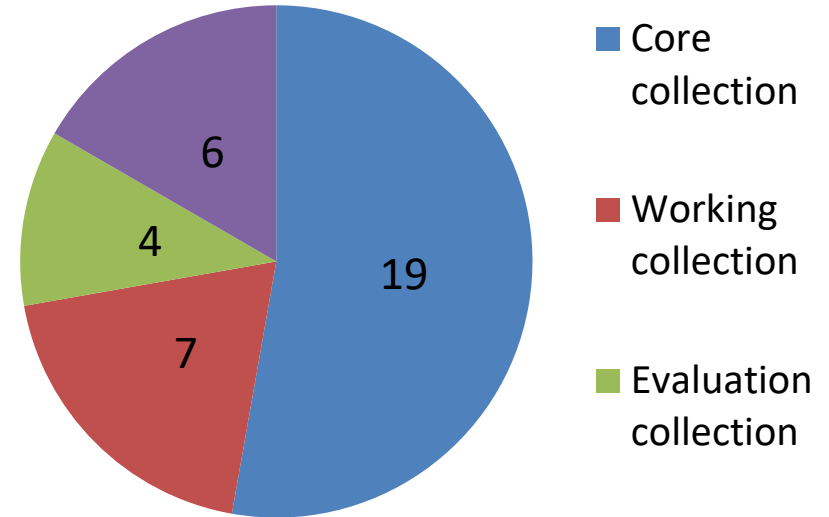- Donors ?-140
- Samples 250-60000

Group D – 11 gene banks

- Breeds 2-9
- Species 1-6
- Donors 20-1600
- Samples ?-52000

What type of material is stored in the gene bank?

- Semen — 22
- Embryos — 10
- Oocyte — 3
- Somatic cells — 6
- Gonadal tissue — 2
- DNA — 10

Type of collections

- Core collection — 19
- Working collection — 7
- Evaluation collection — 4
- 6

What is the institution managing the national gene bank?

- Public body — 17
- Public-Private cooperation — 7
- Other — 1
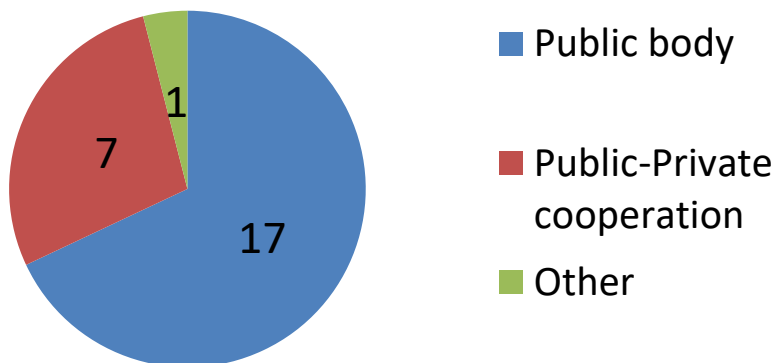
How is the gene bank managed?

- Centralized management by one institution — 18
- Distributed management across institutions/no — 4
- Other — 3

8
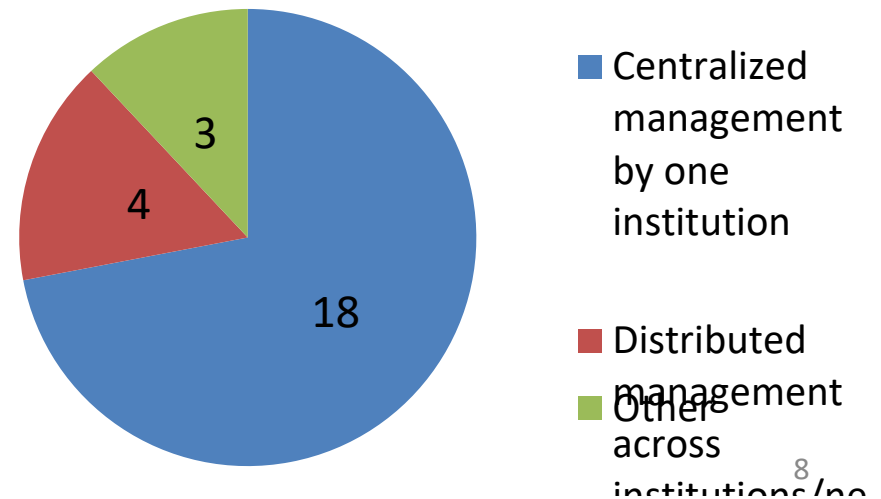
Persons employed by the national gene bank

- 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

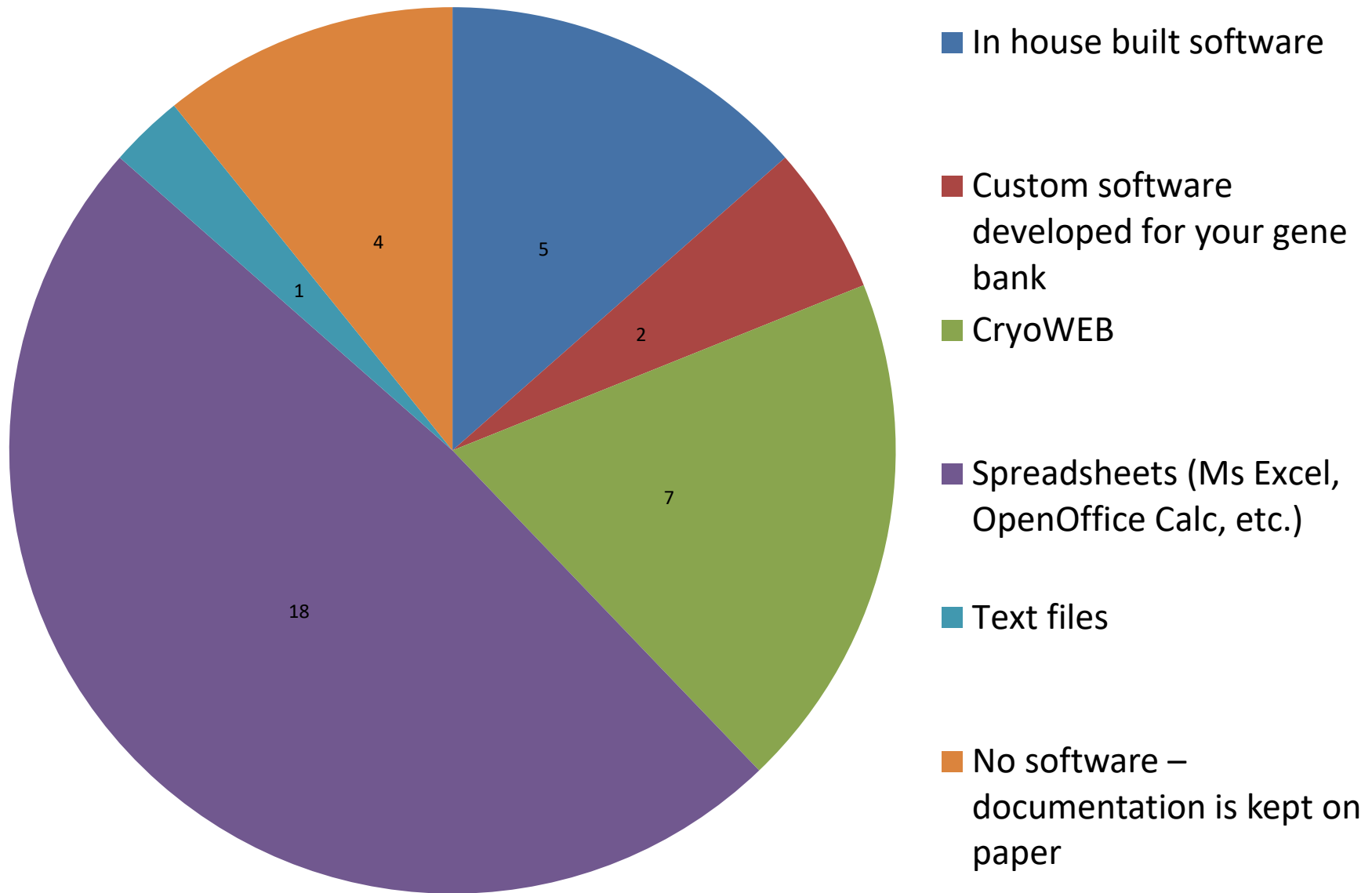# Information recorded

- 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

What kind of software are you using for documentation of the gene bank?

- 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

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

DOCUMENTATION SOFTWARE
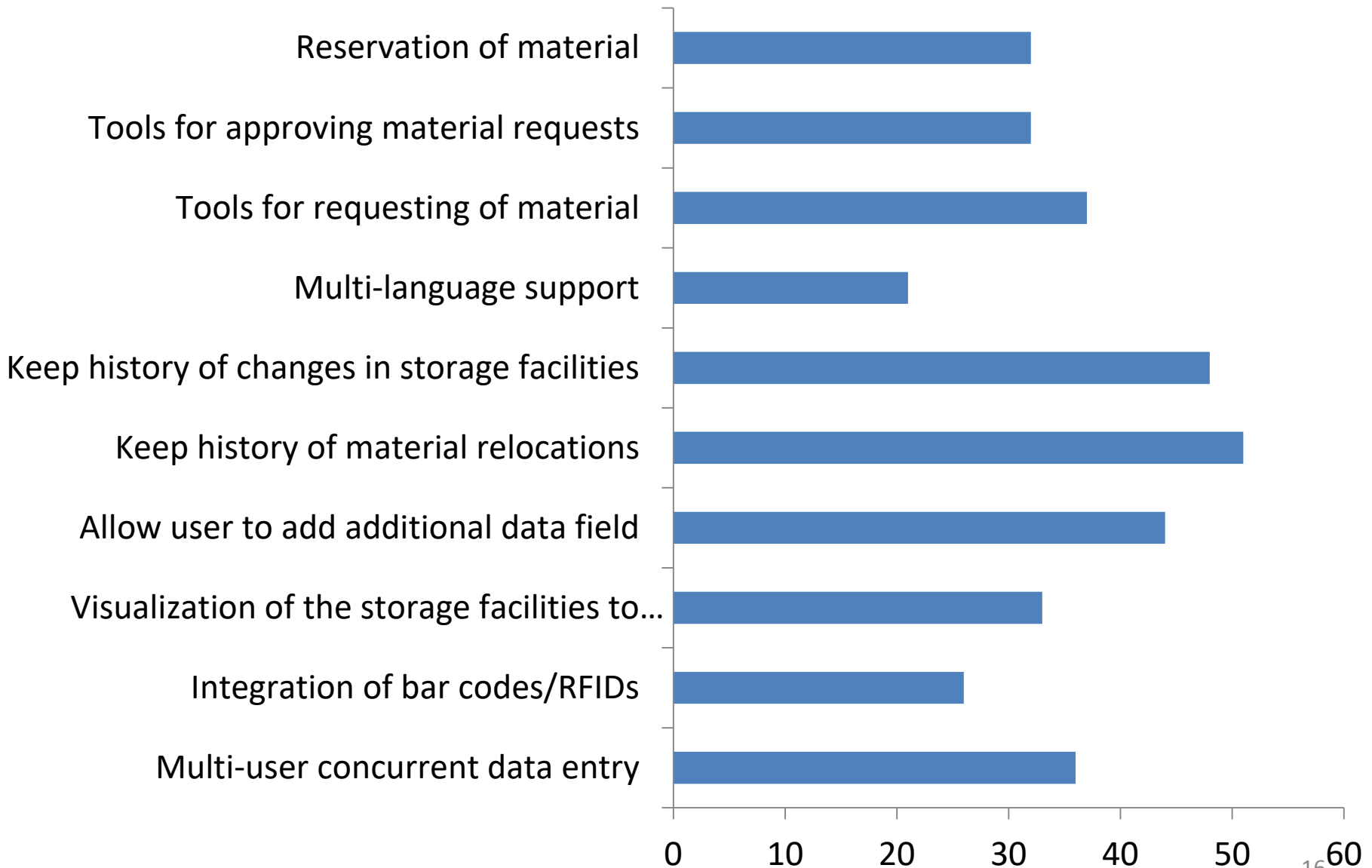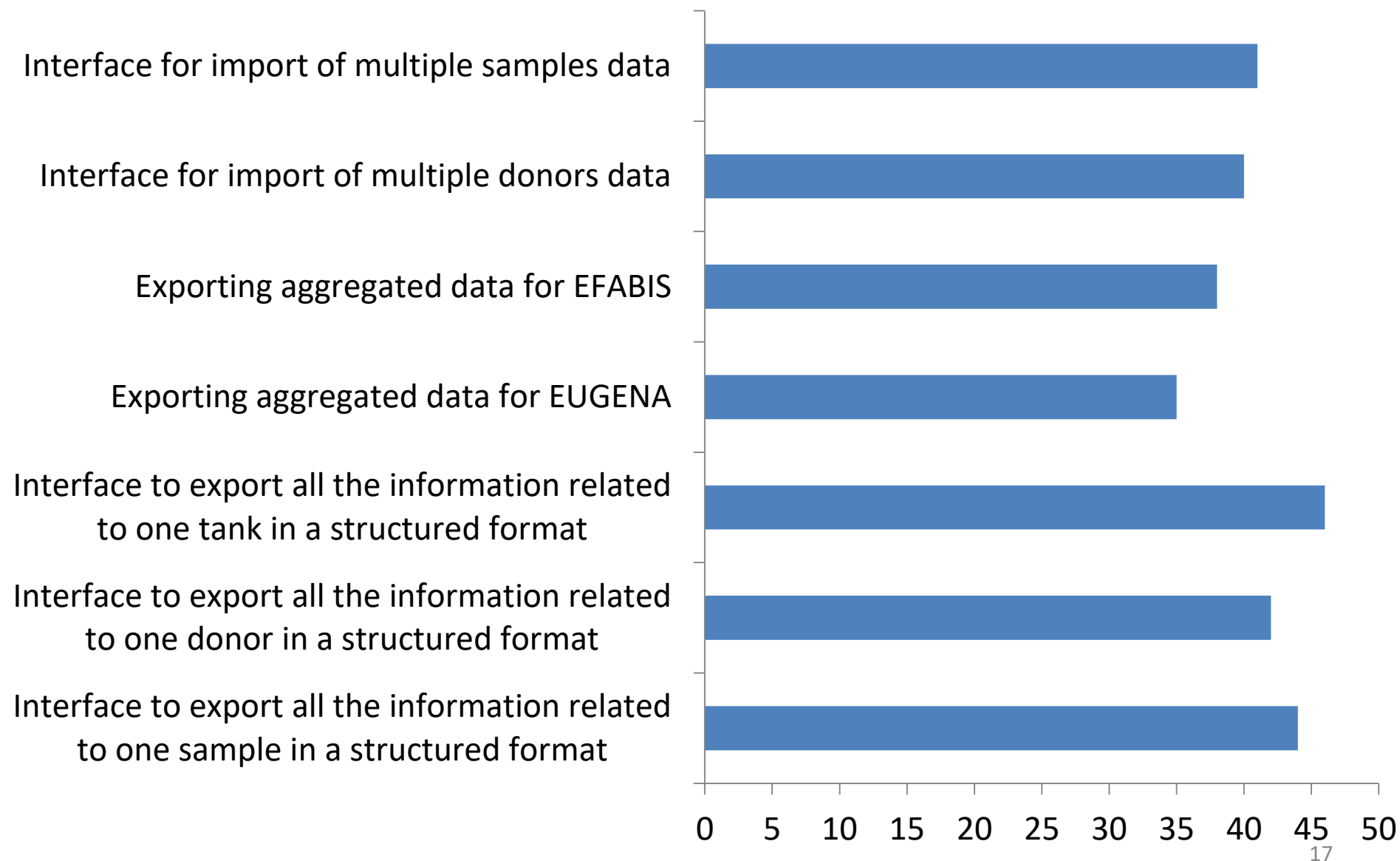
Documentation software

- 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 own resources for maintenance, hosting and help desk
- Limited export functionality
- Data has been backed up in most cases

REQUIREMENTS

What is your opinion about the importance of the following software functionality?

Horizontal bar chart with the following categories and approximate values:

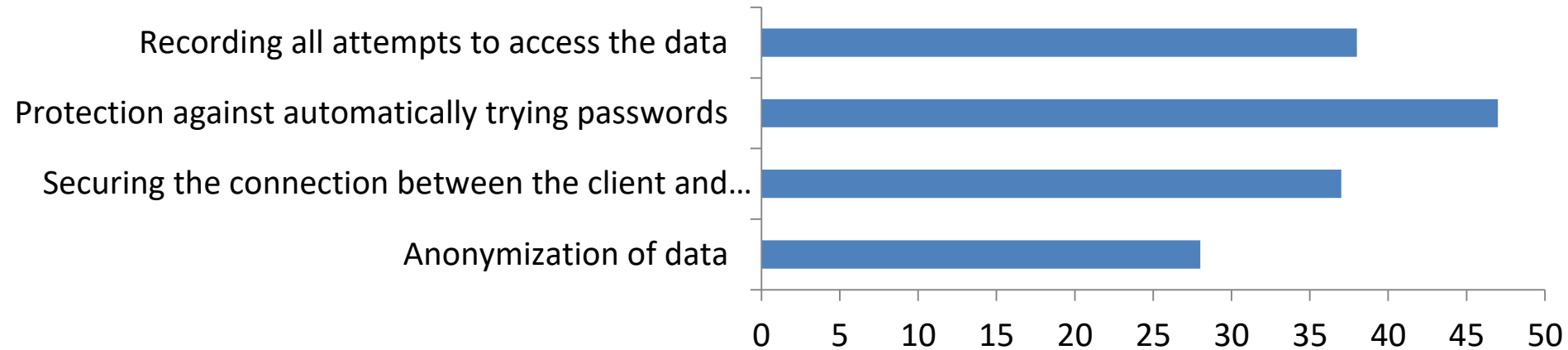| Functionality	Value
Reservation of material	32
Tools for approving material requests	32
Tools for requesting of material	37
Multi-language support	21
Keep history of changes in storage facilities	48
Keep history of material relocations	51
Allow user to add additional data field	44
Visualization of the storage facilities to...	33
Integration of bar codes/RFIDs	26
Multi-user concurrent data entry	36

X-axis: 0, 10, 20, 30, 40, 50, 60

What is your opinion about the importance of the following data exchange options?
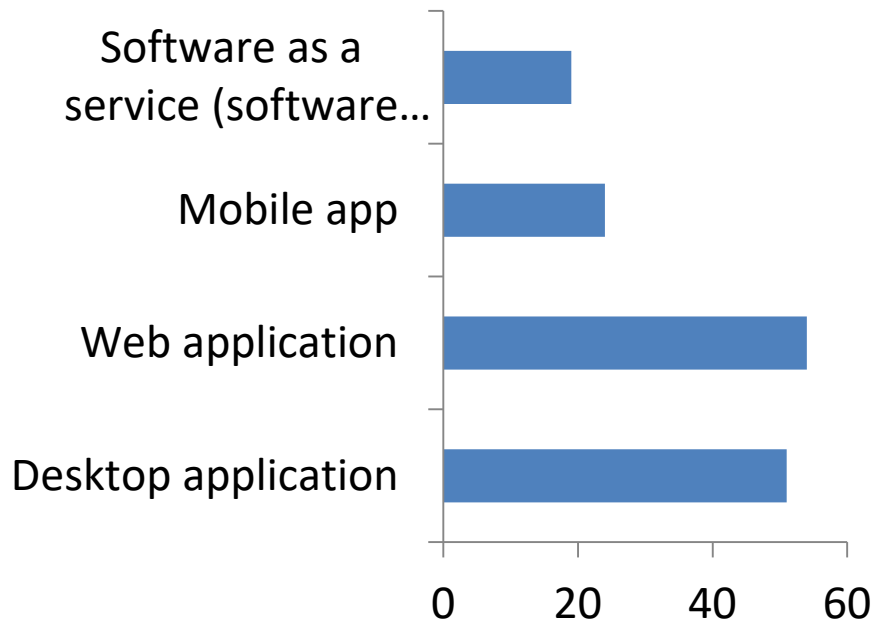
Wish list

- 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)
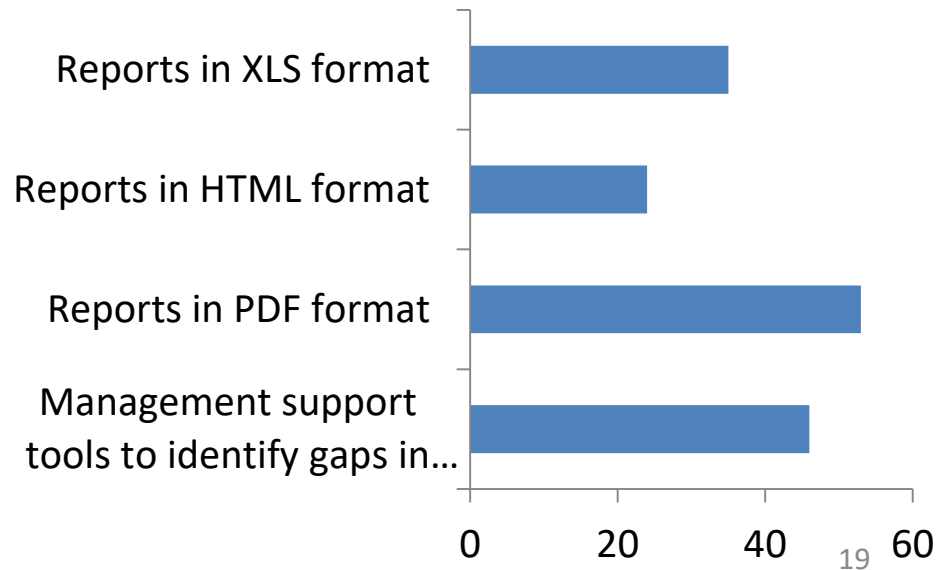
What is the importance of the following security measures?

Category	Value
Recording all attempts to access the data	~38
Protection against automatically trying passwords	~47
Securing the connection between the client and…	~37
Anonymization of data	~28

What type should be the documentation software?

Category	Value
Software as a service (software…	~19
Mobile app	~24
Web application	~54
Desktop application	~51

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

Category	Value
Reports in XLS format	~35
Reports in HTML format	~24
Reports in PDF format	~52
Management support tools to identify gaps in…	~47

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

Options for the software - modules

Access control

Journal logging

Passport donor data

Users management

Storage management

Data export

Basic samples management

Core modules

Data publishing

Genotypic data

Phenotypic data

Extensions

Data exchange

Samples quality management

21
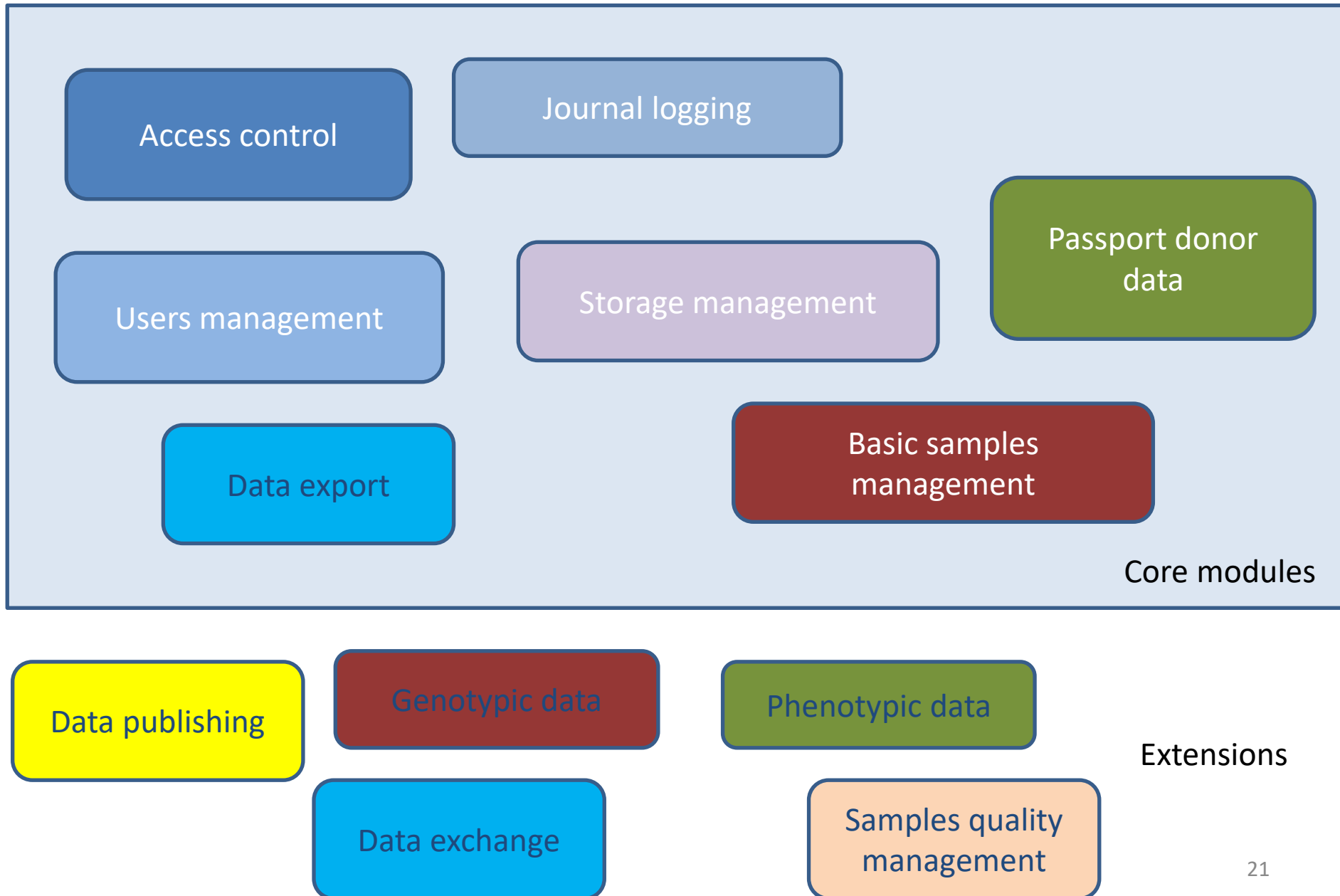
Options for development – collaborative team

Mode of operation

- Each gene bank provides a developer to form a team for the development of new software
- The team develops the common software
- The appointed developer is programming also specific extensions required by the appointing gene bank

Costs

- Programmer costs
- Communication costs – collaborative meetings

Benefits

- IT expertise with each gene bank
- Large team can train replacement developers

Options for maintenance – separate installations vs cloud

Mode of operation - local

- Each gene bank maintains its own installation

Costs

- Hosting
- Maintenance of the software

Mode of operation - cloud

- Software as a service – maintained externally

Costs

- Annual fee for usage of the software