

## Annex 12:

### Heritage Sheep –WP5: Data Base Development, Testing and Validation

#### Desktop database Application

Microsoft Access was selected in order to build the relational data management system (RDBMS) used for the heritage sheep project (*table 1*).

This is a renowned application, with known performance, friendly user graphical user interface (GUI) and it is suitable for the amount of data of the heritage sheep project.

Furthermore, this application can be easily upgraded in case additional data will exist, to different RDBMS such SQL and XML outputs. The power of Visual Basic Applications (VBA) is also recognized for the development of professional programs in Access. The above are fully harmonized with the .NET platform used for the web site and GIS project development.

**Table 1: Properties of the Developed Relational Data Base Management**

AccessVersion:	09.50	Build:	814
CheckTruncatedNumFields:		1	CollatingOrder:
General			
NavPane Category:	1	NavPane Closed:	0
NavPane Sort By:	1	NavPane View By:	0
NavPane Width:	334	ProjVer:	35
QueryTimeout:	60	RecordsAffected:	0
Transactions:	True	Updatable:	True
Version:	4.0		

#### Design of the Database

The design of the database has been developed in order to fulfil the objectives of the project and facilitate the work of the partners during the development phase (entering data, testing) and finally the potential users.

The tables of the database and its relationships were developed considering the data of the questionnaire (WP1). The data type of the fields is fully harmonized with the questionnaire fields and the same concept was kept for grouping the tables. The field breed\_name was the first primary key to the database and according to this the relationships between tables were created. All tables incorporate this field and a special validation rule was created which is explained below (*table2*).

The forms for data input were formed and queries regarding the needs of the potential users were generated.

**Table 2: Database Tables Relationships and its Attributes**

<b>BREEDSCryopreservation</b>			
	<b>BREEDS</b>		<b>Cryopreservation</b>
	BREED_NAME	1	BREED_NAME
Attributes:			Enforced; Cascade Updates
RelationshipType:			One-To-Many
<b>BREEDSFactors_effecting_sheep_numbers_1</b>			
	<b>BREEDS</b>		<b>Factors_effecting_sheep</b>
	BREED_NAME	1	1 BREED_NAME
Attributes:			Unique; Enforced; Cascade Updates
RelationshipType:			One-To-One
<b>BREEDSFactors_effecting_sheep_numbers_2</b>			
	<b>BREEDS</b>		<b>Factors_effecting_sheep</b>

BREED_NAME	1	1	BREED_NAME
Attributes:	Unique; Enforced; Cascade Updates		
RelationshipType:	One-To-One		
<b>BREEDSFactors_effecting_sheep_numbers_2</b>			
<b>BREEDS</b>			<b>Factors_effecting_sheep</b>
COUNTRY_NAME			COUNTRY_NAME
Attributes:	Not Enforced		
RelationshipType:	Indeterminate		
<b>BREEDSGeneral_Description</b>			
<b>BREEDS</b>			<b>General_Description</b>
BREED_NAME	1	1	BREED_NAME
Attributes:	Unique; Enforced; Cascade Updates		
RelationshipType:	One-To-One		
<b>BREEDSOptions</b>			
<b>BREEDS</b>			<b>Options</b>
BREED_NAME	1	1	BREED_NAME
Attributes:	Unique; Enforced; Cascade Updates		
RelationshipType:	One-To-One		
<b>BREEDSValues_1</b>			
<b>BREEDS</b>			<b>Values_1</b>
BREED_NAME	1	1	BREED_NAME
Attributes:	Unique; Enforced; Cascade Updates		
RelationshipType:	One-To-One		
<b>BREEDSValues_2</b>			
<b>BREEDS</b>			<b>Values_2</b>
BREED_NAME	1	1	BREED_NAME
Attributes:	Unique; Enforced; Cascade Updates		
RelationshipType:	One-To-One		
<b>COUNTRIESBREEDS</b>			
<b>COUNTRIES</b>			<b>BREEDS</b>
COUNTRY_NAME			COUNTRY_NAME
Attributes:	Not Enforced		
RelationshipType:	Indeterminate		
<b>cryopreservation_countryBREEDS</b>			
<b>cryopreservation_country</b>			<b>BREEDS</b>
COUNTRY_NAME			COUNTRY_NAME
Attributes:	Not Enforced		
RelationshipType:	One-To-Many		
<b>BreedsMembers_sheep</b>			
<b>Breeds</b>			<b>Members_sheep</b>
BREED_NAME			BREED_NAME
Attributes:	Not Enforced		
RelationshipType:	One-To-Many		

Following is the table regarding the developed database users' permissions

**Table 3: Database Permissions**

<b><u>User Permissions</u></b>	
admin	Read Permissions; Set Permissions, Open/Run; Open Exclusive
<b><u>Group Permissions</u></b>	
Admins	Read Permissions; Set PermissionsOpen/Run; Open Exclusive
Users	Open/Run; Open Exclusive

### **Database Test and Validation**

After completing the design of the database, the database was tested by using Microsoft Access analysis tools related with the general validation and performance, the tables, the forms and their relationships. Also Validation tools were used to test the data types, the fields' attributes and field indexes. Demo data were used in the validation stage.

Once the database was developed to the stage its b-version the partners were asked to test it before proceed to entering their country data.

The rules included in the database are listed below:

The Primary key field (breed\_name) was set as a list box which provides its data from a separate table in order to avoid input and spelling mistakes. Also only pre-registered breeds can be filled in the database tables.

The same idea was kept in the fields of the database with scores from 1 to 5. List boxes were created with the options from 1 to 5 for data entry. Only fields regarding comments are free of restrict validate rules. Fields regarding percentages, or numbers, are using input masks.

The relationships of the tables are one to one or one to many, depending on the data grouping and the queries needed. For these relationships validation and integrity rules were activated. No data from a table can be erased if there is information to any table for any breed (*table 2*).

In conclusion validation rules were created not only for the safety of the data but also for the facilitation of the data input.

After this stage was completed by taking into consideration the feedback of the users, the final version has been given to the users for entering their data.