FABISnet – A network of farm animal biodiversity databases

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Abstract: A network of WEB based databases has been created in the EU project "EFABIS – a European Farm Animal Biodiversity Information System" for the recording and dissemination of biodiversity data of breeds in animal agriculture. It integrates the historical database from the European Association of Animal Sciences (EAAP) and the world wide DAD-IS system of FAO in Rome. Its outstanding features are an automatic synchronization of data records across the whole hierarchy at the global (FAO), regional (EAAP) and country level. Furthermore, a generalized strategy has been developed for translation of content and interface into any language in the world using UTF8 encoding for the presentation of any character set like Latin, Cyrillic, Chinese and Arabic. FABISnet is available as Open Source software.

1 Introduction

Historically, two databases were developed, for the purpose of management of animal genetic resources in the Europe. As one of the first organizations the European Association of Animal Production (EAAP) developed a database to monitor the large variety of European Breeds, making this information available through the Internet [SB93]. This comprised general data describing breeds (textual and numeric) as well as population sizes over the time. On its basis – both in terms of structure and content - the Animal Genetic Resources Group at FAO in Rome set off a new development for its Domestic Animal Diversity Information System (DAD-IS), which since then has been developed into a database with a world wide coverage of breeds.

In the EFABIS project of the European Union under the 5th framework a merge of these two incompatible systems, put them on a new software footing under the Open Source Model, adding new functionality and opening the road for further development.

2 FABISnet - design objectives

Network structure (Topology)
The EFABIS project treats countries as the smallest unit, supporting aggregation at a regional level – like the European database with the final aggregation at the worldwide global level at FAO. To this effect, EFABIS consists of a network of countries' databases together with regional (EAAP) and global database (FAO see Fig. 1). Multiple databases can automatically exchange their content and thereby synchronize the content. All databases are accessible through the Internet using a standard web browser. This covers data updates for authorized and browsing for anonymous users.

Localization of interface
Two aspects of the web interface can be localized. First, translation of all labels allows countries to create an own EFABIS web site, where the interface is displayed in the local language and character set e.g. Latin and Cyrillic. Second, the web interface can also be customized by providing own graphics and color layout to underline the ownership of AnGR database.

Localization of data content
All breed descriptions can be entered in the local language. Later on they can be translated into protocol language (one of official languages established for communication with higher levels) using the tools provided by FABISnet. Breed descriptions in any of the protocol language will be automatically uploaded to the higher levels, thereby making the information globally available.

This hierarchy of the network (country, regional and global level) is also reflected by a hierarchy of content: the standard set of fields that the FAO database contains is also present at the regional (EU) and at the national level. There are some fields that are relevant only for a certain region and finally some that exist only in a given country. The synchronization protocol allows a synchronization granularity down to the field level with records, thereby accommodating differential data structures in the network.

3 FABISnet installations

Within the EFABIS project three operational databases have been created. These are:
1. the FAO DAD-IS website at http://www.fao.org/dad-is/
2. the EAAP website (currently) at http://efabis-eaap.tzv.fal.de
3. the Polish National database at http://efabis.nriap.pl

EAAP and FAO have the same public content, which is kept up to date through synchronization, while he Polish database also has Polish specificities which is not synchronized and therefore only available on the Polish web site.

4 Options for countries to join the network

Given the hierarchy of databases, NC have a number of options available for their own data entry.

Option 1: If a country wants to enter data with the minimum effort they can either get a login at the FAO or the EAAP site. For European countries this should be the EAAP database. But technically, either the FAO or the EAAP site is possible. If data is entered at the EAAP site, the interface will be in English only, and textual data will have to be entered in English. If, on the other side, data entry is done at the FAO site, interfaces will be available in any of the 3 official languages, and data can also be entered in any of the official languages (see Fig. 1 O1). It is then the responsibility of FAO to organize the translation process to the other official languages. Those translated records are then distributed to the EAAP site through the synchronization mechanism.
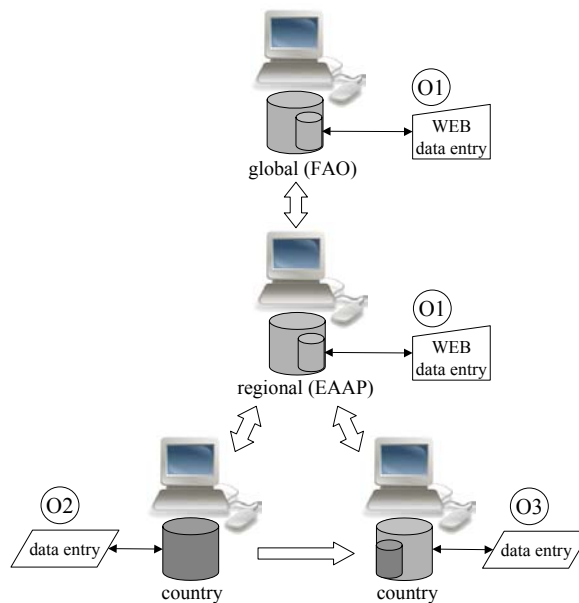

Figure 1. The structure of FABISnet network with options for countries (description in text)

Option 2: A further option for countries will be to setup their own biodiversity web site. However, to be able to do this a few prerequisites need to be met. Firstly, there has to be a web server connected to the Internet. Then the Web server and the EFABIS software need to be configured together with the operating system. After the interface has been translated, and the layout localized as mentioned above, countries can start entering and browsing their own data through a country genetic resources web site (see Fig. 1 O2).

Option 3: The third option is an extension of the second one. A country can also – through synchronization with an upper level - download all public data from other countries into their own database. This allows all user accessing the country database to

browse imported records of the other countries through the localized interface (see Fig. 1 O3).

AVAILABILITY

FABISnet installation can be made without any software license cost. APIIS libraries (Gr04), and FABISnet application code are licensed under GPL and thus freely available. Because a FABISnet installation is a complete WEB site its setup is obviously more complex than that of a single program. Interested parties should contact the authors.

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