HIT
Central Database for the
Registration and Tracing of Cattle in Germany

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1. Legal Framework

- according EEC Regulation No. 820/97 member states have to set up a central database till 31.12.1999

- according the German constitution the responsibility for the implementation of all aspects of cattle identification and registration is with the Lander.

2. Preconditions for a central database

Due to decentralised responsibilities there was no unique system for ear tag numbers or farm identification numbers in Germany. The systems used differs from Land to Land. In order to meet the conditions for one central database in Germany set by EEC regulation No. 820/97, the Lander had to agree on certain preconditions and standards within their responsibility.

These core preconditions were:

- A standardised and unique cattle identification numbers (ear tag number)
- A standardised and unique farm identification number (cattle keeper)
- One institution or authority per Land for the issuing and administration of farm ID numbers.
- One institution or authority per Land for the issuing, allocation and administration of cattle ID numbers.

3. Organisational structure and responsibilities

The organisational levels and the responsibilities between the central database (CDB), the Lander authorities , institutions and the cattle keepers is shown in figure 1:
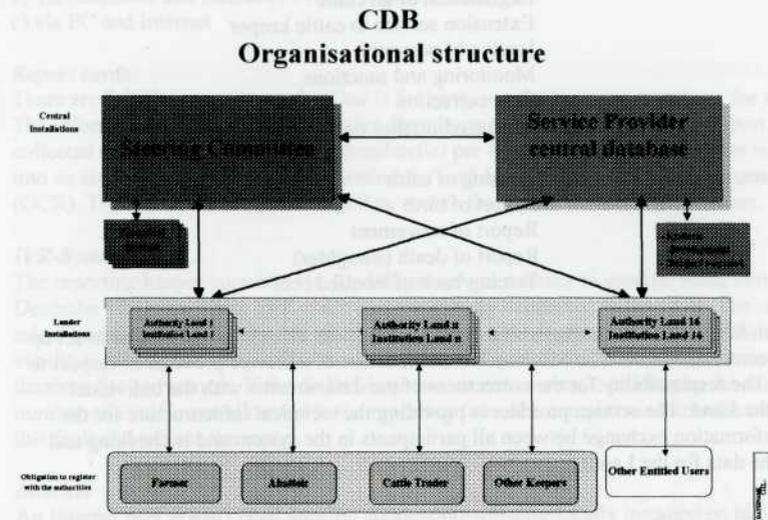

Figure 1. Organisational structure

This organisational structure and specific tasks and responsibilities for the different groups assure that the implementation for the registration remains according our constitution with each Land. Despite the decentralised responsibility one central database for all Lander was realised by agreeing and meeting specific preconditions and the use of modern information technology.

Responsibilities of the involved groups:

Steering committee:
Selection of the service provider „central database"
Setting the framework for the running of the CDB.
Advising the service provider in subject issues
Approval of the IT system
Setting conditions for admission to the system

Service provider central database:
Providing hard- and software for the CDB
Providing tables for the database
Running the CDB
Storing of farm ID numbers and the information behind the number
Storing of birth, movement and slaughter information of an animal
Cost calculation
General user administration

Land (authorities and institution): Providing statistics
Responsible for the implementation of Regulation
820/97
Registration of cattle keepers
Issuing of ear tags
Registration of all cattle
Extension service to cattle keeper
Issuing of passports
Monitoring and sanctions
Data correction
Issuing admission rights for the system

Cattle keepers, other eligible groups:Tagging of cattle
Report of birth
Report of movement
Report of death (slaughter)
Tracing back of labelled beef

The Bavarian Ministry of Food, Agriculture and Forestry was chosen by the Lander to set up and run the central database. The Ministry has the function of a service provider in respect to the Lander. The responsibility for the correctness of the data remains with the individual keeper and the Land. The service provider is providing the technical infrastructure for the electronic information exchange between all participants in the system and is checking and storing of the data for the Lander.

4. Information in the central database

About 15 million cattle in Germany must be registered with
- identification number
- data of birth
- sex
- breed
- Identification No. of dam
- holding were born
- holding were kept and date of movement
- date of slaughter or dead

About 280 000 cattle keepers must be registered with
- an identification number and
- name and address

The cattle keepers come from the following groups:
Farmers
Non agricultural keepers
Cattle traders
Abattoir

According to the group the right of entering information into or getting information out of the central database is clearly defined.

5. Means of information-transfer

There are 3 main ways of information exchange between a keeper and the central database.
a) via report cards for birth, movement and slaughter
b) via telephone and interactive voice response (IVR)
c) via PC and Internet

Report cards
There are 3 different report cards . One is for birth, one for movement and one for slaughter. The information via report card does not directly go to the central database. Report cards are collected in one regional office (Regionalstelle) per Land, where the information is transferred into an electronic information by scanning the card and using optical character recognition (OCR). The electronic information is then sent to the central database via Internet.

IVR-System
The reporting keeper connects via one unique service number to specific voice computers of Deutsche Telekom. These IVR-machines are directly connected to the CDB. The caller is asked questions by the voice computer. He answers not by voice, instead he dials in the data via the numeric phone keys. The received information is directly checked in the central database for correctness. If the dialled in answer is not correct, for example, the ear tag number of a calf is not allocated to the reporting farm, the computer informs the caller about this fault and refuses the report.

Internet
An Internet user doesn't need specific application-software locally installed on his computer. He only needs internet access via a service provider and an internet browser. The web-server of the CDB provides html forms for data gathering and various output-reports. For a user who wants to transfer information for a great number of animals at one time, a specific transfer-utility called "HIT-Batch-Client" is offered and available for free. Only the use of internet offers the possibility to get specific reports or lists about one or more animals from the CDB.

Communication technology

6.1 Communication protocols
For the communication between all clients and the central database only one protocol, "the HIT-protocol", is used, independent of the communication line Telephone, Internet, Intranet and independent of the of client programme (IVR-Client, Web-Client, Batch-Client). The HIT-protocol is a standardised and open protocol for data input and retrieval on the basis of the internet-protocol standard TCP/IP. This standard socket communication allows the communication between different systems using existing hard and software. It is easy to implement and to integrate into existing software and helps to avoid extra costs for the user.

6.2 Communication infrastructure

The use of existing and reliable communication links like public telephone network, Internet and Intranet helps to keep the costs low for all participants and maintain a very high rate of reachability of the central database.
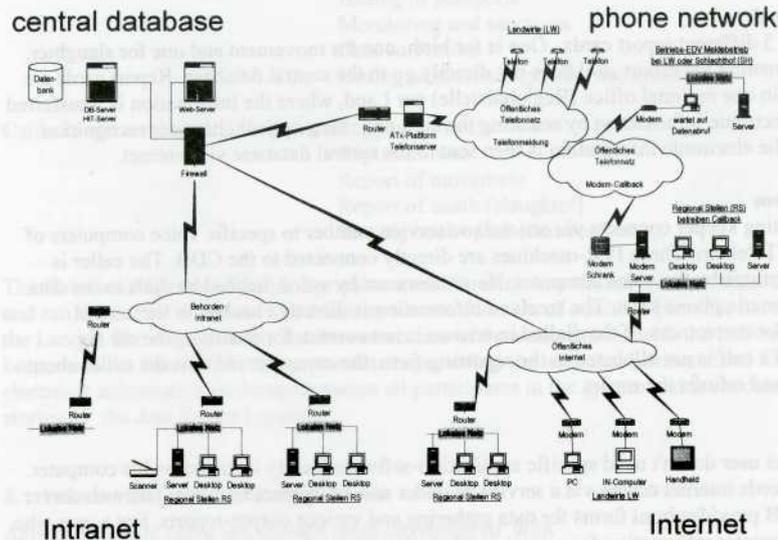

Figure 2. Technical Infrastructure

7. Data Volume

The handling capacity of the central database is based on the total cattle population of about 15 million in Germany, quite precise birth and slaughter numbers and a assumption in movements per year. Taking into account the different figures and the assumption the input into the central database will be in a range above 25.4 million data per year.

The data flow will not be constant during the day, the maximum handling capacity is in the vicinity of about 10 000 single inputs per hour.

Table 1. Estimated Inputs per Year

Birth	5.2 Mio
Movement	15.0 Mio
Slaughter	5.2 Mio
Total	25.4 Mio

8. Use of data

The data in the central database will be used for the following purposes:
- disease control
- identification and tracing of an animal
- localisation of the place of birth
- beef labelling
- EEC premium payments

9. Conclusion

By meeting the essential preconditions, standardised and unique cattle and farm ID numbers in all 16 Lander a central database is established in Germany despite the decentralised responsibilities for the implementation of the EEC regulation No. 820/97. The use of existing infrastructure in communication and of modern IT-technology like inter active voice response and Internet provides a low cost system, easy attainable and reliable system to all involved in the system central database.