Boletín de la Asociación de Geógrafos Españoles N.º 54 - 2010, págs. 435-438
I.S.S.N.: 0212-9426

WORKING METHODOLOGY FOR THE DEVELOPMENT OF THE CATALOGUE OF PUBLIC ROADS IN THE MUNICIPALITY OF BENISSA (ALICANTE)

Guillermo Parra Galant, Joaquín Vizdómine Ortiz, José F. García González, Miguel A. del Amor Saavedra, Cesáreo Bas Vivancos
Departamento de Economía Agroambiental, Ingeniería Cartográfica, Expresión Gráfica en la Ingeniería y Antropología Social.
Universidad Miguel Hernández

I. INTRODUCTION

The field of development of the Geographical Information System (GIS) is Benissa, a very tourist area in the north of Alicante, as the area offers tourism both in mountains and beaches.

In fact, this project arises from the need to organize and classify the public roads in the municipality due to the big impact of tourism and all its implications. The layout of roads in this traditionally agricultural area is essential both for its short and long term development.

Therefore, our objective is that of creating a road catalogue which will include their main features so that it can be used by the different public administrations.

This essay focuses on the methodology we have followed in order to get the necessary information for the preparation of the above mentioned catalogue.

II. BACKGROUND

The cartography used by Benissa City Council when managing roads dates from 1960, and although they also get some support from the Cartographical Valencian Institute (ICV) this cartography shows remarkable differences with the current cadastre.

This results in important problems due to the lack of information updating, and there are frequent nuisances in daily work that derive into loss of efficiency.

III. PROPOSED METHODOLOGY

We suggest the application of a GIS as a solution to the problems that have been exposed in the previous point.

We aim at creating a GIS environment based on free software which includes both administrative and field-obtained data.

The methodology we have followed to generate a GIS of the public roads of the municipality of Benissa was based on the following points:

1. What is the objective?
2. Which initial data are there?
3. How reliable are these initial data?
4. How will we accomplish our objective?

1. What is the objective?

The objective is the implementation of a GIS on the net of rural roads of the municipality of Benissa with alphanumeric database like code, identification, cadastral reference, flasks, etc.

2. Which initial data are there?

– Ortophotography from 2002 and 2005
– Official Digital Cartography
– Cadastre dating from 1960
– Other specific cartography from the area

3. How reliable are the initial data?

Before applying the methodology, we must consider the kind of investigation we are going to carry out. The starting point was the creation of a process to use both the initial and the new data. After these considerations, we devised the following procedure.

Phase 1. SPATIAL ANALYSIS OF INITIAL DATA

We developed a new cartography which shows the essential elements of the catalogue.

The data processing included both an exhaustive analysis of the initial data and also the integration of the data obtained in subsequent field work.

Phase 2. PROCESS OF FIELD DATA COLLECTION

In our first visit to the work field we checked the vertex of the fourth order geodesic net from the CVI and the topographic bases from Benissa City Council. Then, we created new working bases.

Field data collection was initially based on the existing data. The new data were obtained according to the following criteria:

1. Existence of road (not considered if public property)
2. Photographs of singular points
3. Collection of alphanumeric field data

4. With a GPS we proceeded to obtain the road paths and the elements of interest that define the area

As an extra to the data obtained via GPS, we collected some other data with tape measure and took photographs of singular points.

It is extremely important to calculate the drop in roads in this kind of research and its methodology, as well as the collection of data.

Therefore, we calculated the «Z» coordinates in real time based on the IBERGEO 95 geodic model. The GPS data were taken with the aid of stations in Denia and Alcoy (from the ERVA net).

Phase 3. DATA TREATMENT

We made some calculations considering the differences we appreciated during the observation of the ICV points.

Then, we made an alphanumeric correction and exported them to SHP format for their subsequent implementation in a GIS.

IV. RESULTS. SPATIAL ANALYSIS OF FINAL INFORMATION

The aim of this work was to create a reliable road catalogue, so it was essential to collect data and organize them. That is the reason why we tried to devise an updated road management model in three dimensions.

The main problem for the technical services of Benissa City Council was the implementation of data due to the wide variety of formats they managed. Consequently, the information was generated in compatible formats which can be easily converted.

We used open source tools like gvSIG for the storage and visualization of data. Moreover, we envisage to create a geographic data server with which the entities that comprise the system will be open to the public.

Then, we intend to develop some plug-ins about svSIG to carry out different works. This offers a lot of management possibilities like crossed checks with other sources.

V. CONCLUSION

With the help of SIG applications, we achieved valid data exchange, which are compatible with free software programs.

The initial data were adapted and the new data were geo-referentied and associated to our data base.

Through the usage of these applications, we obtained a catalogue of public roads in the area, developing a dynamic system of easy use.