

# The GIS TECHNOLOGY IMPLEMENTATION

## TO THE INVENTORY OF THE PARISH OF GOOD SHEPHERD

### ABSTRACT

GIS IS A USEFUL TOOL FOR GATHERING AND ANALYSING INFORMATION. CEMETERY IS A PLACE WHERE A LOT OF INFORMATION CAN BE FOUND BUT USUALLY THERE IS NO SYSTEM THAT COULD HELP PUT ALL THE INFORMATION TOGETHER. STUDENTS OF AGRICULTURAL UNIVERSITY OF KRAKOW WERE ASKED TO CREATE A DATABASE THAT COULD MAKE THE MANAGEMENT OF THE CEMETERY OF THE PARISH OF GOOD SHEPHERD EASIER. ON THE BASIS OF TOTAL STATION AND GPS MEASUREMENT, THE DATABASE; CONTAINING: NAMES, DATES OF DEATH, THE TYPE OF GRAVE, THE SIZE OF GRAVE ETC.; WAS CREATED. GEOGRAPHIC INFORMATION SYSTEM THAT CAME INTO BEING FACILITATES DECISION MAKING E. G. FINDING PLACE FOR A NEW GRAVE, MANAGING BURIALS ETC.

### KEYWORDS

GIS  
Inventory  
Cemetery  
Database  
Queries

GIS is widely recognized technology and as such it has many applications. Some of the most popular uses are: natural hazards monitoring, transport, emergency management, geology etc. The project, that I am going to describe, focuses on the implementation of the GIS technology to the inventory of the cemetery. As a participant of this enterprise I must say that it was interesting to observe the development of the idea. At the beginning there was only the task of conducting an inventory of the cemetery. The Student Geodetic Association of Agricultural University of Kraków accepted the challenge. However, after that it had to be found out how to tackle it successfully. In the end Monika Giemzik, one of the students involved in the project put forward an idea of creating a GIS. The plan was accepted by our supervisor dr. Zbigniew Siejka. We did a research on the Internet and discovered that similar system already exists and covers all Kraków's state cemeteries but this Internet browser was not very precise, because the graves were not measured. You can find out in which part of cemetery the grave is, but you are not able to get this spot on the map.

The first stage of the project was surveying. The object of our survey was a cemetery of the Parish of Good Shepherd. The cemetery, created in 1923, is

situated in the north part of Kraków, Poland. It covers the area of about 1 ha and it is divided in 18 parts. This study presents only the first part of the cemetery as the whole project is still in progress. In the first part of the cemetery; which was inventoried by Monika Giemzik, Maciej Adamski and Barbara Czesak; there are 121 graves and 254 people buried.

It is important to know how the cemetery is arranged and how every single grave is documented and what changes could be introduced in order to improve the management. We discovered paper documentation which consisted of: cemetery book and parish book. It is not easy to find anything in those papers quickly. It is mostly handwritten, which makes the whole thing even more difficult.

The provost has decided to introduce a new software in the parish recently. It is supposed to help manage the records of the parish. There is 'module cemetery' in the software. A map of cemetery (file extension bmp or jpg) can be attached in the module. There is a possibility to create a database too. The main purpose of this module is to control prolongation fees. Each grave must be prolonged every 20 or 30 years, depending on the type of grave. We decided to present the provost with our idea of 'cemetery software'.

After getting acquainted with the cemetery and its documentation we could start with the project. Inventorying the cemetery was not an easy task. We came across many problems. First of all, each grave had to be described. It had to be decided what type of grave it is. What distinguishes the graves is a basement. If there is a basement, the grave can be called a tomb. If there is no basement, it is a ground grave. Many graves do not have basements, but they do have tombstones, so there is no conspicuous difference between these two types. Each time we could

not recognize the type of the grave we had to ask the gravedigger for help.

Writing down all the names from the tombstones was sometimes also complicated. The names of the persons buried were not always clear. It happened that the writing vanished or some letters just disappeared from the tombstone. It was very difficult to guess the name in such situations. But somehow we felt like Columbus did 400 years ago. We have been discovering the history of the cemetery.

After we managed to write down all the data, an Access database was created. It consists of two tables. First table, named 'grave', contains attributes such as signature, part of the cemetery, type of the grave, picture; the second table 'the dead' features attributes such as: first name, last name, maiden name, nun/monk/priest etc. field, year of death, year of birth, gender. Probably the most interesting attribute is 'nun/monk field'. That is why it needs to be explained. On some tombstones there is only a name and the information that the person was a nun. It is much easier to find 'nun Mary' if there is a possibility to put that piece of information to the query. If only the name 'Mary' was written, too many possible locations would be obtained.

Then the surveying was made. First of all we used GPS technology to set geodetic marks. We got 19 points. Then each grave was measured in four points and 500 picket points were captured. We used Leica TS02 for the survey. After digitalizing the points in Microstation V8, all the graves were drawn. The database containing the full information about each grave was created. All the elements were then connected in the GeoMedia software. We got a GIS which made it possible to find each grave really quickly. The picture shows the cemetery with the geodetic marks marked red and the location of the first part of the cemetery marked green.

The great work has been done. Many graves were measured and still are being measured because the project is in progress. However, the question is how the GIS can be used.



FIGURE 1. Location of the first part of cemetery, marked green

Here are some examples of queries that may be created in GIS since we already know that each ground grave has to be prolonged every 20 years. Here is the example of the query that makes the control over the prolongation easier. All the graves where the people are buried before 1990 are marked green.

It is also important to find out the location of the graves of the same type. The results of the query show all single ground graves.

Sometimes there is a need to find a grave of a specific person. It happens that people are looking for their relatives but they do not always have the full information. This query shows the results of the input: 'Anna, died before 1960'.

As it can be noticed, GIS can significantly support the management of the cemetery. The information which is contained in the GIS can be easily modified and updated. Queries may be created and the results of

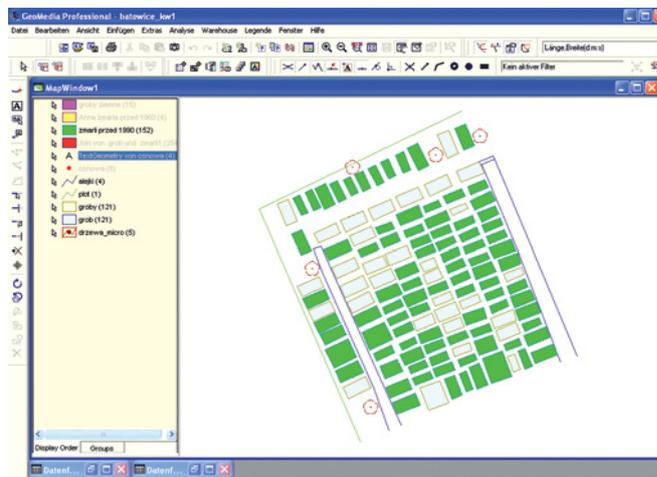


FIGURE 2. Query - burials before 1990

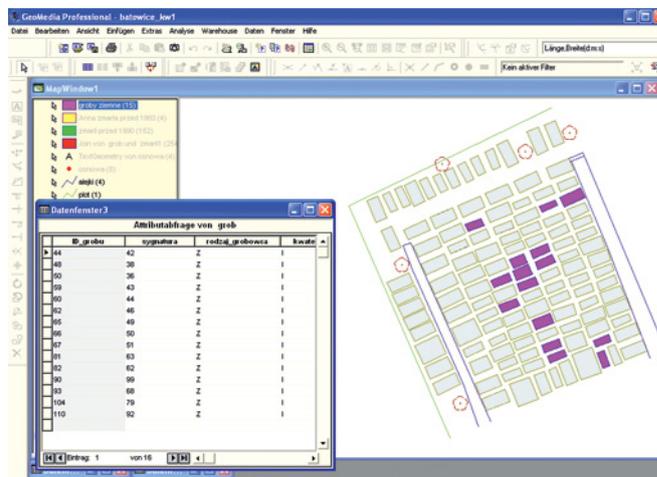


FIGURE 3. Query - single ground graves

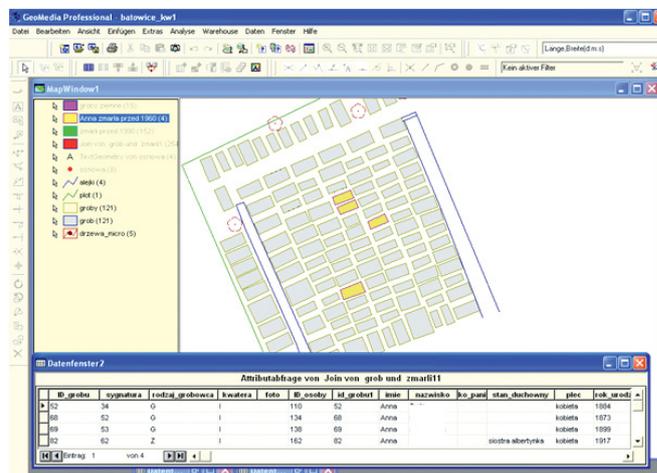


FIGURE 4. Query - 'Anna, died before 1960'

it can be presented graphically. But in spite of many advantages, it requires a short term introductory course for the software user.

We hope that our solution will prove to be efficient and make the management of the cemetery easier. There is still a lot to do and we have to think about solving the problems for the software used in the project which is probably too expensive for this purpose. Some open source substitutes could be applied instead. However, this is the matter of the future. Hopefully we can manage to develop and apply our ideas which will probably prove that the words of Harold Wilson: '... The only human institution which rejects progress is the cemetery' will not be true any more. **E**