



## **LAND INFORMATION SYSTEM – A TOOL TO KEEP THE REGISTRY OF PLANNING PERMISSION. CASE STUDY OF THE SZCZUTOWO COMMUNE**

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### ***Summary***

The article discusses the issue of spatial planning in communes. The opportunities of making spatial databases for the purposes of record of planning permission are presented. The presented solution allows for the collection and processing of spatial data in geographical information systems at the local, regional, and national government level.

The analysis shows the possibilities of creation of database on the example of selected rural commune. This commune has not kept a record of the planning permission in electronic version. The case study used in the research allows presenting the sample spatial database that can be used in the commune management. This is due to the fact that geographical information systems are becoming an increasingly popular tool for the administrative decision-making process in commune offices. These tools allow for easier access to data and faster and multi-faceted use of it in the office work.

An example of the Szczutowo commune shows the possibility of using a spatially referenced data resource in the electronic way. However, it is important that local authorities after hearing about this kind of tool wished to use it in their daily work. The ArcGIS software was used in the presented example, but it can be replaced by open source solutions.

**Key words:** system of spatial planning, land information system, planning permission, INSPIRE.

## INTRODUCTION

The system of spatial planning is a basic element of functioning of territorial units, independently of the country. Polish planning system was formed after the political transformation in 1989. Nowadays this system is being regulated by the Spatial Planning and Land Development Act of 27<sup>th</sup> March 2003 [The Spatial, 2003]. Ordinance of the Minister of Infrastructure supports and supplements this Act.

An important element in the spatial planning at local level is using the geographical information systems. Unfortunately, in Poland it is not a frequent phenomenon. This results from the fact that geographical information systems are being used for promotional purposes of a commune and contain a small amount of information about the land use planning documents. This approach means that the advantages of geographical information systems are not fully exploited by local authorities.

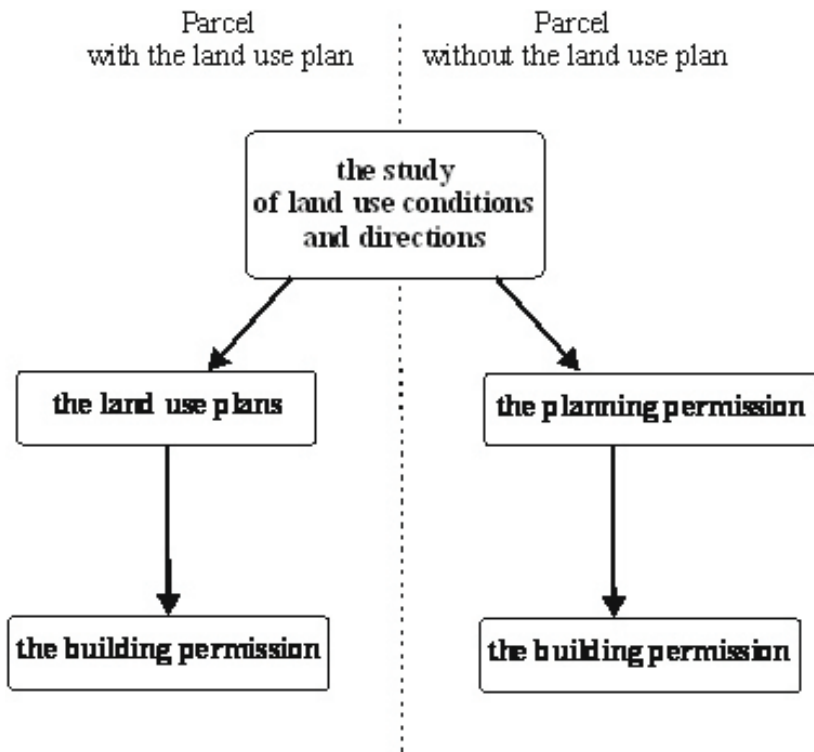
The planning system in Poland involves three competence levels: the state, regional and local level. Commune is the most important level of the spatial planning system in Poland. At this stage there are created the most important land use planning documents. These documents are the study of conditions and directions of spatial planning, local land use plans and planning permissions.

Relationship between the documents of the spatial planning system in Poland shows that it is a coherent system. Theoretical study shows that the spatial planning system is not the ideal system and must be changed in the future. The study of conditions and directions of spatial planning is an obligatory document. This document is used by commune authorities and their subordinate bodies. Local community does not have the obligation to apply the provisions of this document. A land use plan is another document in the commune. This document is made optionally. The land use plan does not have to involve the entire commune area. Land use plans are the most important documents in the spatial planning system despite optionality. They must be respected by all actors in the local community and they constitute the local law.

Zoning approvals are an element of the spatial planning system in Polish communes. There are two types of the zoning approvals:

- planning permission;
- decision on the site location of a public-purpose.

These decisions are given to local space users by the local community leader (*wójt*) or the mayor or president of a town; they are also given for the areas where the land use plan was not put into force. The planning permissions represent about 87% [Local Data Bank, 2013] of the zoning approvals. This index shows that the planning permissions play an important role in the spatial planning system in Poland. The law says that any individual and any entity can get this kind of administrative decision. Applicants applying for planning permission do not need to have ownership of the land.



Source: own work based on The Spatial Planning and Land Development Act of 27<sup>th</sup> March 2003, J.L. 2003 No 80 pos. 717, with subsequent amendments.

Figure 1. The way to get the building permission

An important element in the spatial planning system is the fact that planning permissions become the basis for issuing the building permission. Building permissions are also administrative decisions. These documents are given by the district head (*starosta*). This shows that if the local actors want to build something they must have two kinds of permission from two different levels of administrative division, i.e., commune and district level. That shows that in case of the lack of the land use plan, the time of the implementation of an investment project is longer by reason of the need of getting the planning permission.

Every kind of planning permission is checked. This obligation arises from The Spatial Planning and Land Development Act. Article 67 of the Act indicates the obligation to keep register of the planning permission by the executive authority of the commune. Details of the register are published in the ordinance of the Minister of Infrastructure of 13 May 2004 on a model of the registry of planning permission and a model of the registry of the decision on the site location of a public-purpose [Ordinance of the Minister of Infrastructure, 2004]. Model of registry proposed in this document allows to use it as an electronic registry of planning permissions. For this purpose spreadsheets can be used such as Excel or Open Office Calc. The registry can become an element of the spatial database used in land information systems (LIS). The electronic register of planning permission can be the basis of analysis of spatial development. It has been discussed by the Ministry of Infrastructure recently. The discussion concerned measures and methods that can be used to monitor land use in the community.

Geographical information system is one of the fastest developing areas of information systems. We can observe that after 1990 the curve of geographical information system development exceeded the normal growth of institutional management skills. It should be noted that currently geographical information systems have great potential in excess of the needs of their users. It is called knowledge gap. This shows that the results from the new capabilities of technology growing faster than an organization's ability to use them [Tomlinson, 2007]. One of the areas of use of geographical information systems is the sphere of local government and spatial planning. This technology is particularly important for spatial planning and land use planning in the commune. Geographical information systems can become an element supporting the spatial decision-making. This system can also become an element supporting the registry of zoning approval making.

**Table 1.** Model of the registry of planning permission

No.	Number of permission and date of issue of the document (YYYY MM DD)	Type of investment	Name and address of the applicant	Parcel identification number	Summary of permission	Termination, annulment or changes of permission	Notes
1	2	3	4	5	6	7	8

Source: Ordinance of the Minister of Infrastructure of 13 May 2004 on a model of the registry of building permission and a model of the registry of the decision on the site location of a public-purpose, JL. 2004 No 130 pos. 1385.

Land information systems are particular elements of geographical information systems. The International Federation of Surveyors (FIG) defined LIS as a tool for legal, administrative and economic decision-making and an aid for planning and development. A land information system consists of a database containing spatially referenced land-related data for a defined area and of procedures and techniques for the systematic collection, updating, processing and distribution of the data. The database of a land information system is a uniform spatial referencing system. The database is used to create a relationship between land information systems and other spatial systems [United Nations, 2005].

It allows the spatially referenced data related to spatial planning to be collected, updated, processed and visualized by the local government in geographical information systems. The planning permissions are also in this group of spatial data. This data can be presented using land information system and can be used by the local community. It is important that the regulation [Ordinance of the Minister of Infrastructure, 2004] allows for implementation of the structure of register to land information systems as an element of the database.

The use of databases of planning permission is an important element of planning system in Poland. The authorities of a commune must carry out spatial analysis. It has been written in Article 32 of the Spatial Planning and Land Development Act. The local executive is responsible for carrying out this analysis. These analyses are evaluated by the local legislative and control authority at least

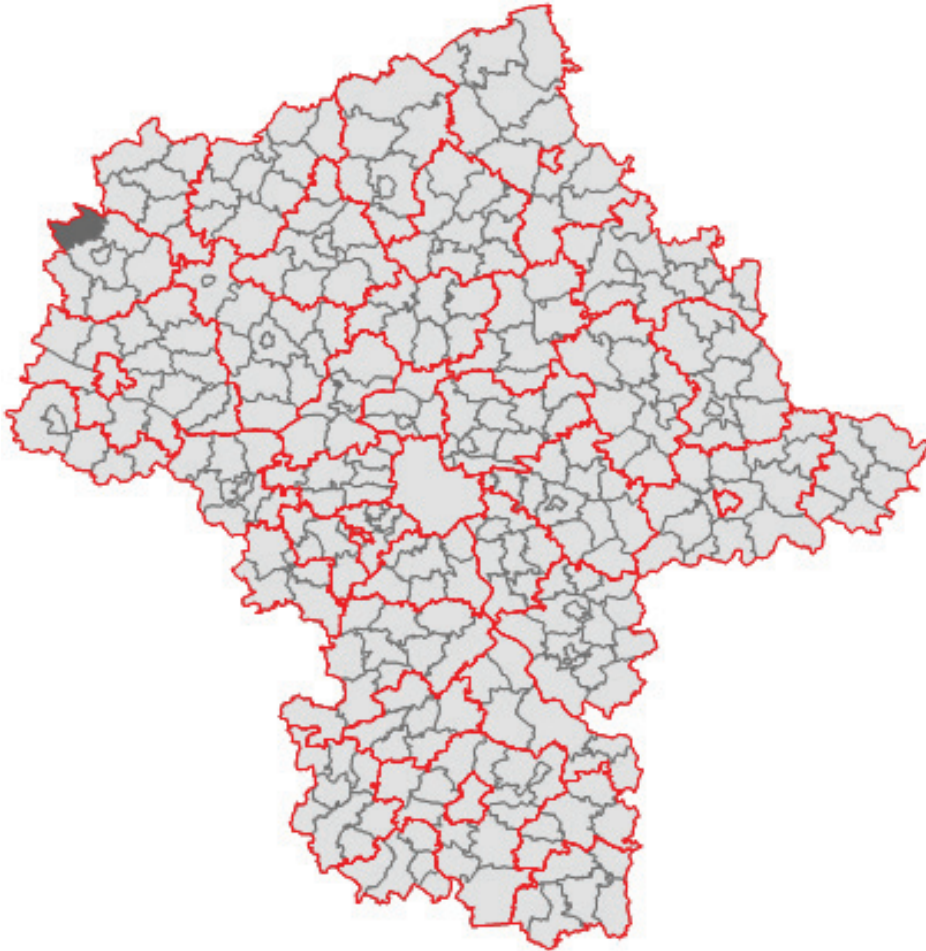
one time in term of office. This means that the electronic database will provide an easier way to present the planning permission at the commune council sessions. Planning permissions are an element used in preparation of land use plans in commune as planning materials.

The use of land information systems in the spatial planning area, particularly in the analysis and presentation of the location of planning permission is indisputable. Land information system helps improving the quality of services and supports the local development. Land information system can be used in many areas of functioning of local government. These areas were indicated in Directive of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) [Directive 2007/2/EC, 2007]. In the Directive it was pointed out that the data basic features must be timeliness, completeness and reliability. This relates to the regional and local administrative division. The area of land use was indicated in Annex III of the INSPIRE Directive.

## **MATERIALS AND METHODS**

The information obtained from the Szczutowo commune (Figure 2) has been used for preparing a case study of land information system with planning permission data. The data came from the years 2006 – 2011. The local authority has issued 322 planning permissions during this period. The data obtained from the local government did not contain information about the name or address of the applicant. It was the difference between the database used in commune and used in preparing land information system. This was due to the provisions of the Personal Data Protection Act [1997]. However, in the case of using such databases in local government office this kind of data can be use.

The Szczutowo commune is rural. It is located in the north-western part of the Mazowieckie voivodeship in the Sierpc district. The commune has 4350 inhabitants. Szczutowo is the commune with the lowest rate of population in the district. The Szczutowo inhabitants constitute 8.24% of the total population of the district which consists of seven communes. Six of these are rural. The town of Sierpc is the seventh commune which is the seat of district government. Szczutowo is also the smallest unit in terms of area. This area is 113 square kilometers, which is 13.26% of district area.



Source: own work

**Figure 2.** Location of the Szczutowo commune in the Mazowieckie voivodeship

The information received from the commune was grouped according to year of application, year of publication, type of planned investment and the nature of the decision (positive/negative) of local authorities. The type of investment was based on the identification of planning permission which could include types such as: housing, multifamily housing, buildings, services and trade. The database allows placing the planning permission on the map basing on the spatial reference defined by the number of the parcel. This was performed using the ESRI ArcInfo software, and using maps in the form of the WMS (Web Map Service) files provided by [geoportal.gov.pl](http://geoportal.gov.pl) belonging to the National Spatial Information Infrastructure (NSII) and supported by the Chief of National Geodetic Office. Other WMS map used in this project was OpenStreetMap-Data.

### **PLANNING PERMISSION DATABASE**

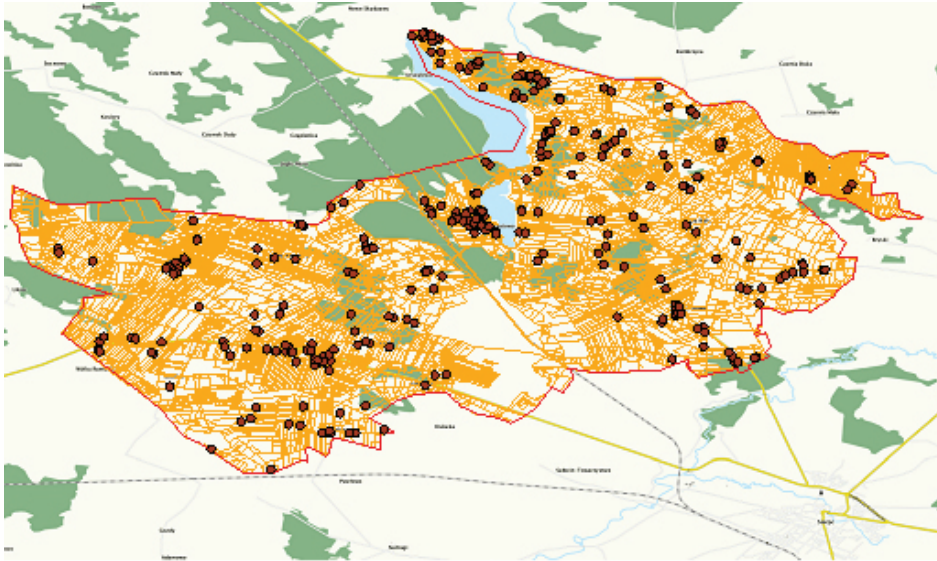
The collected data was introduced into a database created for the research project. The process required a lot of time. The database included 322 planning permissions. The data came from five-year period and had to be introduced in short time. The result of work was a database with spatially referenced data. This data allow for making simple land information system for the Szczutowo commune (Figure 3).

The land information system of Szczutowo consists of four thematic layers. The basis is the OpenStreetMap-Data map. This map can be replaced for topographic map from [geoportal](http://geoportal.gov.pl) supported by the Chief of National Geodetic Office. The other layers were made basing on raster data and register of planning permission. There are layers consisting of the boundaries of the Szczutowo commune, layer of the parcels and point layer of planning permission. Data prepared in this way allow for verification of spatial references of each planning permission and presentation of data about selected permission in the form of identification table (Figure 4)

Spatial databases allow conducting the spatial analysis for various precincts of the commune. An important element of this type of analysis is to identify precincts through the use of registration numbers of parcels, which are related to the number called TERYT. National Register of Territorial Division (TERYT) allows for identification of individual administrative subdivision of the country by a seven-number code. Figure 5 presents the number of parcel using



the TERYT number. This number allows for identification of each commune, precinct and parcel in Poland. The use of this method allows analyzing planning permissions using their spatial locations. This helps in group permission due to location in precincts. These numbers can be found in the parcels layer.

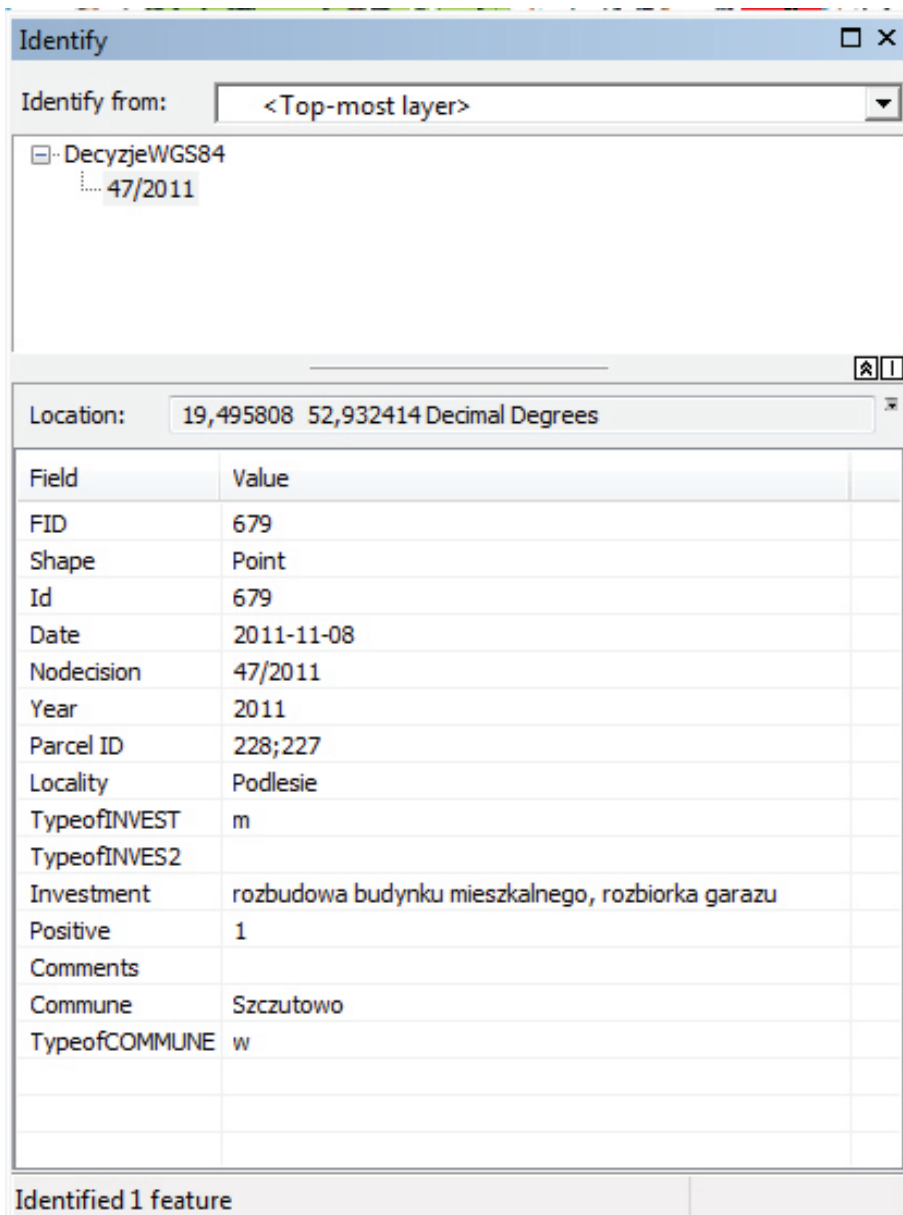


Source: own work with particular use of OpenStreetMap-Data.

**Figure 3.** Szczutowo commune on OpenStreet map

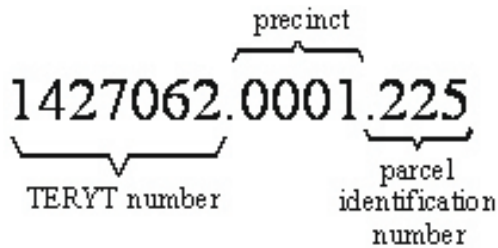
The database of planning permission includes information about: date of decision, year of application and number of decisions. The database contains information about the type of investment and description of type of investment. Types of investments are marked in database as follows:

- m – housing;
- mw – multi-family housing;
- g – utility buildings;
- u – service buildings;
- h – commercial buildings.



Source: own work

**Figure 4.** Identification of object in the land information system of planning permission



Source: own work

**Figure 5.** Elements of the TERYT number

The information collected in the database included name and type of commune, name of precinct and parcel identification number. It was made for the ease use of data collected in the land information system. The character of an administrative decision (1 – positive decision, 0 – negative decision) is also important information contained in the database.

Database with spatially referenced data allows conducting analysis and simulation, and describing data using many different criterions. Such database is also helpful in assessing the quantity of land-use planning in commune. It allows for the preparation of quantity in various configurations. It allows for work with specific groups of planning permission, such as decisions made in one year or relating to one type of investment. The spatial database also allows for data presentation for individual decisions (Figure 4).

An important feature of the land information system is its ability to edit data and monitor the land-use situations in the commune. The commune can use open source software to develop planning permission databases. This element helps to facilitate the office staff work and increase work efficiency.

## CONCLUSIONS

According to Polish law and requirements of the European Union database related with land-use planning and planning permissions will be a necessary element of geoportals. The current state of commune planning permission registry leaves much to be desired due to the fact that many of these registries are collected in paper databases. These kinds of databases are difficult to use in the future.

Digital databases created using common tools like Microsoft Excel allow using data in the future. Digital database can be used to make spatial analyses that can be helpful in the commune land-use planning. Thus it allows for easier management of data and information collected in the local government units.

Elements of digital database will allow for easier management of the commune area. The database will also be an element of support for elimination of corruption in the procedures of issuing planning permissions. Using geoportals to present spatially referenced data will increase the level of public participation in the land-use planning processes. Each of the participating parties will be able to participate in administrative proceedings and will have real-time access to data connected with their planning permission.

Land information system presenting planning permissions provides an easier way to draw up an annual report to the Central Statistical Office and the Ministry of Infrastructure. Digital databases allow for acceleration of reporting processes and improve efficiency of staff offices. Uniform system of collecting data about planning permissions would be the basis for a comprehensive system of information on the regional and national level. This kind of information system would allow for using of databases in the process of spatial planning at the regional and national level. Land information systems allow for their widespread use in the structures of local government. These systems help in implementing of higher quality services in local government.

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