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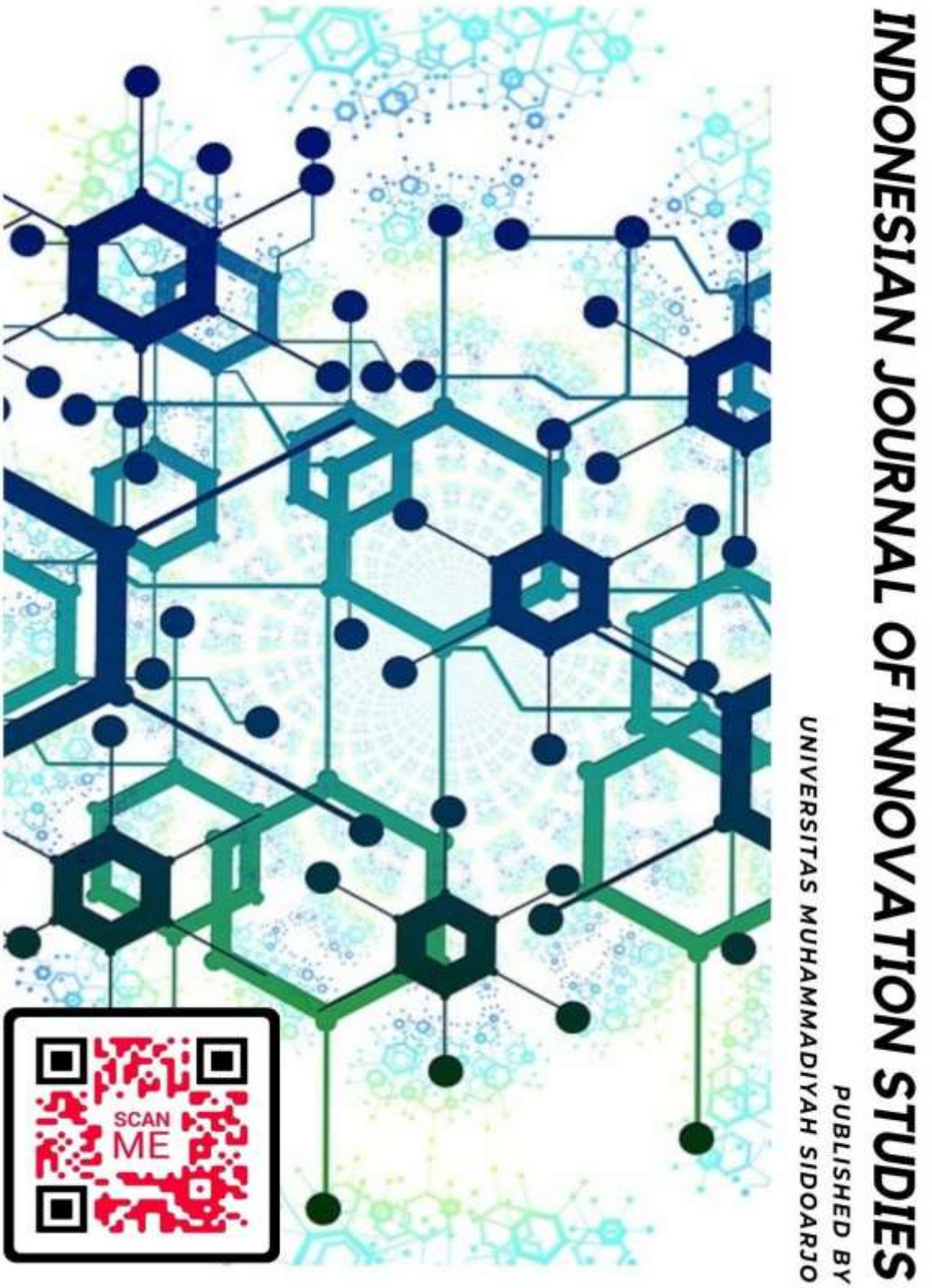

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Use Of Digital Cadastral Map In Land Information Systems.

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Annotation*: This paper presents the problem of cadastral maps. The cadastre that existed until now, consisting of paper maps and land books, is now becoming insufficient. Its shortcomings cause developments leading to its improvement. One way is to create a Land Information System.*

Key words*: digital cadastre, map, land information, gis.*

The relevance and necessity of the topic. The digital cadastral map is the main component of this system. The structure and information content of the map are presented, its differences from analogue maps are shown, and the process of creating a map is described. A digital cadastral map can be the basis for additional thematic layers, consistently turning it into a complex system for managing administrative units. Some examples of such layers and their uses are presented here.

1.In the past, the cadastre was traditionally created for fiscal purposes. Over time, the cadastre began to be used for other purposes. It became the basis for the creation of land registers and at the same time was used to protect property. The first cadastre in Poland was created in the nineteenth century, and the modern Polish cadastre was created in the 1960s. Its basic document is the Land Register. The land book is a list of owners and all land they own. The cadastral map performs only an auxiliary role, showing the spatial structure of objects.

The spatial structure consists of parcel boundaries, land use boundaries, and class boundaries. Each object is described by an identifier. Data derived from the classical model of the land cadastre is currently becoming insufficient. In the course of economic development, the demand for more diverse information becomes more and more urgent. The data stored within traditional cadastral systems do not meet the requirements related to control, management, decision-making, forecasting and development planning. On and more significant problems are:

- low accuracy of geometric data,
- quality and speed of data access,
- map and registry
- lack of supervisory tools.

Another problem is the ability to conduct analyzes and reports. Using a traditional analog register, its owner cannot easily specify such a basic parameter as the number of parcels described.

2. The evolution of these shortcomings has forced the improvement and updating of the cadastre, which can be observed in many countries. These processes cause both model changes

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and changes in the unitary properties of systems. They tend to go in two directions: • extending the classic cadastral model to cover new issues • building land information systems (GIS) and, more generally, geographic information systems (GIS), based to some extent on a cadastre that is already works. The last solution was chosen in Poland.

3. At present, a modern cadastre can be described as a complete and comprehensive inventory of the structure of land ownership throughout the country, including a formal survey of land and buildings (often including apartments) intended primarily to meet fiscal needs. In this system, the boundaries of real estate objects and their constituent plots are established in accordance with the last legally valid ownership right.

documentation supported by geodetic and cartographic documentation of the border. A modern cadastre, fully entered into a computer system, must include real estate data to determine it:

- cadastral identifier and links with other computer systems;
- location;
- border route;
- land use; function or land use; •technical equipment (network connection);
- the purpose of the land specified in the local spatial development plan;
- Distinctive features of a particular real estate, especially its area and value.

Instead of determining what exists in a given place, one might want to find a place where certain conditions are met (for example, all lots belong to a particular person). The cadastre thus defined is the basis for any official real estate activity. In addition, it can serve to confirm fees and other government obligations such as legal processing, real estate market, land savings, and the completion of any spatial development plan. The modern cadastral system can be called a multitasking cadastre. Its fundamental importance for the future lies in the possibility of communication with other subsystems, which leads to their integration within the framework of GIS structures.

Building a cadastral system begins with the implementation of computer systems at the local level, that is, in municipalities and communes. At the first stage, they will function autonomously. In the second stage, local cadastral systems should be linked at the regional level with elements of decentralized management, consistent with the agreed structure. In the future, the scope of the cadastral system should be gradually expanded, and the system should be linked to other subsystems (territorial development plans, building registers, technical networks, population census, etc.). At the next stage, it is necessary to coordinate the activities of individual local and regional subsystems to create a nationwide cadastral system.

1. The digital cadastral map is a fundamental component of any cadastral system. However, the digital cadastral map is not a map in the traditional sense. The card is not kept in the usual sense; it is also not a picture or view of a geographic area. Instead, data is stored that can be used to create the desired representation for a particular purpose. While it can be displayed and printed at different scales, projections, and colors, it is in fact an analytical tool. Its main advantage is that it displays the spatial relationships between the objects depicted on it. There are two main types of map information:пространственная информация, описывающая расположение и форму географических объектов и их пространственные отношения с другими объектами;
2. descriptive information about objects.

Spatial data is obtained by a specific representation of real-world objects using an application. rules defined in advance that determine which objects and attributes should be selected, which definitions should be used, and how they should be stored and rendered. The main characteristics that distinguish geographical objects from other objects contained in the database (although an ageographic object may also occur in raster or vector form) are their geometric characteristics. features are too narrow to be drawn because regions are represented by lines, while homogeneous geographic features are represented by regions.

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Such points, lines, and areas are presented as a list of coordinates rather than as an image or graph. Map objects are logically organized into sets of layers or information topics. The base cadastral map is organized into layers such as parcels, land use, land classification, and buildings.

Relationships are very important because they help the user understand the situation and make decisions. They are implicitly present on map sheets; they depend on the map reader who interprets them. For example, you can define:

- which geographic features are connected to others (for example, 5th Avenue connects to Main Street);
- what geographical objects are adjacent (contiguous) with others (for example, two neighboring sites);
- what geographical objects are included in the territory (for example, the building is located on the site);
- which geographic features intersect (for example, a railroad crosses a road).

In digital maps, spatial relationships are depicted using topology. Topology is an amathematical procedure for explicitly defining spatial relationships. Topology expresses various types of spatial relationships as lists of features (for example, an area is defined by lines that form its boundary). Spatial data is associated with non-geographic (descriptive) information about a particular feature on a map. Information is stored as attributes of a geographically represented entity. These attributes can be in the form of labels (tags) attached to graphic elements and stored in vector files or as tabular data that can be used to perform certain analyses.

The first solution is mainly used to provide simple information about specific objects, such as the name of the object, the date it was posted, etc. The second solution requires an external database whose records are associated with the corresponding graphic objects of the map. The values of these attributes are:

- quantitative, measurable and expressed in units of length, area, time, etc.; or
- qualitative, when each attribute can take only one value from a set of previously defined values, such as names, addresses, colors, etc. The strength of the system lies in its ability to link two types of data (spatial and descriptive) and maintain spatial relationships between elements cards. This connection has three notable characteristics:
- there is a one-to-one relationship between objects on the map and records in the object attribute table;
- The relationship between an object and its record is maintained through a unique numeric identifier assigned to each object. ;
- A unique identifier is physically stored in two places: in files containing coordinates and with a corresponding entry in the object attribute table.

The concept described above applies to more than just tracking objects and their attributes. You can join any two tables as long as they have a common attribute. The common element is used to establish a relationship between corresponding records in two tables. Each entry in one table is associated with an entry in another table that has the same value for a common element.

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