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DIGITAL MASTER PLAN – USING IN REGULATING THE URBAN AND LANDSCAPE DEVELOPMENT

UŻYTECZNOŚĆ CYFROWEGO ZAPISU PLANU ZAGOSPODAROWANIA PRZESTRZENNEGO W ZAKRESIE REGULACJI I ROZWOJU MIASTA I KRAJOBRAZU

A b s t r a c t

System spatial planning, responsible for creating an environment of life, sustainable development and protection of natural and cultural environment is constantly upgrading. After considering the important issues of spatial planning in Slovakia, are possible to achieve the demands of the repair of the existing situation. They seek to balance studies and the use of GIS planning system.

Keywords: *GIS system, urban and landscape planning, regional planning*

S t r e s z c z e n i e

System planowania przestrzennego, warunkujący tworzenie środowiska życia, równoważenie rozwoju oraz ochronę środowiska przyrodniczego i kulturowego podlega stałej modernizacji. Po rozważeniu istotnych problemów systemu planowania przestrzennego w Słowacji, przedstawiono możliwe do realizacji postulaty naprawy istniejących sytuacji. Zmierzają one do zrównoważenia opracowań i wykorzystania systemu GIS planowaniu przestrzennym.

Slowa kluczowe: *system GIS, planowanie przestrzenne, planowanie regionalne, planowanie krajobrazu*

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1. Preface

Urban and landscape planning belongs to the leading branches in creating living environment, creating sustainable development and protecting the cultural and natural heritage. To fulfill its aim, the process of planning must be closely connected with the inhabitants, the regional government and the professionals from the branch of urban and spatial planning. The effectiveness of using it in real life and development is influenced not only by the system of planning but also by the form of the master plan. Computer technology is not a better pencil but a sophisticated tool for improving the real state of spatial planning in Europe. The aim of this work is to define the effective form of planning connected with the latest advancements in computer technology and how this helps planners to better develop the land. This paper focuses on the regulation principles and utilization of computer technology in relation to them.

2. Main problems in the system of urban planning

2.1. Relation between the public and planning

The public, especially in Eastern Europe, is used to considering any type of regulating as a bad relic from the era of the socialist regime. Any form of regulating or influencing the spatial development is considered as a “brake”, as something unnecessary for further development. This fact is especially obvious when the investor’s aim is compared with the master plan. This makes the master plan change according to the needs of the investment.

All these facts influence the relation of the public to the planning in a bad way. In fact, the public do not even recognize the meaning of the master plan. There is also lack of education about planning and no relation to urban and landscape values in the educational system.

2.2. Regulating the area

The master plan itself often contains over-regulated areas. The amount of regulation is excessive and usually causes blocking of certain areas or forces the master plan to be changed. Changes of the master plan affect the public in a negative way – the public simply do not trust it.

Over-regulating can be caused by the fact that no one, not even a team of specialists, is capable of setting correct development vision for each and every part of the regulated area. There are so many possibilities of development that it is really impossible to find the correct aim at any time.

The second reason is looking too closely at a specified area. Urban areas are spreading, so logically, one day everything is going to be a built-up area. Green areas and urban areas are also a topic for discussion, which makes the master plan change even faster.

2.3. Relation between the levels of planning in Slovakia

There are four levels of plans in Slovakia. The most conceptual one is the “KURS” – Conception of Spatial Development of Slovakia – this plan defines the urban axis and

agglomeration areas and their hierarchy. The next level is the Regional plan that closely takes care about locating the transportation axis, landscape protection and urban development. The most-used and mostly discussed one is the Master plan that defines the development of urban and landscape areas in cadastral units or groups of cadastral units. The last one is the Zone – landuse Plan. The differences between the master plan and the zonal landuse plan are sometimes very questionable. It is hard to explain the necessity of the last level to the wide public.

2.4. Position of an architect – the urban planner

There can be defined two positions of an architect

- the architect as a team leader, the one who decides what is going to be in the area considering of course all the incoming and related inputs,
- the architect as part of a team, the one who takes care about landscape and urban part, the one, who offers solutions and possibilities for the creators of the environment – the inhabitants (inhabitants – humans and nature).

Nowadays usually the first one prevails, but to involve the wide public and avoid future misunderstandings of urban plan and development requirements it is necessary to move the architect (urban planner) to the position of only one of the team.

2.5. Citizen and his role in the process of spatial planning

Moving the citizen to the position of someone, who only makes remarks or comments on the proposed solution creates timed danger. Already during the process of consulting the plan with the inhabitants there are two fighting parties – the citizen against the developer of the master plan. They usually get the feeling that “someone” forces them to do something or decides about their village or town without their consent. Finally this leads to disrespecting the master plan which may cause irreversible damage to the landscape and a waste of economic and natural resources in the area.

2.6. Plans and computer aided design

The law and customs are focused on preparing the “paper” (analog) plans. All the power and capabilities are usually concentrated on preparing a perfect colourful paper sheet. The control and checking activities of state authorities focus on improving the graphical symbols, the colour customs but not on the quality of the collected data. It is necessary to mention that:

- the printed form of the data requires generating inaccuracies in element positions, just to have it nice and readable in printed version,
- some of the collected data do not even appear in the sheet, because they are not required now, although they are needed later,
- the scale of the map is more important than the level of the detail,
- the final sheets are scanned or exported to viewing files, which are bigger in size and returned to the computer for the internet users.

Because of the above facts, the enhanced computer technology is forced to produce paper sheets, although the final sheet again has to be scanned or simply placed in viewing format back in computer, not respecting the size of the files or convenience of viewing and, first of all, of using it – searching for information and applying it to the real world.

The power and capacity of the developer of the master plan is mostly wasted on “how” to make the master plan rather than focus on “what” to do in the master plan.

3. Possible solutions

Considering all the previous facts, the way and amount of requirements for the land, social, economic and nature protection, there can be defined a new approach to planning within the limits of the legal system and local cultural customs. The main pillars of the new approach can be summed up in several points after numerous discussions, research and consultation. These points create simple and clear philosophy of planning that offers unlimited possibilities of application and still ensures that the development in a specified area will be sustainable. Sustainable development means securing continual evolution of natural environment, fulfilling the economic, recreational and living requirements of the humans by means of creating optimal use of the land and preventing a waste of economic and natural resources to achieve this.

The points:

- simple rules,
- thinking of an area in terms of a final stage,
- clear conception,
- flexibility,
- easy and fast accessibility,
- simple and effective querying.

Simple rules

“Rules used in regulating must be as simple as red means stop and green go”
 (prof. Bohuš Kováč, FA STU Bratislava)

The regulations must not be complicated. They must express what is allowed or prohibited in the area according to the level of the master plan.

A regulation is a tool, that secures the needs of mankind and nature. It is not for limiting myself, but for making sure that no one else will limit me. For ensuring that the value of my property will increase or at least stay stable and not decrease.

Thinking of an area in terms of a final stage

“We did not inherit the land from our ancestors, but we borrow it from our children”
 (Seattle, chief of the Suquamish Tribe, North America)

As the urban areas grow, it is logical to think about a day, when everything will be built-up. That is why we need to think about an area as we want it to look like in a final stage – one day in the future. In this way we will prevent wasting valuable land from the natural and economic point of view.

3.1. Clear conception

There must be a clear conception of land development: what we want to have it like, what is the economic development based on, what is the most valuable natural and cultural heritage, what is the uniqueness of that place.

After the questions have been answered, a conception must be set and maintained.

3.2. Flexibility

The superior level of the plan is not supposed to limit possibilities of a different development of the inferior level. It must only define the limitations and related conception.

3.3. Easy and fast accessibility

The master plan is supposed to be created by the public, so it should stay accessible to the public all the time, 24 hours a day. The work with the plan must be as easy as it gets.

3.4. Simple and effective querying

To find an answer or just a simple piece of information means that the plan itself must be able to provide the answer and create customized output according to requirements. There is no need to have a well-educated person who searches for the information and then connects that together.

4. Application of these principles to case study

The case study was creating a master plan of a small village using the above mentioned principles. The main regulation plan was divided into landscape and urban structure plans.

The landscape regulation plan sectionalized the whole cadastral unit into landscape sectors. Each sector was determined by the uniqueness of the selected landscape type. The boundary of the sector smoothly turns into another one. Each of these sectors has simple rules that describe:

- what is located in the sector (information character),
- what is suggested there (recommendatory character),
- what is prohibited there (obligatory character).

The landscape plan contained also the system of ecological stability.

The urban structure plan sectionalized the whole cadastral unit into urban sectors. These sectors were determined by landscape sectors (shared the boundary) and divided them in a more detailed way. Each sector enclosed a unique type of urban structure. The boundary between them was logical (created by landscape features, transportation lines or another dividing sector). Each sector was supposed to have a buffer zone to make sure that it would influence another one as little as possible. The buffer zone could be another sector or any type of landscape feature that came out of landscape plan or would be added into landscape plan subsequently.

The rules that referred to urban sector:

- what is suggested there (recommendatory character),
- what is prohibited there (obligatory character),
- the high level of buildings.

The urban structure plan contained also main composition principles – the axis, dominants.

Each of the urban sectors has a regulative principle that it is necessary to create land use zone plan for it. This includes the structure of plans:

The KURS defines main composition and divides the country into regions. Each region has a Regional Plan.

The Regional plan defines the axis and urban areas, protected areas, transport lines and divides the region into cadastral units. Each cadastral unit has a Master Plan.

The Master Plan defines urban and landscape areas, non-built-up-able areas, closer composition, closer transportation lines and divides the cadastral unit into sectors. Each sector has a Landuse Zone Plan.

The Landuse Zone Plan defines the exact land use functions and exact regulations to secure the needs and protect the inhabitants from a decrease in the environment value.

The plans recursively complete the superior level. So it means, that one day the whole country will have thousands of landuse plans in sectors. Gathering them together will produce one superb big landuse plan for the whole country.

The master plan was finally developed in GIS – geographical information system. So the master plan was a big database of graphical and text data. Using the GIS procedures it was possible to create any sheet with any combination of required information.

The GIS system allowed the master plan to have these main features:

- **unification of terms**

to ensure that each master plan could be placed and comparable with each other,

- **up-to-date information**

database of information (owners, lot boundaries, changes of landscape features) could be added flow through,

- **self control of the need for actualization**

a new requirement added into master plan could be checked whether it complied with the rules. Then it could be decided if the requirement is false or if the plan needs actualization,

- **building permits and their recursive control**

by comparing the investor's aim with the plan and after finding out, that it follows the rules, it is easy and fast to issue a building permit,

- **public access**

the whole work was prepared to be placed on web site, so all the information and procedures were accessible 24 hours a day.

This approach to developing the master plan provides the local government with as much information about the landscape and investor's aim as they need. The information is objective and it helps the local government to decide in the best way about their land.