



# GIS as a Foundation for Modern Planning: Challenges and Opportunities in Serbia

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# WHY GIS?



Connection

between Space, Data, and Decision

UN HABITAT

„Data-driven solution at the center of sustainable cities“



Source: <https://www.shutterstock.com/search/gis-vector>

# GEOGRAPHIC + INFORMATION + SYSTEM



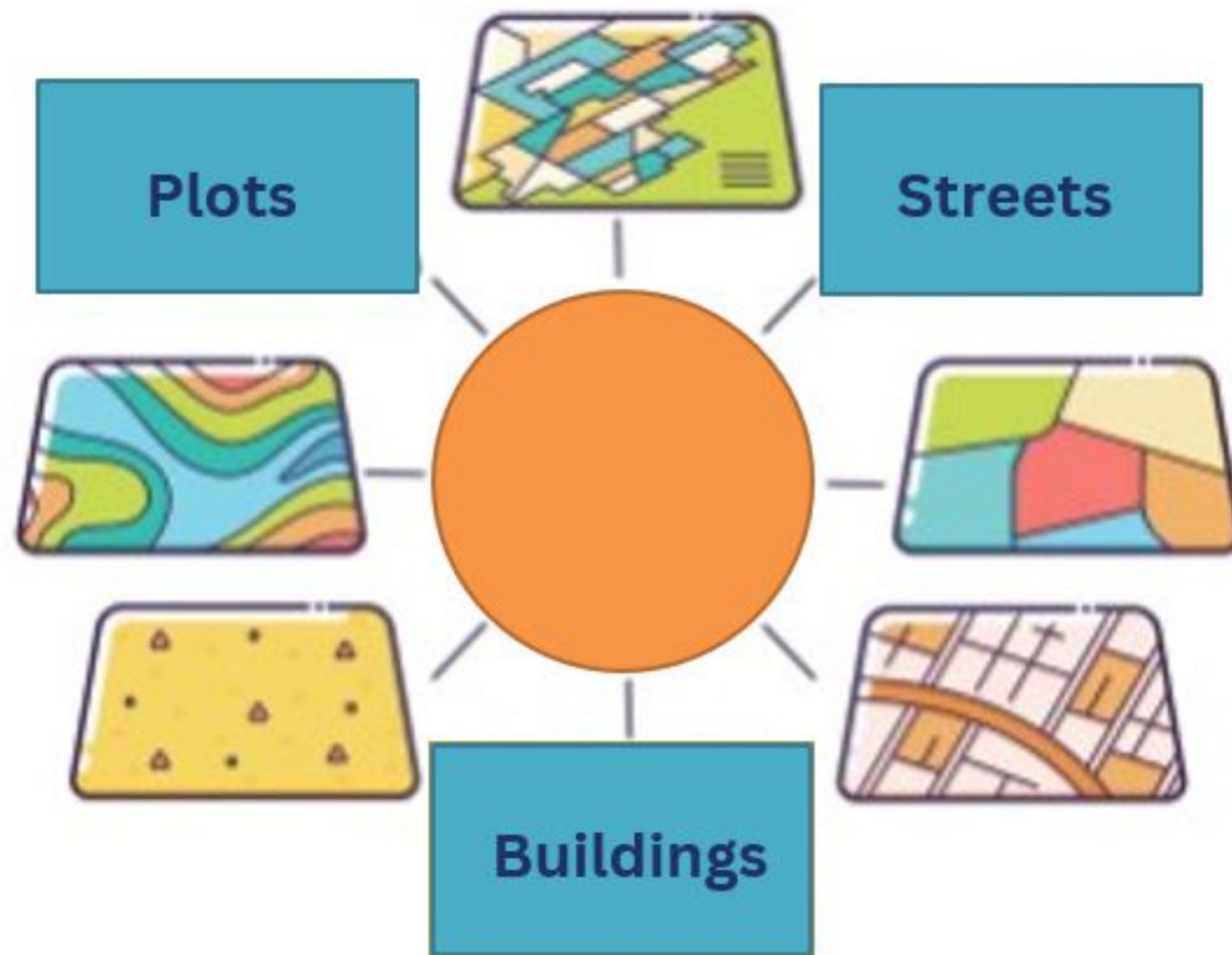
SPACE vs  
GEOGRAPHIC

DATA vs INFORMATION

DECISION vs SYSTEM

# SPACE vs GEOGRAPHIC

What is SPACE?



Elements of Urban Morphology

# Key Elements of Urban Morphology



## 1. Plots (Parcels)

- The basic units of land division that define ownership, boundaries, and land use patterns.
- Form the foundation for the layout of urban blocks and building typologies.

## 2. Buildings

- Physical structures that occupy plots and define the density, height, and architectural character of urban space.
- Express the functional and cultural identity of an area.

## 3. Street Network

- The connective structure linking plots and buildings.
- Enables movement of people, goods, and information, and shapes the spatial hierarchy of the city.

# DATA vs INFORMATION

## What is DATA?



Raw facts and figures without context or interpretation!

Data represents measurements, observations, or records collected from various sources.

It answers the question “What?”

Examples:

Coordinates: (43.32° N, 21.90° E)

Numbers: 5, 12, 23

Text entries: “Residential area,” “High traffic,” “Park”



In GIS, data can be spatial (maps, coordinates) or non-spatial (attributes, statistics).

# DATA vs INFORMATION

## What is INFORMATION?



Processed and organized data that has meaning and context!

Information answers the question “Why or how?”

- It supports decision-making and planning.

Examples:

“High traffic density in the city center correlates with limited public transport access.”

“Population growth of 12% indicates expansion toward the south zone.”



In GIS: turning raw spatial data into maps, analyses, and visual insights that reveal patterns and relationships

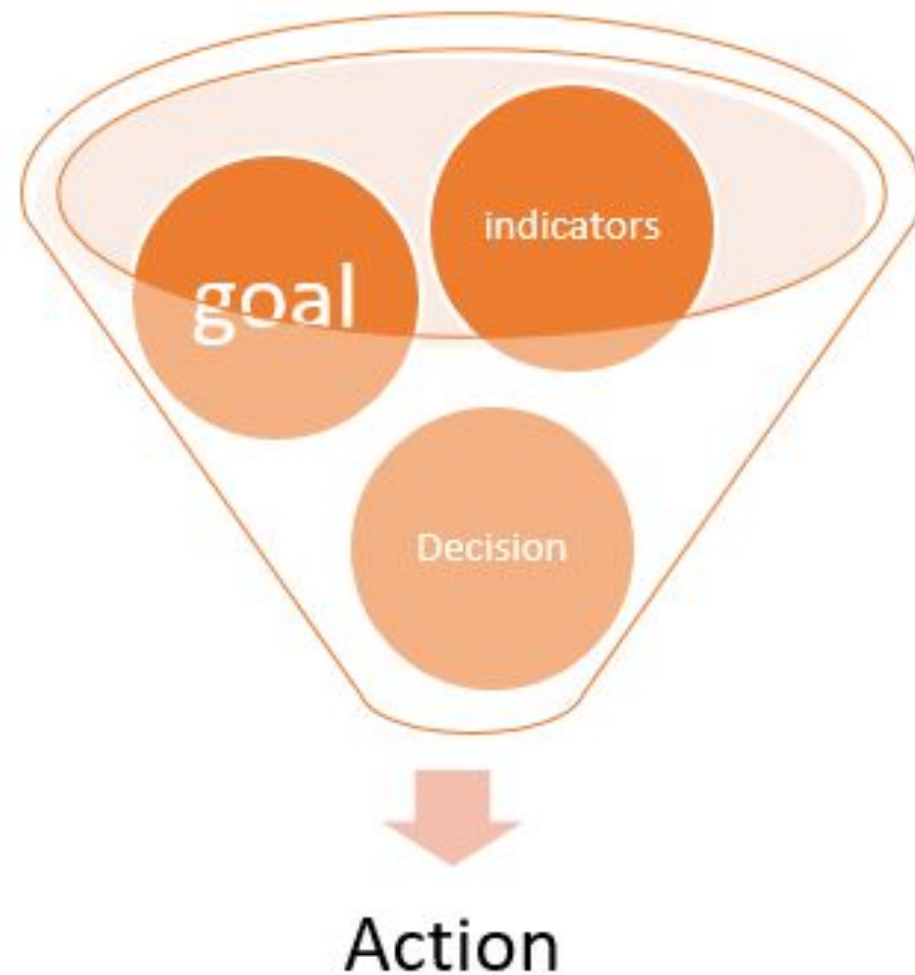
 Data becomes information when it is analyzed, interpreted, and connected to real-world context.

# DECISION vs SYSTEM

SYSTEM – Planning+Monitoring and Evaluation +Implementation



## ONE HIERARCHICAL LEVEL



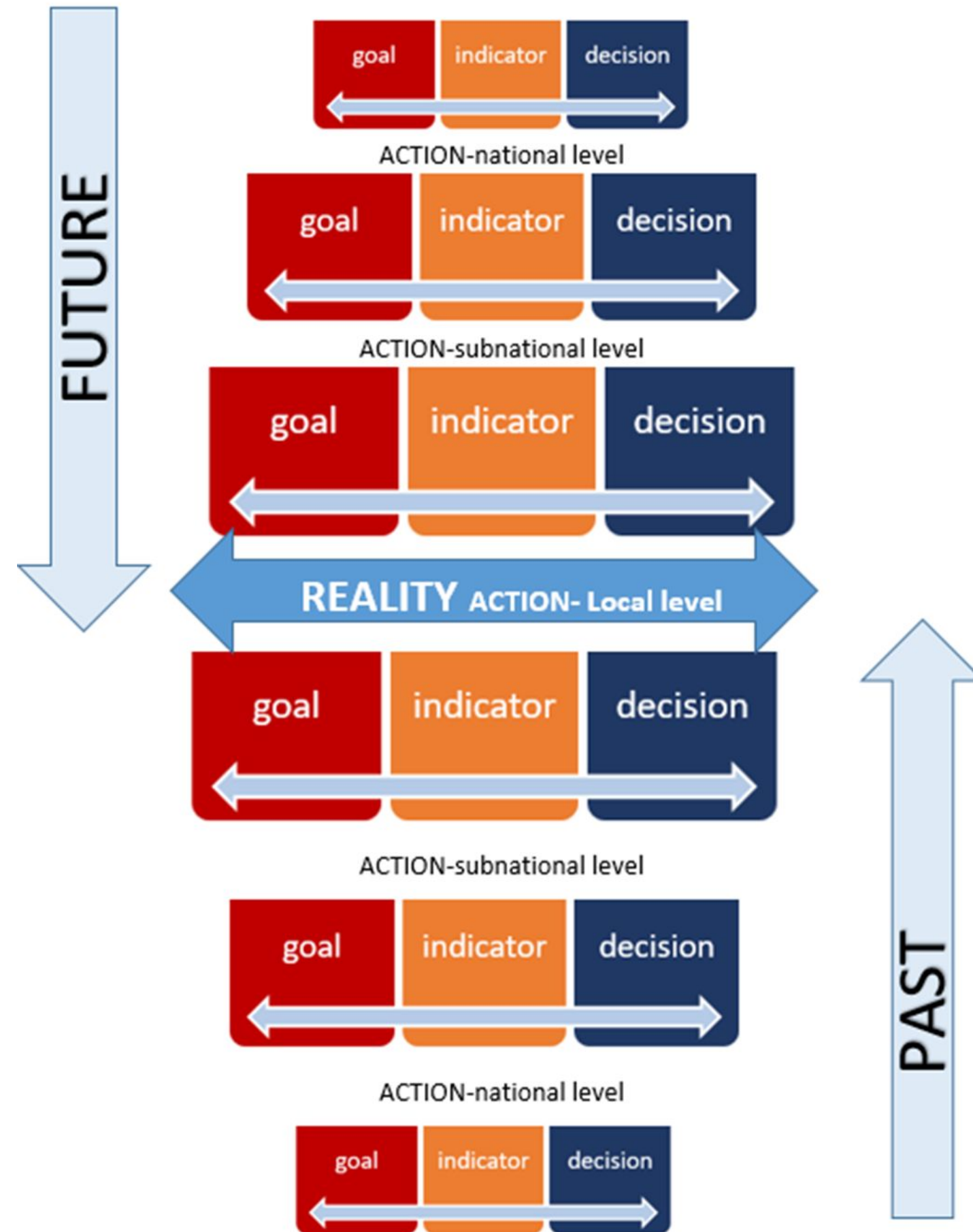
PLANNING- goals

MiE-indicators

IMPLEMENTATION-decision

# DECISION vs SYSTEM





Real time system -Source: own research Tanja Obradovic



Discussion and Q&A



# Planning Without GIS: Key Challenges in Serbia

# Fragmented Data and Poor Coordination

- Spatial data stored separately across different institutions.
- Lack of standardized formats and data-sharing protocols.
- Duplication of work and inconsistent information between national and local levels.

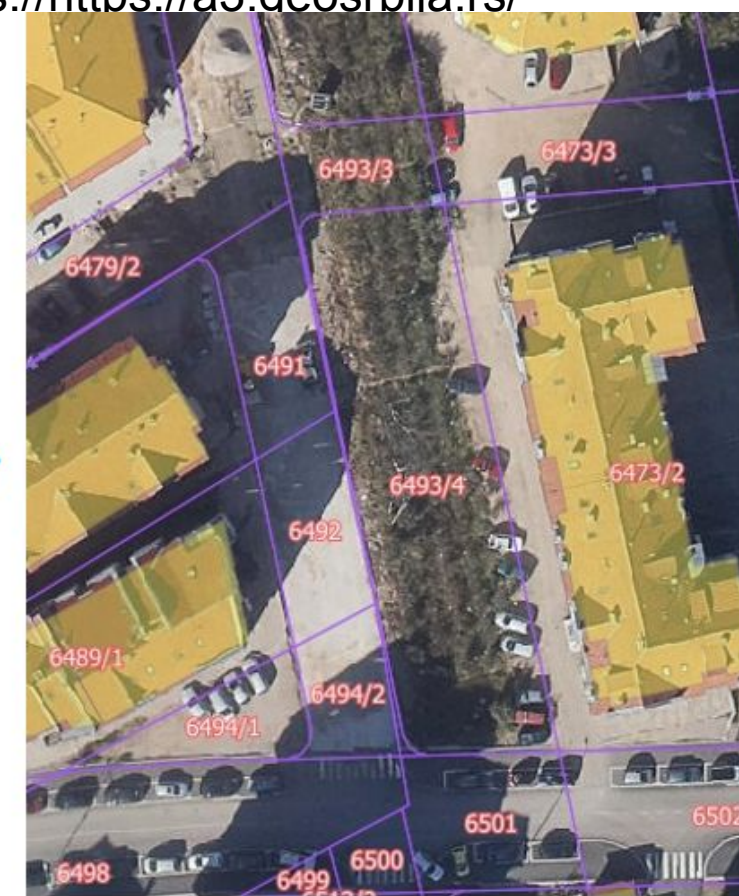
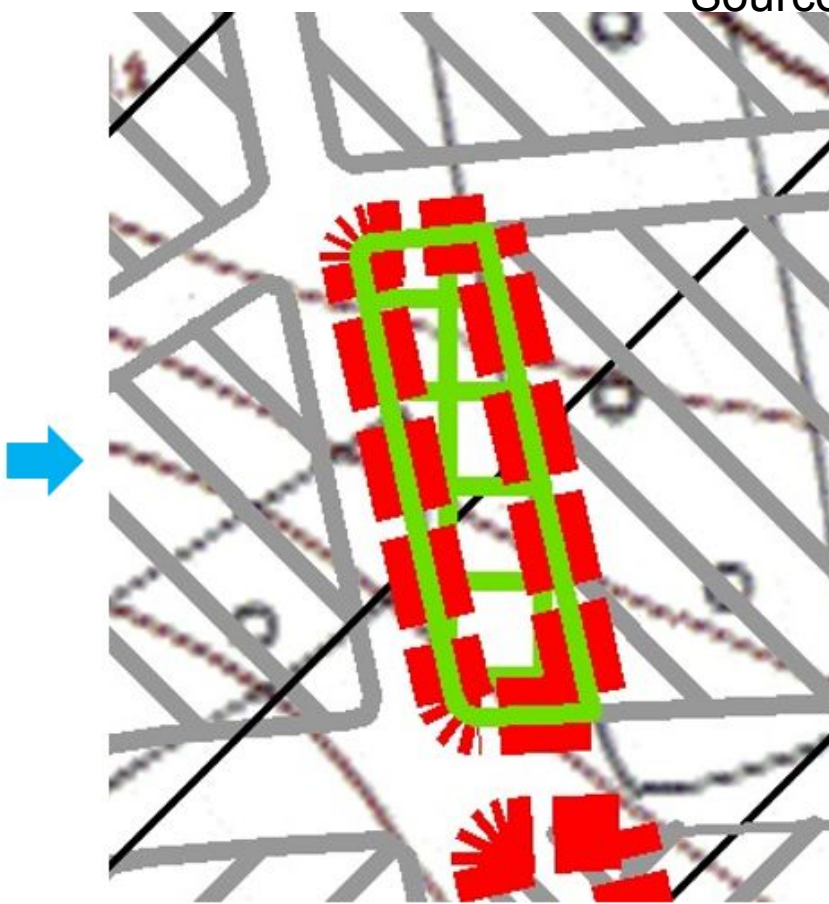
# NIŠ-Pantelelej



Source: <https://private photo>

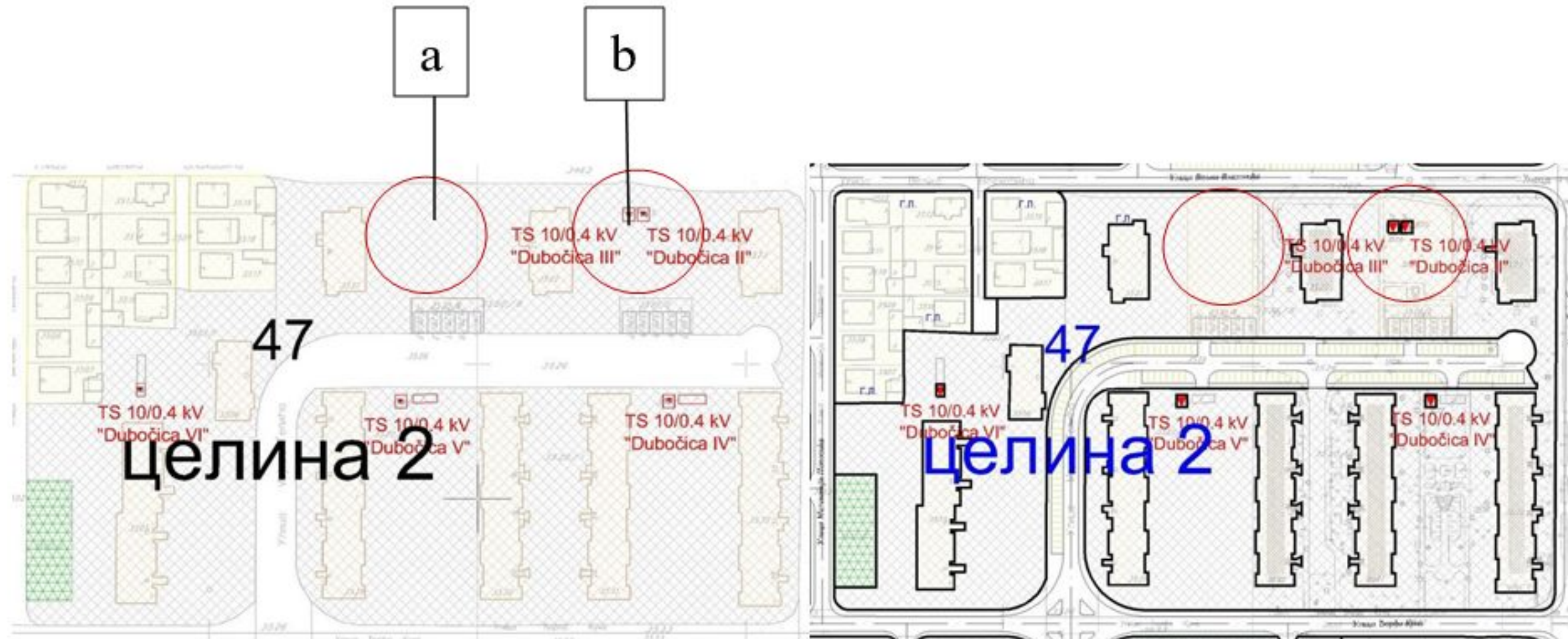


Source: <https://a3.geosrbija.rs/>

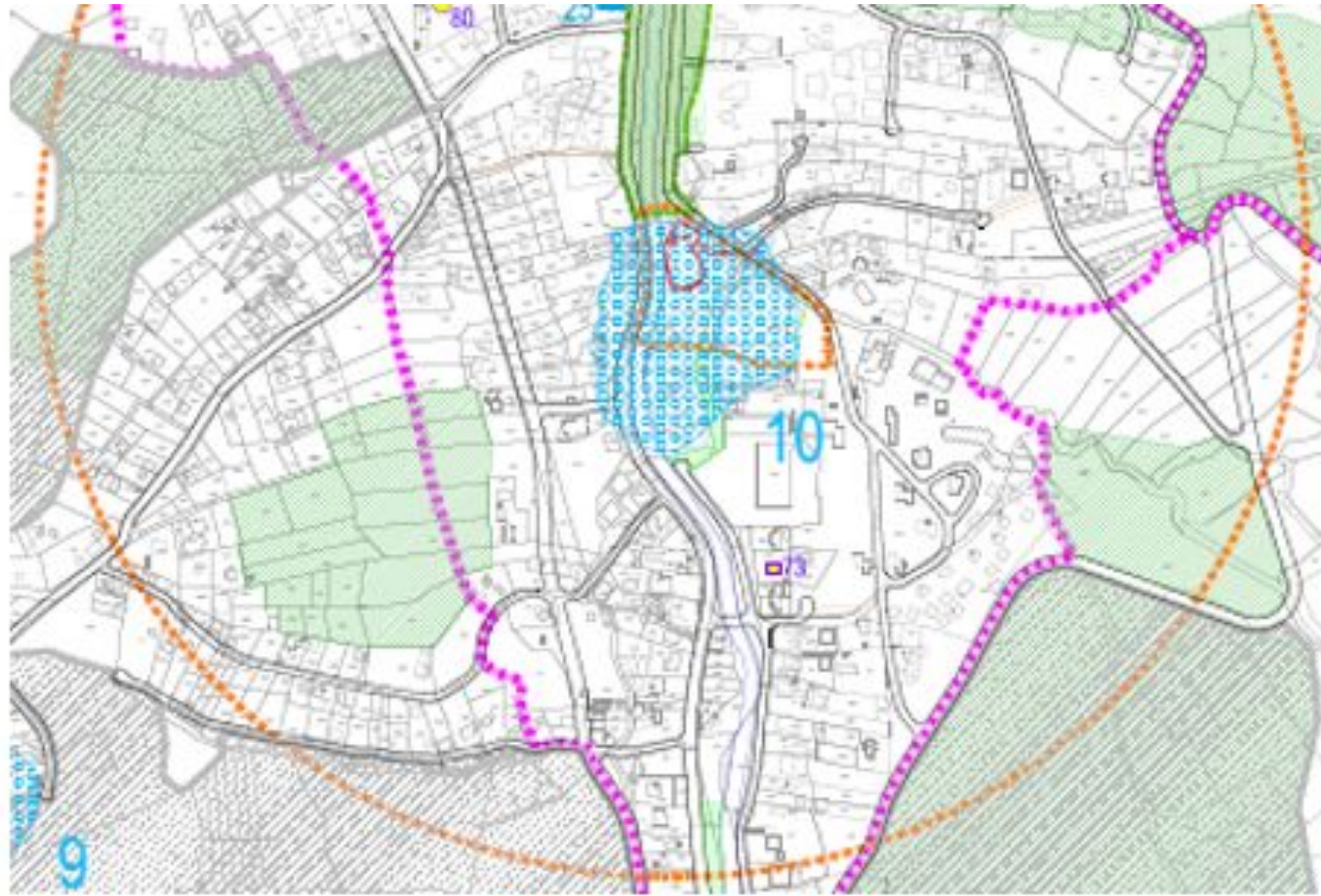


Source: Left – Planned Documentation, Right – <https://a3.geosrbija.rs/>




# LESKOVAC-Dubočica

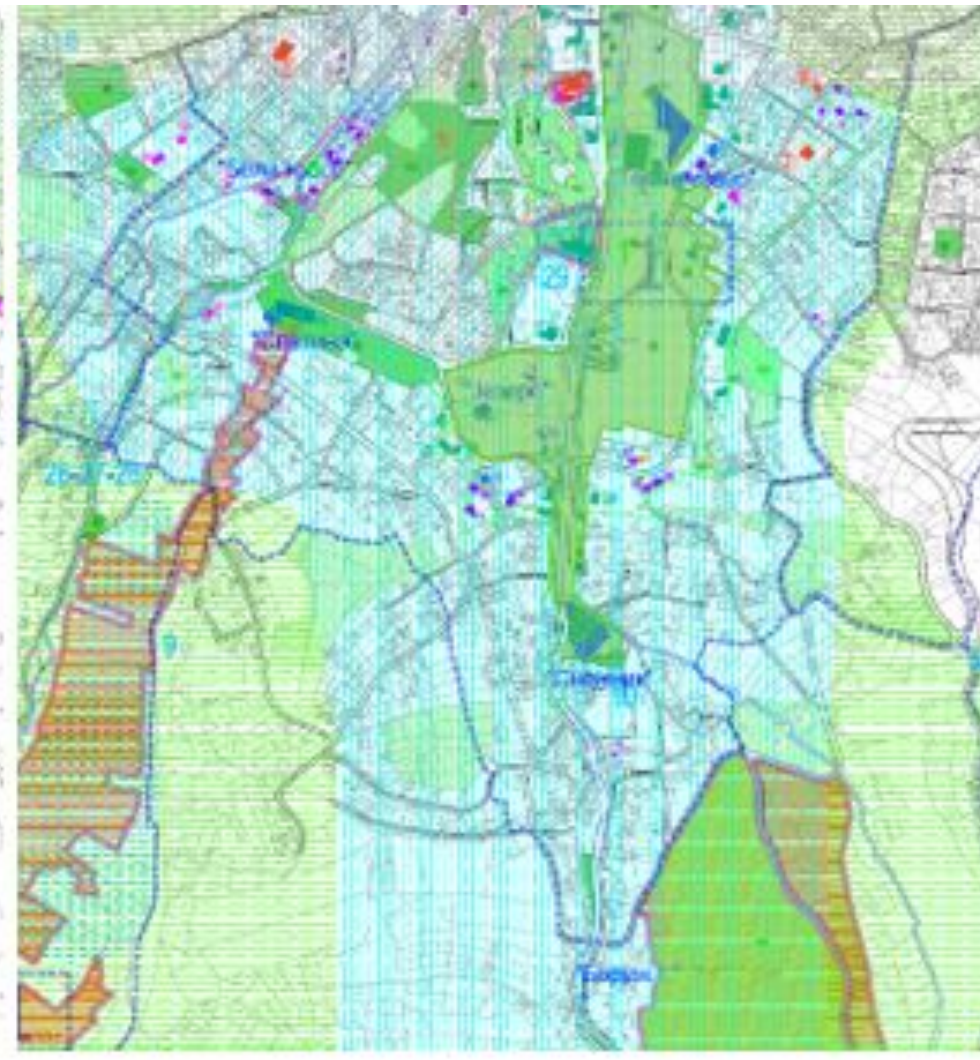


Source: Top – Planned Documentation, Bottom – private photo





**Заштита изворишта**

-  III зона санитарне заштите
-  II зона санитарне заштите
-  I зона санитарне заштите



**Заштита изворишта**

-  III зона санитарне заштите
-  II зона санитарне заштите
-  I зона санитарне заштите
-  заштитна зона потенцијалног изворишта

Source: Left – Planned Documentation-old, Right –Planned Documentation-new

# Planning Without GIS: Key Opportunities in Serbia

# Amendment of the Law

## Article 91

Technical documentation for buildings with a gross developed floor area exceeding 10,000 m<sup>2</sup> shall be prepared using BIM technology, starting from January 1, 2028.

Urban and spatial planning documents shall be prepared using **GIS technology, starting from January 1, 2028.**

**LAW ON PLANING AND CONSTRUCTION (2023)**

# Successful Initiatives- VOLUNTARY LOCAL REVIEW Niš



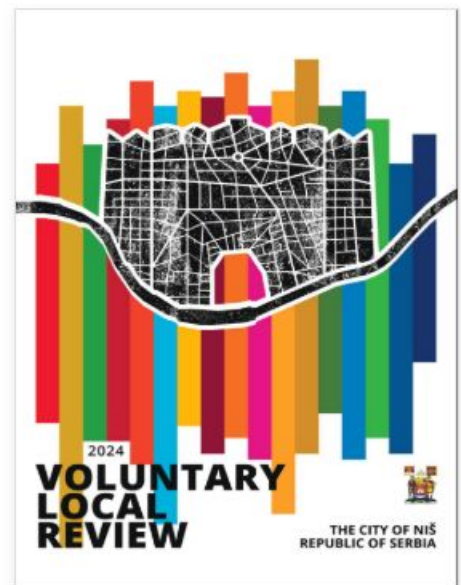
## Voluntary Local Review Repository

Learn more about Voluntary Local Reviews (VLRs)

Region

Year  VLR Location

UN Habitat Supported VLRs



Niš 2024



Source: <https://sdglocalization.org/voluntary-local-review/>

# Successful Initiatives- QoL Niš



**Nis**  
Serbia

Home

About the Platform

Explore Cities

English ▾

Discover insights and data

Explore the Quality of Life Index by hovering and clicking on each section of the fan

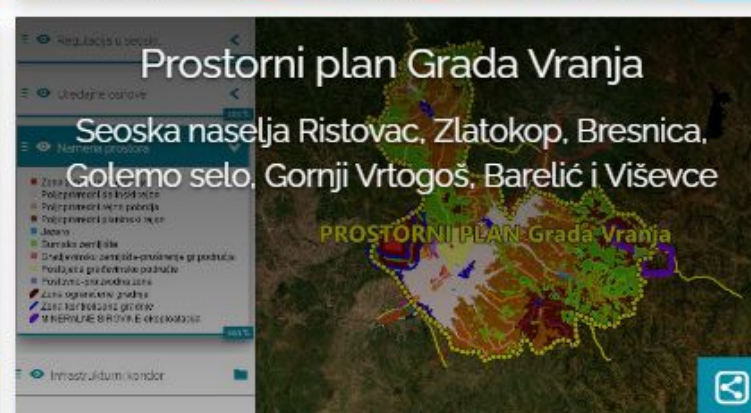
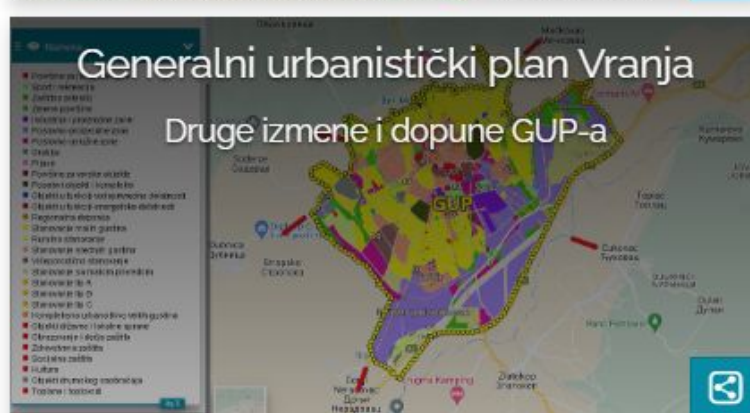
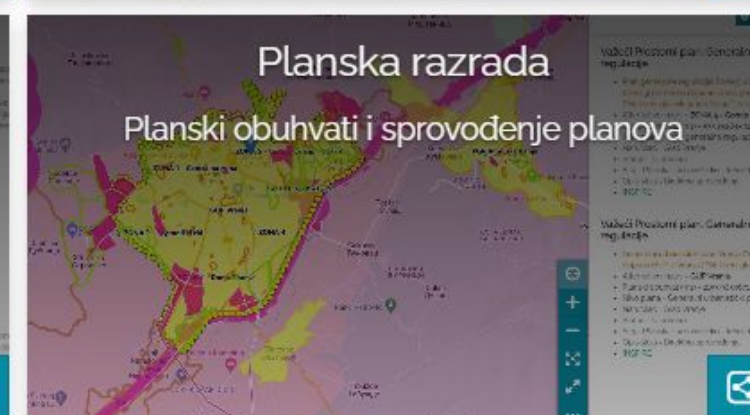
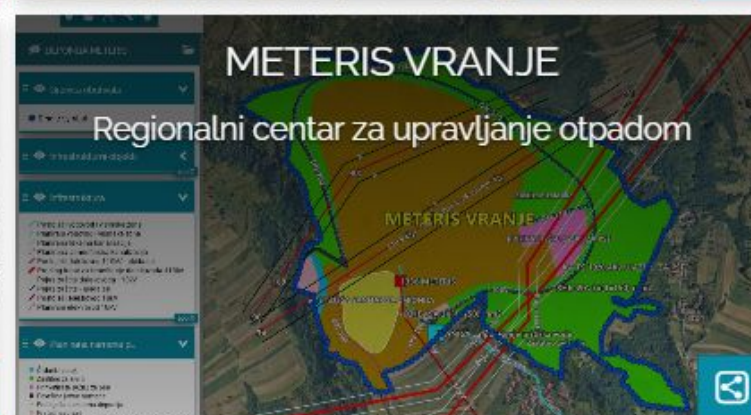
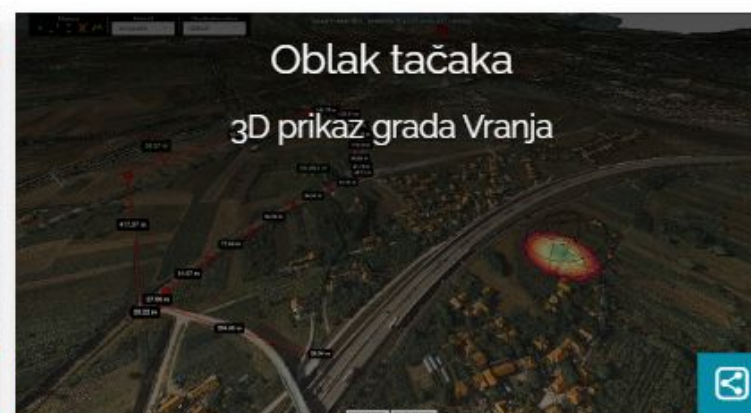
QoLi  UMF



Source: <https://qolimpact.com/city/nis>

# Successful Initiatives- GIS Vranje

## Karte



# Successful Initiatives- Republic Geodetic Authority Serbia „Smart Parcel“



The screenshot shows the homepage of the Republic Geodetic Authority of Serbia's e-service platform. The header includes the 'RGZ Portal' logo and navigation links for 'Početna', 'eUsluge', and 'Aktuelnosti'. A main banner features a night view of a bridge over a river with the text 'Platforma eUsluga Republičkog geodetskog zavoda'. Below the banner are four service tiles: 'RGZ ID' (with a 'ZAHTEV' button), 'Digitalna platforma katastra', 'eKatastar', and 'eUsluge'.

RGZ Portal

Prijava

Početna  
eUsluge  
Aktuelnosti

RGZ Portal

Platforma eUsluga Republičkog geodetskog zavoda

RGZ ID  
Odobranje pristupa organima i organizacijama  
→ ZAHTEV

Digitalna platforma katastra  
Vizuelni prikaz podataka Republičkog geodetskog zavoda

eKatastar  
Pregled podataka o nepokretnostima

eUsluge  
Elektronske i Republičkog zavoda

Source: <https://www.rgz.gov.rs/>



Thank you for your attention

