

# Mobilna aplikacija **MapLords** kao dijagnostički alat za otpornost lokalne putne mreže

**Ranka Stanković, Nikola Vulović**

**OTPORNOST**

**PUTNE MREŽE**

# Prezentacija ukratko

Sistem MapLoRds: prikupljanje, obrada i analiza podataka

Korisnički profili

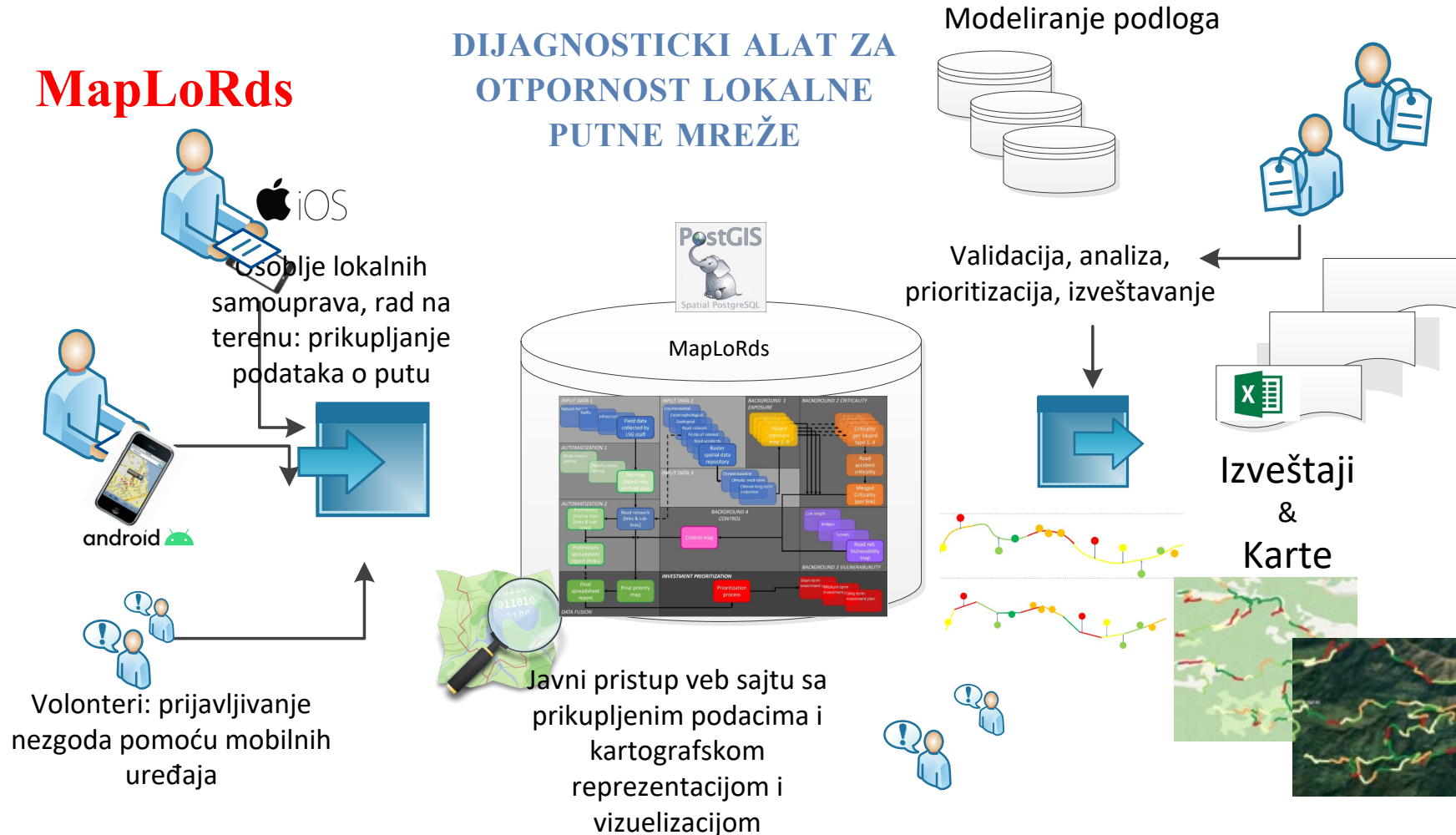
Komponente sistema MaPLoRds

Veb aplikacija

- Administracija i podrška višejezičnosti
- Upravljanje konfiguracijom sistema
- Editovanje i vizuelizacija podataka
- Izveštavanje i eksport podataka

## Sistem MapLoRds: prikupljanje podataka, njihova obrada i analiza

### MapLoRds



# Korisnički profili

Pregled podataka: otvoren  
(dostupan bez logovanja)

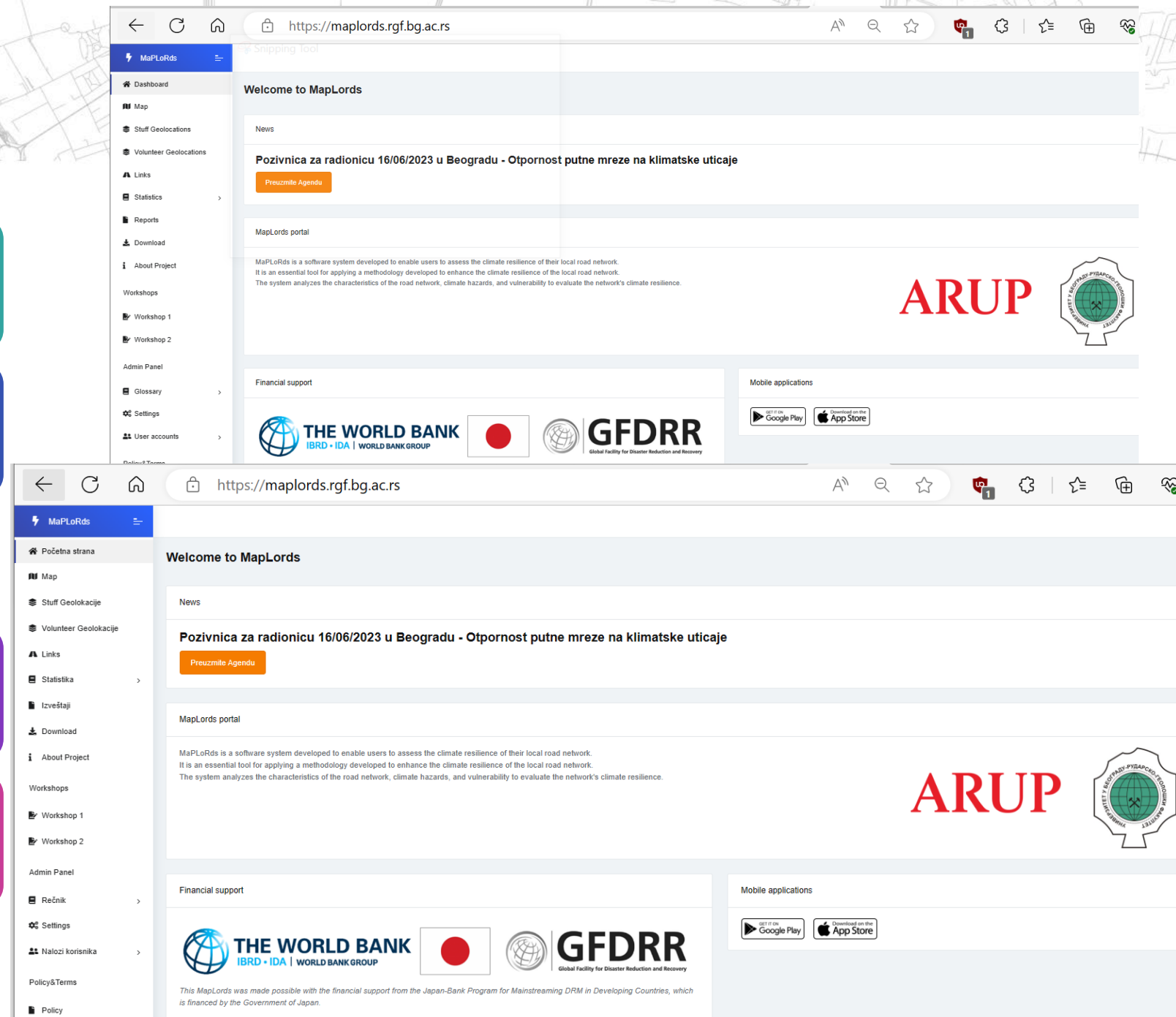
Editovanje podataka:

- Zaposleni u lokalnoj samoupravi (mobilna i veb)
- Volonteri (mobilna)

Administratori: nivo lokalne samouprave i globalno

Planeri: analiza podataka i izveštavanje

[maplords.rgf.bg.ac.rs](https://maplords.rgf.bg.ac.rs)



https://maplords.rgf.bg.ac.rs

MaPLoRds

Dashboard

Map

Stuff Geolocations

Volunteer Geolocations

Links

Statistics

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Workshops

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Workshop 2

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Glossary

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Welcome to MapLords

News

Pozivnica za radionicu 16/06/2023 u Beogradu - Otpornost putne mreze na klimatske uticaje

Preuzmite Agendu

MapLords portal

MaPLoRds is a software system developed to enable users to assess the climate resilience of their local road network. It is an essential tool for applying a methodology developed to enhance the climate resilience of the local road network. The system analyzes the characteristics of the road network, climate hazards, and vulnerability to evaluate the network's climate resilience.

ARUP

Financial support

THE WORLD BANK  
IBRD • IDA | WORLD BANK GROUP

GFDRR  
Global Facility for Disaster Reduction and Recovery

Mobile applications

Google Play

App Store

https://maplords.rgf.bg.ac.rs

MaPLoRds

Početna strana

Map

Stuff Geolokacije

Volunteer Geolokacije

Links

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Izveštaji

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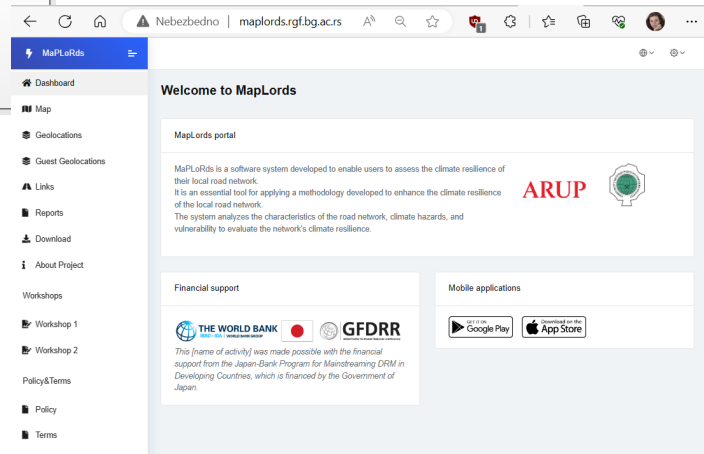
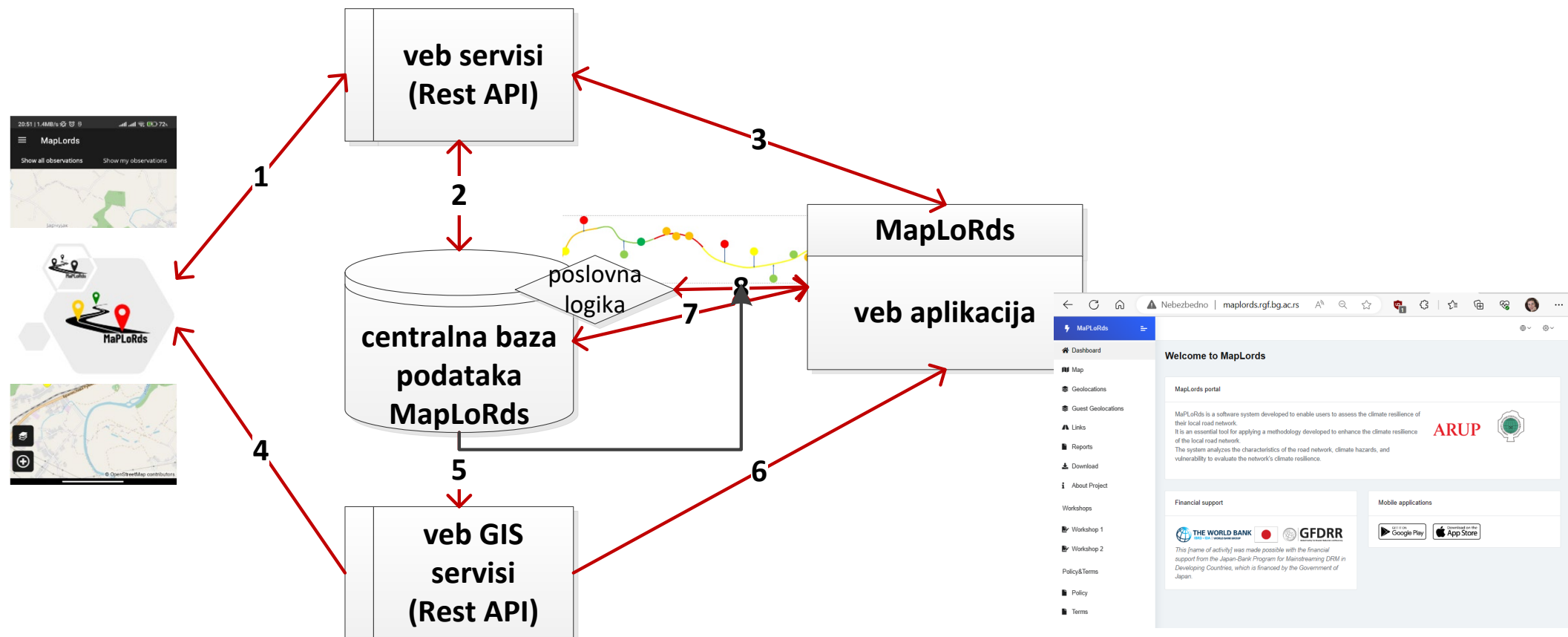
Mobile applications

Google Play

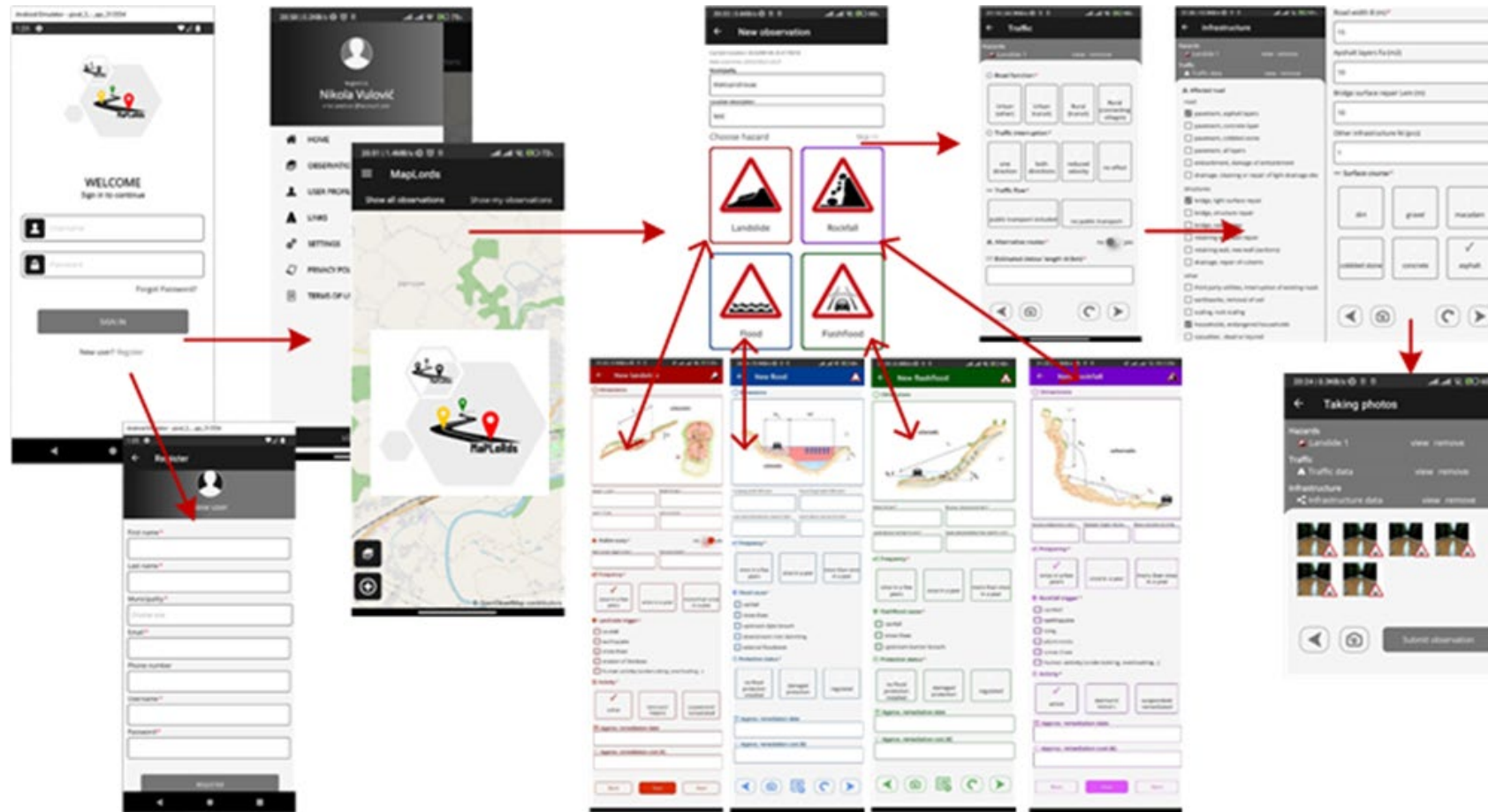
App Store

This MapLords was made possible with the financial support from the Japan-Bank Program for Mainstreaming DRM in Developing Countries, which is financed by the Government of Japan.

## Komponente sistema MapLoRds



## Mobilna aplikacija



14:40 | 0.0KB/s | 75%

## Register

New user

First name \*

Last name \*

Local Self Government \*

Choose one

Email \*

Phone number

Username \*

Password \*

I will use app as Field Specialist

Register

9:23 | 5.5KB/s | 95%

## Forgot Password

### FORGOT PASSWORD

If you forget your password please enter your username or email and password reset link will be sent to your registered email

Username

- or

E-mail

REQUEST PASSWORD RESET

14:43 | 0.0KB/s | 76%

## Profil

### User profile

First name  
Nikola

Last name  
Vulović

Local Self Government  
Aleksandrovac, Kraljevo

Email  
nikolavulovic@hotmail.com

Phone number

Username  
nikola.v

15:26 | 0.0KB/s | 80%

## Profil

### Profil korisnika

Ime  
Nikola

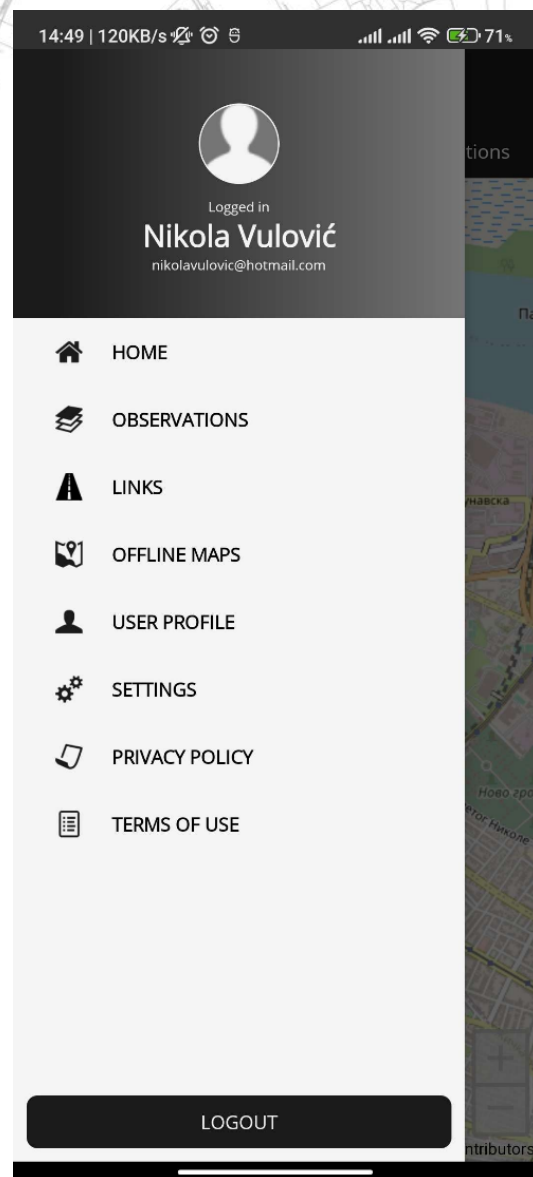
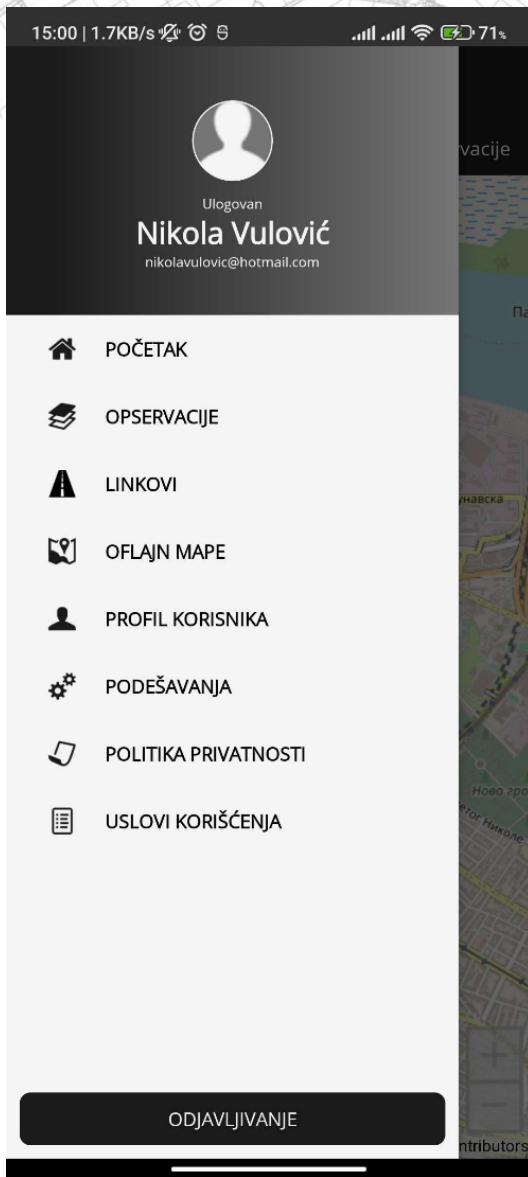
Prezime  
Vulović

Lokalna samouprava  
Aleksandrovac, Kraljevo

E-pošta  
nikolavulovic@hotmail.com

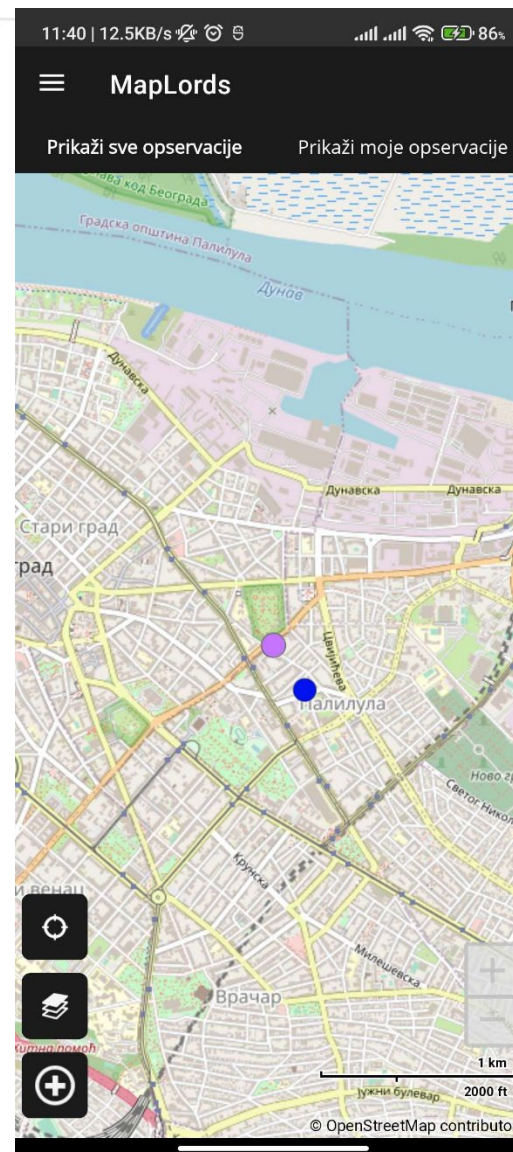
Broj telefona

Korisničko ime  
nikola.v



# OTPORNOST

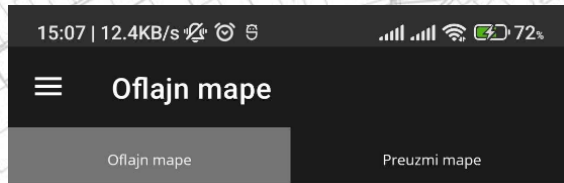
# PUTNE MREŽE





# OTPORNOST

# PUTNE MREŽE

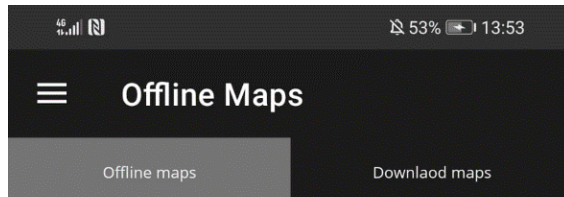


Opština Aleksandrovac

Download

Opština Kraljevo

Download

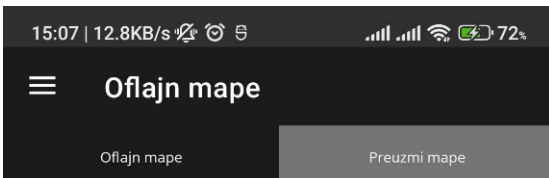


Opština Aleksandrovac

Download

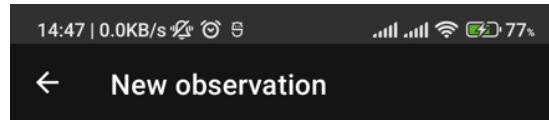
Opština Kraljevo

Downloaded



Opština Aleksandrovac

Not visible



Current location: 44.8136607 20.473802

Date and time: 07/04/2023 14:47

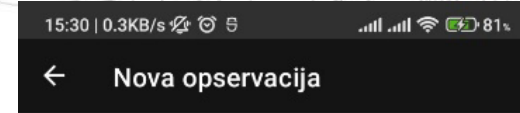
Municipality

Aleksandrovac

Location description

Choose hazard

Skip >>



Trenutna lokacija: 44.8136736 20.4737842

Datum i vreme: 07/04/2023 15:30

Opština

Aleksandrovac

Opis lokacije

Izbor hazarda

Preskoči



Klizište



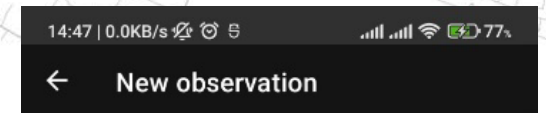
Odron



Poplava



Buiica



Current location: 44.8136607 20.473802

Date and time: 07/04/2023 14:47

Municipality

Aleksandrovac

Location description

Choose hazard

Skip >>



Landslide



Rockfall

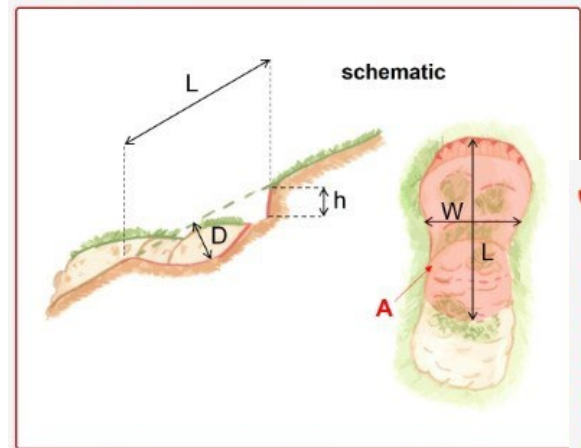


Flood



Flashflood

Dimenzije



- Uzrok klizišta\*
- padavine
  - zemljotres
  - otapanje snega
  - erozija nožice
  - ljudska aktivnost (potkopavanje, preopterećenje...)

Širina W (m)\*

Površina A (m2)\*

Dužina L (m)\*

Zapremina V (m3)\*

Dubina D (m)

- Aktivnost\*
- aktivan
  umiren/arhivski
  saniran

Približan datum sanacije

Vidljiv ožiljak (škarpa)\*  ne  da

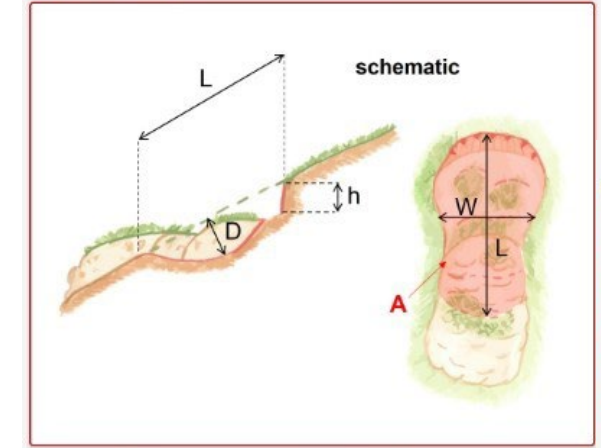
Visina glavnog ožiljaka (škarpe)? h (m)\*

Približni troškovi sanacije (€)

- Učestalost pojave\*
- jednom u nekoliko godina
  jednom godišnje
  više od jednom godišnje



Dimensions



- Landslide trigger\*
- rainfall
  - earthquake
  - snow melt
  - erosion of the base
  - human activity (undercutting, overloading...)

Width W (m)\*

Area A (m2)\*

Length L (m)\*

Volume V (m3)\*

Depth D (m)

- Activity\*
- active
  dormant/historic
  suspended/remediated

Approximate remediation date

Visible scarp\*  no  yes

Main scarp height h (m)\*


Approximate remediation cost (€)

- Frequency\*
- once in a few years
  once in a year
  more than once in a year

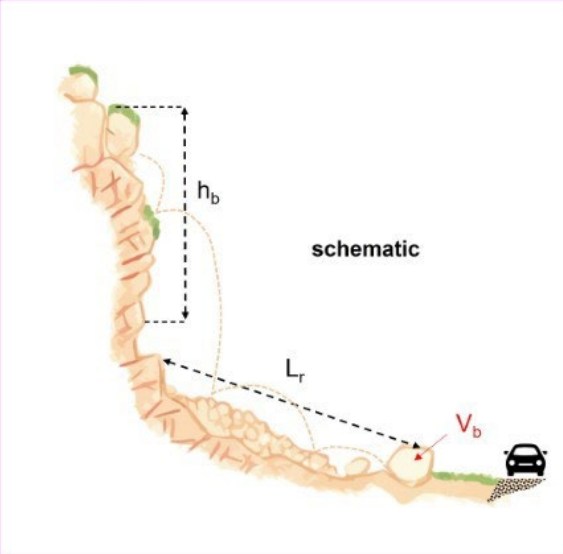


# PUTNE MREŽE

15:33 | 0.0KB/s | 81%

← Novi odron 

○ Dimenzije



**Uzrok odrona\***

- padavine
- zemljotres
- zaleđivanje
- korenje biljaka
- otapanje snega
- ljudska aktivnost (potkopavanje, preopterećenje...)

**Aktivnost\***

aktivan
  umiren/arhivski
  saniran

Domet odrona  $L_r$  (m)\*   
 Visina mesta odronjavanja  $h_b$  (m)   
 Zapremina bloka  $V_b$  (m<sup>3</sup>)


**Učestalost pojave\***

jednom u nekoliko godina
  jednom godišnje
  više od jednom godišnje

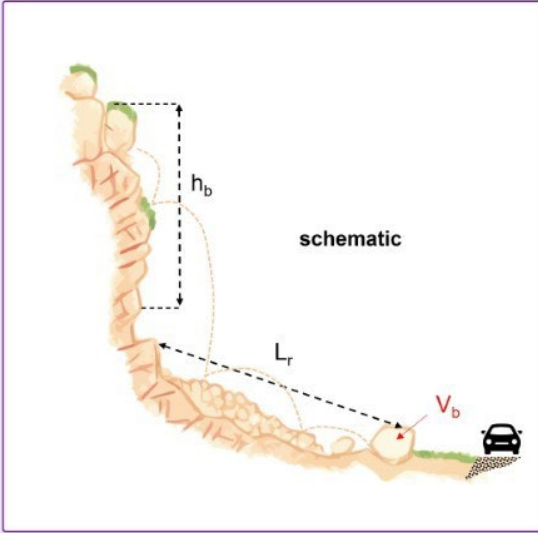
**Približan datum sanacije**

**Približni troškovi sanacije (€)**

14:51 | 2.5KB/s | 78%

← New rockfall 

○ Dimensions



**Rockfall trigger\***

- rainfall
- earthquake
- icing
- plant roots
- snow melt
- human activity (undercutting, overloading...)

**Activity\***

active
  dormant/historic
  suspended/remediated

Runout distance  $L_r$  (m)\*   
 Release height  $h_b$  (m)   
 Block volume  $V_b$  (m<sup>3</sup>)

**Frequency\***

once in a few years
  once in a year
  more than once in a year

**Approximate remediation date**

**Approximate remediation cost (€)**

15:34 | 0.0KB/s | 81%

← Nova poplava

○ Dimenzije

Širina protočne zone  $W_f$  (m) \*

Širina zone zadržavanja vode  $W_{ff}$  (m) \*

Nivo iznad/ispod puta  $h_r$  (m) \*

Nivo iznad redovnog nivoa odbrane  $h_n$  (m) \*

Učestalost pojave \*

jednom u nekoliko godina  
 jednom godišnje  
 više od jednom godišnje

Uzrok poplave \*

- padavine
- otapanje snega
- uzvodno probijanje brane
- nizvodno pregrađivanje reke
- spoljašnji poplavni talas

Stanje zaštitnih mera \*

bez zaštitnih mera od poplave  
 oštećen sistem zaštite  
 regulisan tok

Približan datum regulacije

Približni troškovi regulacije (€)



14:52 | 0.0KB/s | 78%

← New flood

○ Dimensions

Floodway width  $W_f$  (m) \*

Flood fringe width  $W_{ff}$  (m) \*

Level above/below the road  $h_r$  (m) \*

Level above normal  $h_n$  (m) \*

Frequency \*

once in a few years  
 once in a year  
 more than once in a year

Flood cause \*

- rainfall
- snow melt
- upstream dyke breach
- downstream river damming
- external floodwave

Protection status \*

no flood protection installed  
 damaged protection  
 regulated

Approximate regulation date

Approximate regulation cost (€)



← Nova bujica

○ Dimenzije

Širina bujice W (m)\*

Dometa bujice Lr (m)\*

Nivo iznad redovnog nivoa odbrane hn (m)

Nivo iznad/ispod puta hr (m)\*

Učestalost pojave\*

jednom u nekoliko godina  
 jednom godišnje  
 više od jednom godišnje

Uzrok bujice\*

padavine  
 otapanje snega  
 uzvodno probijanje protivbujične barijere

Stanje zaštitnih mera\*

bez zaštitnih mera od poplave  
 oštećen sistem zaštite  
 regulisan tok

Približan datum regulacije

Približni troškovi regulacije (€)

← Nova bujica

○ Dimenzije

Širina bujice W (m)\*

Dometa bujice Lr (m)\*

Nivo iznad redovnog nivoa odbrane hn (m)

Nivo iznad/ispod puta hr (m)\*

Učestalost pojave\*

jednom u nekoliko godina  
 jednom godišnje  
 više od jednom godišnje

Uzrok bujice\*

padavine  
 otapanje snega  
 uzvodno probijanje protivbujične barijere

Stanje zaštitnih mera\*

bez zaštitnih mera od poplave  
 oštećen sistem zaštite  
 regulisan tok

Približan datum regulacije

Približni troškovi regulacije (€)

← New flashflood

○ Dimensions

Width W (m)\*

Runout distance Lr (m)\*

Level above normal hn (m)\*

Level above/below the road hr (m)\*

Frequency\*

once in a few years  
 once in a year  
 more than once in a year

Flashflood cause\*

rainfall  
 snow melt  
 upstream barrier breach

Protection status\*

no flood protection installed  
 damaged protection  
 regulated

Approximate regulation date

Approximate regulation cost (€)

← New flashflood

○ Dimensions

Width W (m)\*

Runout distance Lr (m)\*

Level above normal hn (m)\*

Level above/below the road hr (m)\*

Frequency\*

once in a few years  
 once in a year  
 more than once in a year

Flashflood cause\*

rainfall  
 snow melt  
 upstream barrier breach

Protection status\*

no flood protection installed  
 damaged protection  
 regulated

Approximate regulation date

Approximate regulation cost (€)

15:36 | 0.0KB/s | 81%

## Saobraćaj

### Pojave

- Klizište 1 Pregled Ukloni
- Poplava 1 Pregled Ukloni

### Funkcija puta\*

- Urbani - ostali
- Urbani - tranzitni
- Vangradski - tranzitni
- Vangradski - vezni

### Prekid saobraćaja\*

- jedna traka
- obe trake
- smanjena brzina
- bez efekta

### Protok saobraćaja\*

- postoji javni prevoz
- nema javnog prevoza

Alternativni putevi\* ne  da

Procenjena dužina obilaska Id (km)\*



14:55 | 0.0KB/s | 78%

## Traffic

### Hazards

- Landslide 1 View Remove
- Flood 1 View Remove

### Road function\*

- Urban - other
- Public transport
- Rural - transit
- Rural - connecting villages

### Traffic interruption\*

- one direction
- both directions
- reduced speed
- no effect

### Traffic flow\*

- public transport included
- no public transport

Alternative routes\* no  yes

Estimated detour length Id (km)\*



# PUTNE MREŽE

## ← Infrastruktura

## Pojave

## Saobraćaj

▲ Saobraćaj

Pregled Ukloni

## ▲ Oštećen put

## Put

- kolovoz, slojevi asfaltnog zastora ⓘ
- kolovoz, betonski zastor ⓘ
- trotoar, kaldrma ⓘ
- kolovoz, svi slojevi ⓘ
- nasip, oštećenje nasipa ⓘ
- odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja ⓘ

## Objekti

- most, popravka površinskih elemenata mosta ⓘ
- most, popravka konstruktivnih elemenata mosta ⓘ
- most, novi most ⓘ
- potporni zid, popravka zida ⓘ
- potporni zid, novi zid (sekcije) ⓘ
- odvodnjavanje, sanacija propusta ⓘ

## Ostalo

- komunalne instalacije, prekid postojeće infrastrukture pored puta ⓘ
- zemljani radovi, uklanjanje zemljanog materijala ⓘ
- kavanje, kavanje stena ⓘ
- domaćinstva, ugrožena domaćinstva ⓘ
- nastradali, poginuli ili povređeni ⓘ
- ugrožen vodok ⓘ

Širina kolovoza B (m)\* ⓘ

50

Dužina oštećenog puta L (m) ⓘ

100

Slojevi asfalta Fa (m2) ⓘ

5000

Popravka površinskih elemenata mosta Lem (m) ⓘ

5

Ostala infrastruktura Ni (pcs) ⓘ

1

Površinski sloj\*

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
zemlja	šljunak	makadam
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
kaldrma/ kocka	beton	asfalt



## OTPORNOST

## PUTNE MREŽE

## ← Infrastructure

## Hazards

## Traffic

▲ Traffic

View Remove

## ▲ Affected road

## Road

- pavement, asphalt layers ⓘ
- pavement, concrete layer ⓘ
- pavement, cobble stone ⓘ
- pavement, all layers ⓘ
- embankment, damage of embankment ⓘ
- drainage, cleaning or repair of light drainage elements ⓘ

## Structures

- bridge, light surface repair ⓘ
- bridge, structure repair ⓘ
- bridge, new bridge ⓘ
- retaining wall, wall repair ⓘ
- retaining wall, new wall (sections) ⓘ
- drainage, repair of culverts ⓘ

## Other

- third party utilities, Interruption of existing roadside infrastructure ⓘ
- earthworks, removal of soil ⓘ
- scaling, rock scaling ⓘ
- households, endangered households ⓘ
- casualties, dead or injured ⓘ
- endangered stream ⓘ

Road width B (m)\* ⓘ

15

Affected road length L (m) ⓘ

10

Asphalt layers Fa (m2) ⓘ

150

Bridge surface repair Lem (m) ⓘ

10

Other infrastructure Ni (pcs) ⓘ

1

Surface course\*

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
dirt	gravel	macadam
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
cobble stone	concrete	asphalt



# Prikaz na karti

Četiri različita osnovna sloja

Tačkasti sloj sa geolokacijom opservacije

Linkovi (klasifikovani i ostali)

Sublinkovi (segmenti linkova)

Legenda za klase (ista za tačke i linije)

Labele vidljive na dovoljnom uvećanju

Informativni iskačući prozor

The image displays two screenshots of a web application interface for mapping road networks. The top screenshot shows a map with a street view and a legend with five classes: Very low class < 0.08 (green), Low class = 0.08 - 0.16 (light green), Moderate class = 0.16 - 0.36 (yellow), High class = 0.36 - 0.64 (orange), and Very high class > 0.64 (red). The bottom screenshot shows a map with a satellite view and a legend with the same five classes. Both screenshots show a sidebar with navigation options like Dashboard, Map, Geolocations, Links, Reports, Download, About Project, Workshops, Policy&Terms, Policy, and Terms.



# Pregledanje i editovanje podataka

Geolokacije osoblja

Sa tabelarnog pregleda

- Filtriranje i pretraga po svim poljima
- Pregledanje/editovanje selektovanih zapisa

Početna strana  
Map  
Stuff Geolokacije  
Volunteer Geolokacije  
Links  
Statistika  
Izveštaji  
Download  
About Project  
Workshops  
Workshop 1

Geolokacije

Prikaži 10 elemenata

Pretraga

UUID	LOKACIJA	OPSTINA	XCOORD	YCOORD	
10dcf0b0-7604-4dc7-936d-e7bab87fea46	Rogavčina Paklenik	Aleksandrovac	489152,2735	4817248,21714	<a href="#">✎</a>
12365a7f-9045-4eb5-ba07-21946bfd433	bogutovac hidrocentrala	Kraljevo	462176,50836	4835184,75102	<a href="#">✎</a>
18db0a5e-97bd-4a67-b769-db1bd5f0c772	lokacija 9 Kožetin Nade Milutinović	Aleksandrovac	503779,92182	4811838,7871	<a href="#">✎</a>

MAIN DATA HAZARDS TRAFFIC INFRASTRUCTURE

**Main information**

Location: Rogavčina Paklenik

Lsg: Aleksandrovac

Coordinates: 489152,2735 4817248,21714

Date added: 09/06/2023 12:44:13

User added: Marija Lačnjevac

upa put	Kraljevo	484782,06154	4851089,37548	<a href="#">✎</a>
bojevac	Aleksandrovac	503782,62115	4810493,22733	<a href="#">✎</a>
ika Vrbnica mja Škola	Aleksandrovac	497384,91146	4815188,18215	<a href="#">✎</a>
lica-radijator	Kraljevo	473330,9772	4843187,97227	<a href="#">✎</a>

MAIN DATA

HAZARDS

TRAFFIC

INFRASTRUCTURE

MAIN DATA

HAZARDS

TRAFFIC

INFRASTRUCTURE

## Hazards

### Landslides

Landslide 1 

Length L(m): 60    Width W(m): 3    Depth D(m): 2    Area A(m<sup>2</sup>): 180

Visible scarp: NO

Frequency: jednom godišnje

Landslide trigger: padavine, ljudska aktivnost (potkopavanje, preopterećenje...)

Activity: aktivan

Approx. remediation date:

Approx. remediation cost(€):

MAIN DATA

HAZARDS

TRAFFIC

INFRASTRUCTURE

### Traffic

Road function:                      Vangradski - vezni

Traffic interruption:                jedna traka

Traffic flow:                          nema javnog prevoza

Alternative routes:                 False

Estimated detour length  $l_d$  (km): 0

## Photos



### Nova fotografija

Изаберите датотеку

MAIN DATA

HAZARDS

TRAFFIC

INFRASTRUCTURE

### Infrastructure

Road width: 6

Affected road:                      kolovoz, svi slojevi, nasip, oštećenje nasipa, odvodnjavanje, sanacija propusta, komunalne instalacije, prekid infrastrukture pored puta, domaćinstva, ugrožena domaćinstva

road:

Pavement structure F(m<sup>2</sup>): 400

Embankment height  $H_n$ (m): 2

structure:

Drainage objects  $L_p$ (m): 10

# Podaci koje su prikupili volonteri

MaPLoRds

- Dashboard
- Map
- Stuff Geolocations
- Volunteer Geolocations
- Links
- Statistics
- Reports
- Download
- About Project
- Workshops
- Workshop 1
- Workshop 2
- Admin Panel
- Glossary
- Settings
- User accounts
- Policy&Terms
- Policy
- Terms

### Guest Geolocations

Prikaži 10 elemenata

UUID	LOKACIJA	OPSTINA	XCOORD	YCOORD
33cf2c27-9c2b-11ed-b4e8-00155dea8902	loc-4	Kraljevo	469591,285384	4841328,5345
33cf2c28-9c2b-11ed-b4e9-00155dea8902	loc-5	Kraljevo	469510,85189	4841696,83523
33cf2c29-9c2b-11ed-b4ea-00155dea8902	loc-6	Kraljevo	469578,585359	4841861,93556
33cf2c2a-9c2b-11ed-b4eb-00155dea8902	loc-7			
33cf5352-9c2b-11ed-b4ec-00155dea8902	loc-8			
33cf5353-9c2b-11ed-b4ed-00155dea8902	loc-9			
33cf5354-9c2b-11ed-b4ee-00155dea8902	loc-10			
33cf5355-9c2b-11ed-b4ef-00155dea8902	loc-11			
33cf5356-9c2b-11ed-b4f0-00155dea8902	loc-12			
33cf5357-9c2b-11ed-b4f1-00155dea8902	loc-13			

Prikaz 1 do 10 od ukupno 27 elemenata

## Preview

### Main information

**Location:** loc-4  
**Lsg:** Kraljevo  
**Coordinates:** 469591,285384 4841328,5345  
**Date added:** 06/06/2023 13:13:43  
**Location description:**  
**User added:** Unknown

### Photos



# Linkovi

Pregledanje

Editovanje

## Links

Show 10 entries

Search

CODE	OPSTINA	FCLASS	NAME	ONEWAY	
5123	Kraljevo	living_street	Patrijaha Pavla Žiča	B	<a href="#">✎</a>
5123	Kraljevo	living_street		B	<a href="#">✎</a>
5123	Kraljevo	living_street	Osmi mart	B	<a href="#">✎</a>
5123	Kraljevo	living_street	Dositeljeva	B	<a href="#">✎</a>
5123	Kraljevo	living_street	Momčila Petrovića - Trše	B	<a href="#">✎</a>
5123	Kraljevo	living_street		B	<a href="#">✎</a>
5123	Kraljevo	living_street	Joze Druškovića Pepe	B	<a href="#">✎</a>
				B	<a href="#">✎</a>
			Zmajevačka	B	<a href="#">✎</a>
			Kovanlučka	B	<a href="#">✎</a>

### Preview Link

Name: Momčila Petrovića - Trše      Class: living\_street      Layer:  
Lsg: Kraljevo      Ref:      Bridge: F  
OSM ID: 208049726      Oneway: B      Tunnel: F  
Code: 5123      MaxSpeed: 0      Length (km): 0.28

Normal scores: ---      Priority class: ---  
Sum scores: ---      Risk basec: 1  
Num points: ---      Final class: ---

Previous 1 ... 450 451 452 453 454 Next

# Statistika

Tabelarni prikaz

Grafički prikaz

Geolokacije po opštinama (grupisane prema klasi prioriteta)

Geolokacije po korisnicima (grupisane prema klasi prioriteta)

Hazardi po opštinama

Parametri hazarda po opštinama (grupisani prema bodovanju)

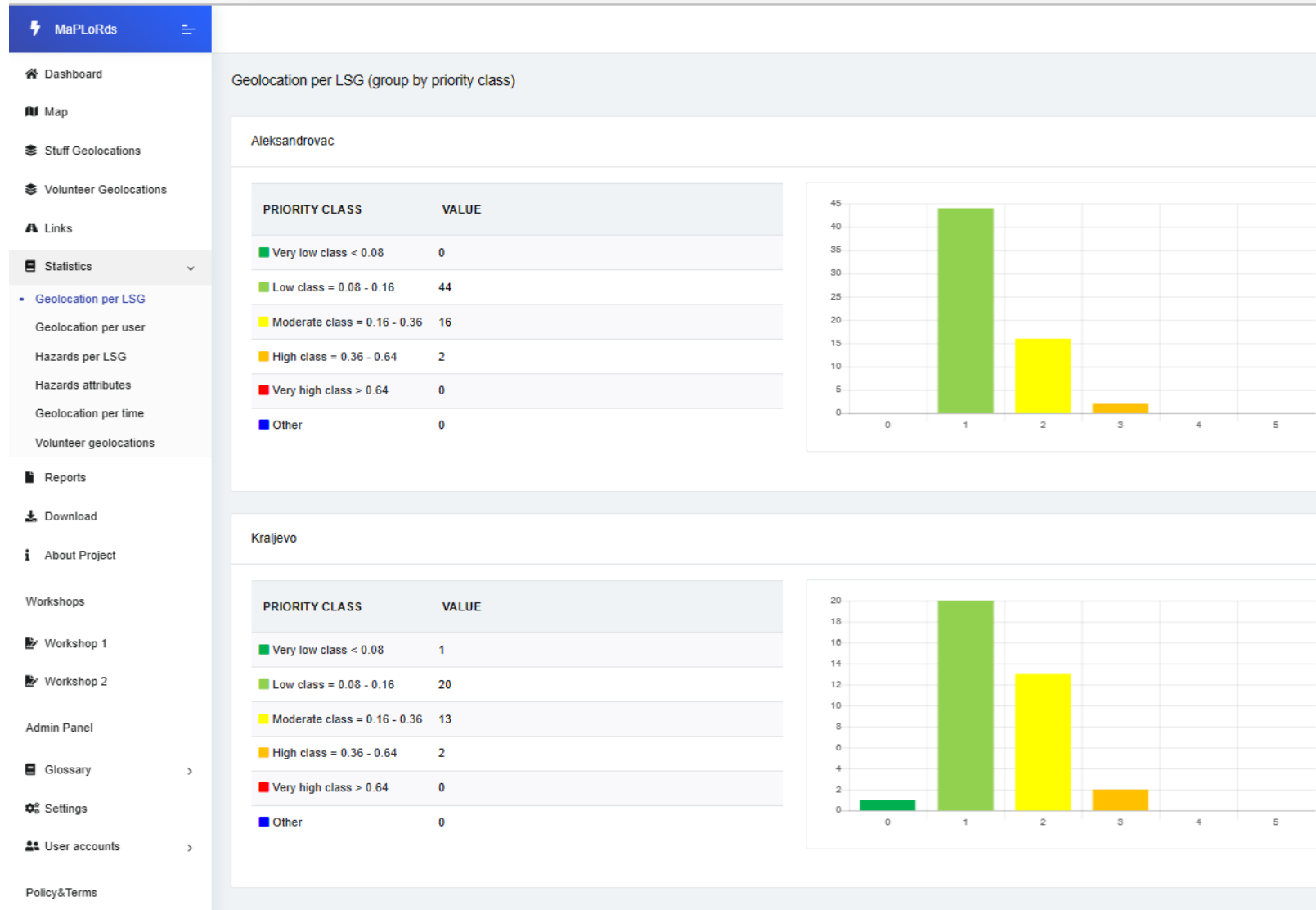
Opservacije na geolokacijama u periodu (po klasi prioriteta)

Opservacije geolokacija volontera (hazardi po opštinama)

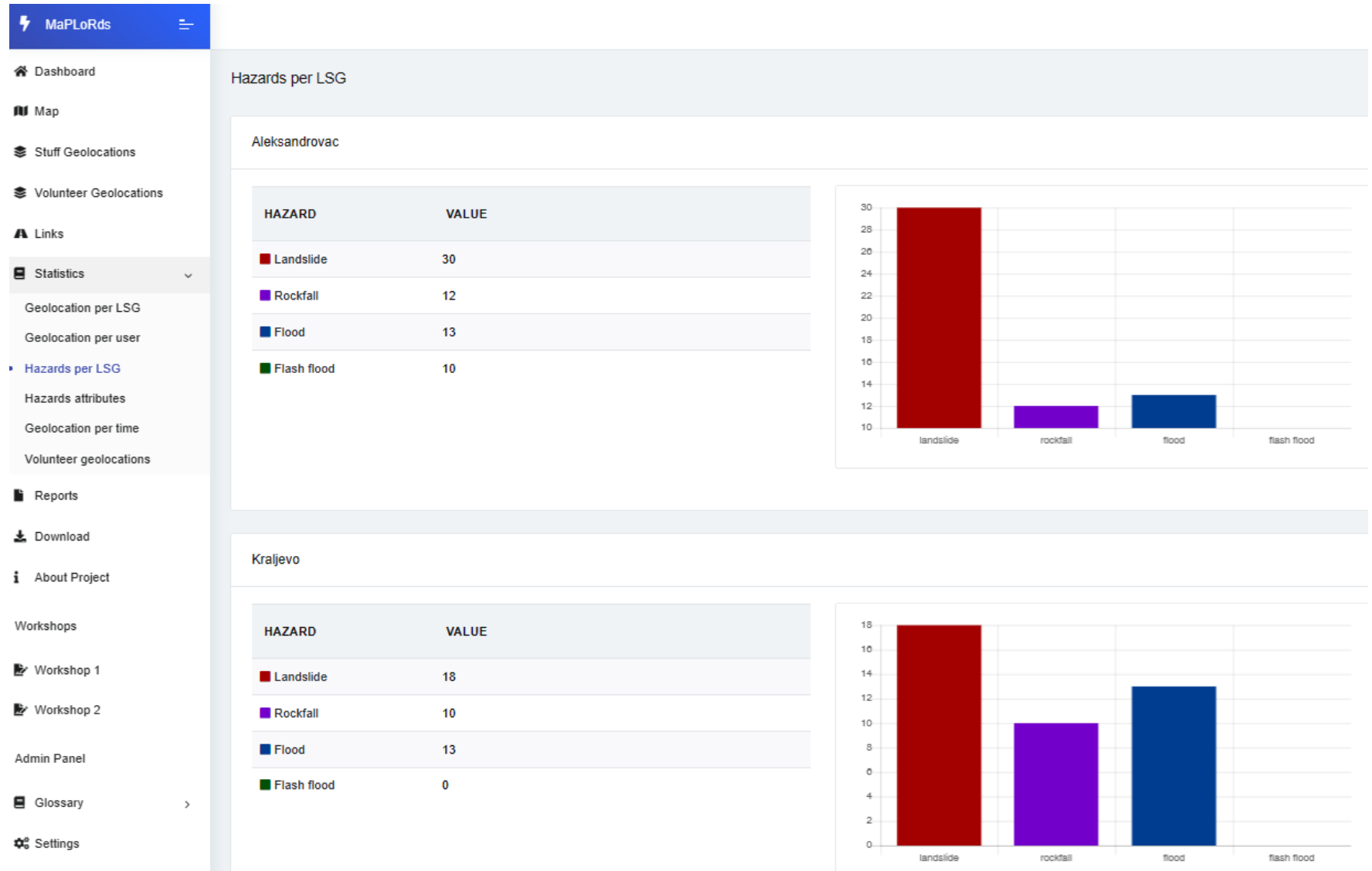
# Statistika – Opservacije geolokacija po opštinama

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# Statistika - Hazardi po opštinama



Aleksandrovac

## Landslides

Label: activity

SCORE	COUNT
1	2

5 30

Label: approx\_remediation\_cost

SCORE	COUNT
0,75	5

Label: approx\_remediation\_date

SCORE	COUNT
0,5	1

0,75 1

1 3

Label: area

SCORE	COUNT
1	12

2 15

3 4

5 1

Label: depth

SCORE	COUNT
1	25

2 6

5 1

Label: frequency

SCORE	COUNT
1	25

3 3

5 4

Label: length

SCORE	COUNT
1	4

2 18

Label: main\_scarp\_height

SCORE	COUNT
2	1

3 5

Label: trigger

SCORE	COUNT
4	32

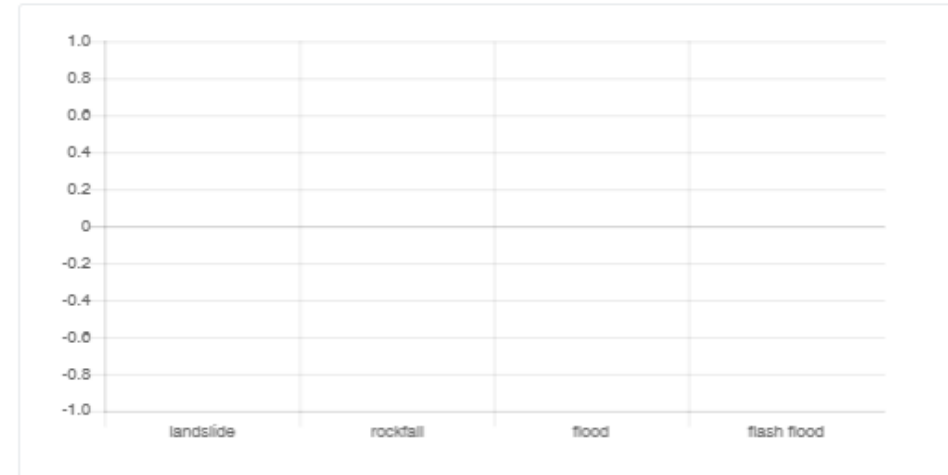


## Volunteer geolocations (Hazards per LSG)

### Aleksandrovac

Number of geolocations: 0

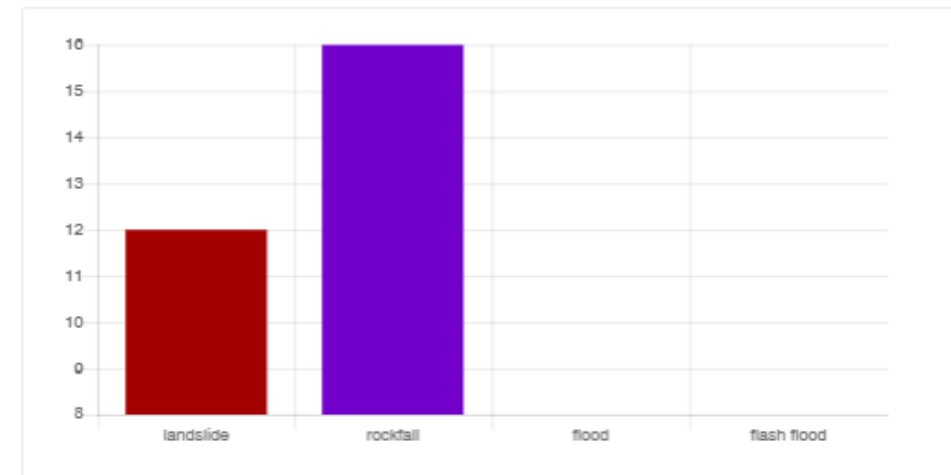
HAZARD	VALUE
■ Landslide	0
■ Rockfall	0
■ Flood	0
■ Flash flood	0



### Kraljevo

Number of geolocations: 27

HAZARD	VALUE
■ Landslide	12
■ Rockfall	16
■ Flood	8
■ Flash flood	8



# Upravljanje konfiguracijom sistema

Admin panel

## Jezik

- sr, en potpuno podržani za interfejs, svojstva i klasifikacije
- Dodavanje drugih jezika kroz interfejs je moguće (na primer francuski)

Languages

[Add language](#)


Prikaži  elemenata Pretraga

#	ISO 2 LETTER LANGUAGE CODE	NAME	
1	sr	Srpski	<a href="#">✎</a> <a href="#">✖</a>
2	en	English	<a href="#">✎</a> <a href="#">✖</a>
3	fr	Francuski	<a href="#">✎</a> <a href="#">✖</a>

Prikaz 1 do 3 od ukupno 3 elemenata Prethodna **1** Sledeća

Prikaži 10 ↓ elemenata

Pretraga 

#	DOMAIN	FIELD TYPE	TERM	
1	dm_process_type	MDomen	tip pojave	
2	dm_process_type	E	klizište	
3	dm_process_type	E	odron	
4	dm_process_type	E	poplava	
5	dm_process_type	E	bujica	
6	ds_freq	SDomen	Učestalost pojav	
7	ds_freq	E	jednom u nekolik godina	
8	ds_freq	E	jednom godišnje	
9	ds_freq	E	više od jednom godišnje	
10	dm_trig_lslide	MDomen	Uzrok klizišta	

← Edit

Field type\*

Domen (Single choice) ▼

Domain

ds\_freq

Measurement unit

Designation

Term en \*

Frequency

Description en

number of occurrences per unit of time

Term sr

Učestalost pojave

Description sr

broj pojava u jedinici vremena

Term fr

Description fr

Save

# Sistem bodovanja: sr - en

## Scoring system

Domain

dm\_trig\_Islide

TERM	ORDINAL NUMBER	MEASUREMENT UNIT	DESIGNATION	SCORE
padavine	1			4
zemljotres	2			5
otapanje snega	3			3
erozija nožice	4			1
ljudska aktivnost (potkopavanje, preopterećenje...)	5			2

Save

## Scoring system

Domain

dm\_trig\_Islide

TERM	ORDINAL NUMBER	MEASUREMENT UNIT	DESIGNATION	SCORE
rainfall	1			4
earthquake	2			5
snow melt	3			3
erosion of the base	4			1
human activity (undercutting, overloading...)	5			2





















Save

Add user

All user status

Show 10 entries

Search

FIRST AND LAST NAME	STATUS	ROLE NAME	USERNAME	EMAIL	
Jelena Jovkovic	• Active	Field specialist	Jelena	jelenajovkovic@yahoo.com	 
Marija Lačnjevac	• Active	Field specialist	marijalacnjevac	inspekcija@aleksandrovac.rs	 
Marko Marković	• Active	Field specialist	marko.m	marko@rgf.rs	 
Miloš Marjanović	• Active	Admin	milos.m	milos.marjanovic@rgf.bg.ac.rs	 
Nikola Gudžić	• Active	Field specialist	nikola.g	nikola.gudzic@rgf.bg.ac.rs	 
nikola guest	• Active	Guest	nikolag.guest	nikolaguesttest@test.com	 
Nikola Vulović	• Active	Admin	nikola.v	nikolavulovic@hotmail.com	 
opstina al	• Active	Field specialist	opstina	opstina@opstina.com	 
opstina kraljevo	• Pending	Field specialist	Opstinakr	kraljevo@opstina.com	 
Ranka Stankovic	• Pending	Field specialist	ranka.s	ranka@rgf.rs	 

Showing 1 to 10 of 28 entries

[Previous](#)
[1](#)
[2](#)
[3](#)
[Next](#)

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# Upravljanje korisničkim profilima

Edit

First name\*

Miloš

Last name\*

Marjanović

Email\*

milos.marjanovic@rgf.bg.ac.rs

Lsg

× Aleksandrovac
× Kraljevo

Status

Active

Role name

Admin

Username\*

milos.m

Password

Confirm password

#	ROLE NAME
1	Admin
2	Field specialist
3	Reader
4	Guest

Showing 1 to 4 of 4 entries

# Panel za preuzimanje

- Karte, aplikacije, korisni dokumenti

Mobile application

Offline maps

#	LOCAL-SELF GOVERNMENT	FORMAT
1	Opština Aleksandrovac	.mbtiles <a href="#">Download</a>
2	Opština Kraljevo	.mbtiles <a href="#">Download</a>

Documents

## Mobile application



### Android application version 2.0

Date release: dd/mm/yyyy - soon

Description: Final verison.

Upgrades:

- Guest user can registered.
- Guest user can submit hazards.
- Bug fixed.

[Download android app \(.apk\)](#)

### Android applicarion version 1.2.1 - DEMO (beta) version

Date release: 20.04.2023.

Description: Version for field specialist.Demo, testing and first data added in system.

Upgrades:

- User location available
- Bug fixed - upload images
- Bug fixed - export data to server
- Bug fixed - label text changed

[Download android app \(.apk\)](#)

# O projektu i radionice

## Project

Technical Assistance - Improving Resilience and Safety of the Local Road Transport Network in the Republic of Serbia.



ARUP



Technical Assistance - **Improving Resilience** and Safety of the **Local Road Transport Network** in the Republic of Serbia.

A **resilient** road transport infrastructure network can **withstand** disturbances and **recover** its **original performance** level quickly



## Project Contexts

World Bank helps Serbia and wider West Balkan strengthen road resilience to climate risks.

These efforts include:

- Methodology developed to assess natural hazard vulnerability.
- Action plan created for climate-resilient road asset management.

60% of local roads found more vulnerable to past disasters, requiring tailored approaches.

The **Project aims** to increase the ability of the **local road** transport network to **cope with natural hazards** and improve the delivery of services.

## Workshop 2

### Field work reports

The second workshop took place on 7.4.2023 for the Kraljevo LSG and 8.4.2023 for the Aleksandrovac LSG and comprised only of field work. Prior to realization of the workshop a new release of the mobile app was issued (6.4.2023), so that the LSG staff could reinstall and use debugged application during the workshop. The following agenda was enacted in both cases:

*briefing, site-visited field locations*

## Workshop 1

### Field work reports

The first workshop took place on 22.3.2023. Two Local Self Governments were enrolled: the host, City of Kraljevo; and the Aleksandrovac municipality representatives. From the project team side, project team leader, three key experts and one non-key expert were present. Seven members from the Kraljevo LSG participated the workshop, out of which 4 were enrolled in field training (and will be assigned to implement the methodology) and two members from the Aleksandrovac LSG (both enrolled in field training). Theoretical part agenda, as already described, was focused on the project presentation and introduction of the methodology, followed by technical instructions for MapLoRds mobile application installation procedure, user registration, using the mobile application on a hypothetical example and other initial settings of the working environment. It was hosted in the Kraljevo LSG headquarters. In the subsequent second part, the users and the project team instructors went for a field visit to train on a real field example, i.e., one example of rockfall (near Ročevići on road 181) and one example of flood event (in Grdica, the suburb of Kraljvo, on local road), both located in vicinity of the City of Kraljevo. It was concluded with a meeting where the first impressions were discussed, and further steps coordinated.

The goal of the second (field) part of the first workshop was to familiarize the users with the application functionalities, to guide them through the technical knowhow, to mend all on-going technical issues and to report all mobile application bugs. It was important to establish direct contact between field working LSG staff and the project experts in-charge of the methodology implementation and MapLoRds application development.

The first workshop outcome in numbers:

- the first mobile application test version was issued on 20.3.2023 prior to the first workshop
- 8/9 installations were successful
- 5/9 (3 for Kraljevo and 2 for Alenksandrovac) users were enrolled as field users
- technical issues were noted and debugged in the following app version issued on 29.3.2023.

The first workshop was successful, as users enrolled in the field work were closely communicating with the project team and provided feedback on mobile app issues, especially after the second app version issued several days after the workshop. The second workshop timing was agreed in accordance with their field work schedule for the beginning of April.



...nate resilience on local road network  
...using the mobile app were encountered  
...together with the project team to successfully complete th

...e operative members (team leader, key expert and no  
...ion that it covers one important route, along which th  
...methodology development. Six locations on local road  
...but location of debris-flow was not enlisted. One of th  
...er with the project team and avoid any confusion arisin  
...ed route was illustrative for the LSG staff, and useful f  
...mobile application, which resulted in releasing a ne

...th three operative project team members (team leade  
...visiting locations that caused confusion during the LS  
...ds distributed around the LSG territory, that were know  
...covered and reported to the IT project team. The late  
...uggestions.

...t teams) covering about 20 km of local road network  
...d project teams)

...were further trained to handle different situations ar  
...methodology. It was agreed that the MapLoRds solutio  
...the local road network.



# Izveštavanje i eksportovanje podataka

## Opcije izveštaja

- Opština
- Jezik
- Tip izveštaja
- Eksportovanje u excel

## Tipovi izveštaja:

- Detaljan izveštaj o opservacijama za izabranu opštinu (debug, srpski i engleski)
- Matrica prioriteta
- Izveštaj o linkovima po opštinama
- Izveštaj o sublinkovima po opštinama
- Izveštaj o opservacijama na linkovima
- Izveštaj o opservacijama na podlinkovima
- Opservacije geolokacija volontera



Report:

Links report per lsg

Lsg:

Aleksandrovac

Language:

sr

Generate report

Excel

NAZIV PUTA ↑↓	ROAD LINK ↑↓	START X ↑↓	START Y ↑↓	END X ↑↓	END Y ↑↓	DUŽINA(KM) ↑↓	SURFACE COURSE ↑↓	ROAD FUNCTION ↑↓	TIP POJAVE ↑↓	AFFECTED ROAD ↑↓	INVESTMENT CATEGORY ↑↓	PRIORITY SKOR
	10348	503794.20	4811888.03	4811872.29	4811872.29	0.02	asfalt	Urbani - ostali	Opservacije:1, klizište:1	odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja:1; zemljani radovi, uklanjanje zemljanog materijala:1	male investicije:1	0.40
	10286	508678.38	4805010.13	4805122.78	4805122.78	0.14	asfalt	Vangradski - tranzitni	Opservacije:1, bujica:2	kolovoz, svi slojevi:1; odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja:1; potporni zid, novi zid (sekcije):1; zemljani radovi, uklanjanje zemljanog materijala:1	velike investicije:1	0.38
	10347	503789.24	4811872.29	4811831.68	4811831.68	0.04	asfalt	Urbani - ostali	Opservacije:2, klizište:2	kolovoz, slojevi asfaltnog zastora:1; odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja:2; zemljani radovi, uklanjanje zemljanog materijala:2	male investicije:2	0.33
	10544	497779.95	4814929.92	4815054.54	4815054.54	0.52	asfalt	Vangradski - vezni	Opservacije:1, bujica:2	domaćinstva, ugrožena domaćinstva:1; kolovoz, slojevi asfaltnog zastora:1; kolovoz, svi slojevi:1; nasip, oštećenje nasipa:1; zemljani radovi, uklanjanje zemljanog materijala:1	velike investicije:1	0.12
	10071	507739.63	4811665.15	4811445.39	4811445.39	0.25	asfalt	Vangradski - tranzitni	Opservacije:2, poplava:2	domaćinstva, ugrožena domaćinstva:2; kolovoz, slojevi asfaltnog zastora:1; kolovoz, svi slojevi:1; odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja:1; odvodnjavanje, sanacija propusta:2; zemljani radovi, uklanjanje zemljanog materijala:2	srednje investicije:1; velike investicije:1	0.10
	10518	508312.70	4805284.10	4805122.78	4805122.78	0.69	beton	Vangradski - vezni	Opservacije:2, klizište:2	most, novi most:2	velike investicije:2	0.08

Report:

Lsg:

Language:

Detailed report of observations scores for LSG

Aleksandrovac

sr

Generate report

Excel

LSGID ↑	GEOLOCATIONUUID ↑	X ↑	Y ↑	LOKACIJA ↑	OBSERVACIJA UUID ↑	TABELA ↑	PARAMETAR ↑	TEKST ↑	SKOR ↑	SUMA SKORA ↑	SUMA SKOROVA ↑	NORMALNA SUMA ↑	KORISNIK ↑	↑
70017	ce597e81-ff68-4abb-9b5b-043bb054953f	508654.27146	4804986.16077		ced5ecbf-3d7f-4b27-8f0e-873f4c063278	flash_flood 1	Širina bujice (m)	10	1	19	38.00	1.36	Marija Lačnjevac (marijalacnjevac)	<a href="#">Link</a>
70017	ce597e81-ff68-4abb-9b5b-043bb054953f	508654.27146	4804986.16077		ced5ecbf-3d7f-4b27-8f0e-873f4c063278	flash_flood 1	Domet bujice (m)	200	5	19	38.00	1.36	Marija Lačnjevac (marijalacnjevac)	<a href="#">Link</a>
70017	ce597e81-ff68-4abb-9b5b-043bb054953f	508654.27146	4804986.16077		ced5ecbf-3d7f-4b27-8f0e-873f4c063278	flash_flood 1	Nivo iznad površine terena (m)	1.5	1	19	38.00	1.36	Marija Lačnjevac (marijalacnjevac)	<a href="#">Link</a>
70017	ce597e81-ff68-4abb-9b5b-043bb054953f	508654.27146	4804986.16077		ced5ecbf-3d7f-4b27-8f0e-873f4c063278	flash_flood 1	Nivo iznad/ispod puta (m)	0.2	3	19	38.00	1.36	Marija Lačnjevac (marijalacnjevac)	<a href="#">Link</a>
70017	ce597e81-ff68-4abb-9b5b-043bb054953f	508654.27146	4804986.16077		ced5ecbf-3d7f-4b27-8f0e-873f4c063278	flash_flood 1	Učestalost pojave	jednom u nekoliko godina	1	19	38.00	1.36	Marija Lačnjevac (marijalacnjevac)	<a href="#">Link</a>
70017	ce597e81-ff68-4abb-9b5b-043bb054953f	508654.27146	4804986.16077		ced5ecbf-3d7f-4b27-8f0e-873f4c063278	flash_flood 1	Uzrok bujice	padavine	3	19	38.00	1.36	Marija Lačnjevac (marijalacnjevac)	<a href="#">Link</a>
70017	ce597e81-ff68-4abb-9b5b-043bb054953f	508654.27146	4804986.16077		ced5ecbf-3d7f-4b27-8f0e-873f4c063278	flash_flood 1	Stanje zaštitnih mera	bez zaštitnih mera od poplave	5	19	38.00	1.36	Marija Lačnjevac (marijalacnjevac)	<a href="#">Link</a>
70017	ce597e81-ff68-4abb-9b5b-043bb054953f	508654.27146	4804986.16077		ced5ecbf-3d7f-4b27-8f0e-873f4c063278	flash_flood 2	Širina bujice (m)	10	1	19	38.00	1.36	Marija Lačnjevac (marijalacnjevac)	<a href="#">Link</a>

## Detaljan zveštaj o bodovanju opservacija na geolokacijama

Geoloka	Dpserva	Tip	Parametar	Vrednost	Bodov	Bodov	Bodov	Normali
1	1	landslide 1	Dužina	50	3	32	32	0.54
			Širina	100	4			
			Dubina	0	1			
			Vidljiv ožiljak (škarpa)	TRUE	5			
			Visina glavnog ožiljka (škarpe)?	0	1			
			Površina	5000	3			
			Zapremina	10000	3			
			Učestalost pojave	jednom u nekoliko godina	1			
			Uzrok klizišta	kiša, zemljotres	5			
			Aktivnost	aktivan	5			
			Približan datum sanacije	dat.: 2022-03-04	0.5			
			Približni troškovi sanacije	100	0.5			
		rockfall 1	Domet odrona	30	1	18	18	
			Visina mesta odronjavanja	10	3			
			Zapremina bloka	1	3			
			Učestalost pojave	jednom godišnje	3			
			Uzrok odrona	kiša	4			
			Aktivnost	umiren/arhivski	3			
			Približan datum sanacije	dat.: 2022-03-04	0.5			
			Približni troškovi sanacije	100	0.5			
		flood 1	Širina protočne zone	30	3	20	20	
			Širina zone zadržavanja vode	20	1			
			Nivo iznad redovnog nivoa odbrane	2	3			
			Nivo iznad/ispod puta	-0.5	3			
			Učestalost pojave	jednom u nekoliko godina	1			
			Uzrok poplave	otapanje snega	4			
		flash_flood 1	Stanje zaštitnih mera	bez zaštitnih mera od poplave	5	16	16	
			Širina bujice	30	1			
			Domet bujice	20	5			
			Nivo iznad površine terena	2	3			
			Nivo iznad/ispod puta	-0.5	2			
			Učestalost pojave	jednom u nekoliko godina	1			
Uzrok bujice	uzvodno probijanje protivbujične barijere		1					
Stanje zaštitnih mera	oštećen sistem zaštite		3					
traffic	Funkcija puta	Urbano (drugo)	1	12	12			
	Prekid saobraćaja	jedna traka	4					
	Protok saobraćaja	javni prevoz uključen	5					
	Alternativni putevi	TRUE	1					
	Procenjena dužina obilaska	0.9	1					
infrastructure	male investicije	kolovoz, slojevi asfaltnog zastora	2	7	7			
	velike investicije	potporni zid, novi zid (sekcije)	5					

Geoloka	Dpserva	Tip	Parametar	Vrednost	Bodov	Bodov	Bodov	Normali
1	1	landslide 1	Dužina	50	3	32	32	0.54
			Širina	100	4			
			Dubina	0	1			
			Vidljiv ožiljak (škarpa)	TRUE	5			
			Visina glavnog ožiljka (škarpe)?	0	1			
			Površina	5000	3			
			Zapremina	10000	3			
			Učestalost pojave	jednom u nekoliko godina	1			
			Uzrok klizišta	kiša, zemljotres	5			
			Aktivnost	aktivan	5			
			Približan datum sanacije	dat.: 2022-03-04	0.5			
			Približni troškovi sanacije	100	0.5			
		rockfall 1	Domet odrona	30	1	18	18	
			Visina mesta odronjavanja	10	3			
			Zapremina bloka	1	3			
			Učestalost pojave	jednom godišnje	3			
			Uzrok odrona	kiša	4			
			Aktivnost	umiren/arhivski	3			
			Približan datum sanacije	dat.: 2022-03-04	0.5			
			Približni troškovi sanacije	100	0.5			
		flood 1	Širina protočne zone	30	3	20	20	
			Širina zone zadržavanja vode	20	1			
			Nivo iznad redovnog nivoa odbrane	2	3			
			Nivo iznad/ispod puta	-0.5	3			
			Učestalost pojave	jednom u nekoliko godina	1			
			Uzrok poplave	otapanje snega	4			
			Stanje zaštitnih mera	bez zaštitnih mera od poplave	5			
			flash_flood 1	Širina bujice	30			1
		Domet bujice		20	5			
		Nivo iznad površine terena		2	3			
		Nivo iznad/ispod puta		-0.5	2			
		Učestalost pojave		jednom u nekoliko godina	1			
Uzrok bujice	uzvodno probijanje protivbujične barijere	1						
Stanje zaštitnih mera	oštećen sistem zaštite	3						
traffic	Funkcija puta	Urbano (drugo)		1	12	12		
	Prekid saobraćaja	jedna traka		4				
	Protok saobraćaja	javni prevoz uključen		5				
	Alternativni putevi	TRUE	1					
	Procenjena dužina obilaska	0.9	1					
	infrastructure	male investicije	kolovoz, slojevi asfaltnog zastora	2			7	7
		velike investicije	potporni zid, novi zid (sekcije)	5				

# PUTNE MREŽE

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
road_r	road	length	locat	coord	coord	ot	landslide	rockfall	flood	flashflood	traffic	infrastructure	investment_cate	pric	pr	it
1	Светосавк	23344	0.32 loc-6	469579	4841862	6	Dimensions: 650x250x9, more than once in a year, rainfall, erosion of the base, human activity (undercutting, overloading...), active.				Rural (transit), both directions, no public transport, .	pavement, cobbled stone, drainage, cleaning or repair of light drainage elements, bridge, new bridge, gravel, .	light investment:1; heavy investment:1	1	5	
2	Светосавк	23344	0.32 loc-5	469511	4841697	5	Dimensions: 150x50x3, once in a year, rainfall, human activity (undercutting, overloading...), active.				Urban transit, one direction, public transport included, .	pavement, asphalt layers, drainage, cleaning or repair of light drainage elements, gravel, .	light investment:1; heavy investment:1	1	5	
3		20694	0.2 loc-11	470155	4841910	11	Dimensions: 90x60x10, once in a year, rainfall, human activity (undercutting, overloading...), dormant/historic.	11: Dimensions: 20x15x, once in a year, snow melt, human activity (undercutting, overloading...), suspended/remediated.			Rural (transit), one direction, public transport included, .	pavement, asphalt layers, cobbled stone, .	light investment:1	0.71	5	
4	Гаврила Ћ	20692	0.65 loc-9	470316	4842112	9	Dimensions: 40x30x15, once in a few years, rainfall, earthquake, active.	9: Dimensions: 50x25x, more than once in a year, icing, plant roots, dormant/historic.	3: Dimensions: 40x20, once in a few years, snow melt, no flood protection installed.		Urban (other), one direction, public transport included, .	pavement, asphalt layers, cobbled stone, .	light investment:3; heavy investment:1	0.64	5	
5	Гаврила Ћ	20692	0.65 loc-8	469957	4842002	8				2: Dimensions: 50x450, once in a year, rainfall, no flood protection installed. . 8: Dimensions: 20x25, once in a few years, upstream		pavement, asphalt layers, bridge, light surface repair, .				

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	
road_r	road	length	locat	coord	coord	ot	landslide	rockfall	flood	flashflood	traffic	infrastructure	investment_cate	pric	pr	it	
6	Гаврила Ћ	20692	0.65 loc-12	470393	4842102	12							trotoar, kaldrma, odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja, most, novi most, šljunak, .	male investicije:1; velike investicije:1	1	5	
7	Гаврила Ћ	20692	0.65 loc-10	470219	4842072	10							kolovoz, slojevi asfaltnog zastora, odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja, šljunak, .	male investicije:1; velike investicije:1	1	5	
8	Гаврила Ћ	22037	0.33 loc-13	470469	4842074	13							kolovoz, slojevi asfaltnog zastora, kaldrma/kocka, .	male investicije:1	0.71	5	
9	Гаврила Ћ	22037	0.33 loc-14	470515	4842007	14	a year, rainfall, erosion of the base, human activity (undercutting, overloading...), active.						kolovoz, slojevi asfaltnog zastora, kaldrma/kocka, .	male investicije:3; velike investicije:1	0.64	5	
10	Светосавк	21035	0.99 loc-7	469869	4841930	7							kolovoz, slojevi asfaltnog zastora, most, popravka površinskih elemenata mosta, zemljani radovi, uklanjanje zemljanog materijala, kaldrma/kocka, .	male investicije:3; velike investicije:1	0.64	5	
1	Светосавк	23344	0.32 loc-6	469579	4841862	6	Dimenzije: 650x250x9, više od jednom godišnje, kiša, erozija nožice, ljudska aktivnost (potkopavanje, preopterećenje...), aktivan.							trotoar, kaldrma, odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja, most, novi most, šljunak, .	male investicije:1; velike investicije:1	1	5
2	Светосавк	23344	0.32 loc-5	469511	4841697	5	Dimenzije: 150x50x3, jednom godišnje, kiša, ljudska aktivnost (potkopavanje, preopterećenje...), aktivan.							kolovoz, slojevi asfaltnog zastora, most, popravka površinskih elemenata mosta, zemljani radovi, uklanjanje zemljanog materijala, kaldrma/kocka, .	male investicije:3; velike investicije:1	0.64	5
3		20694	0.2 loc-11	470155	4841910	11	Dimenzije: 90x60x10, jednom godišnje, kiša, ljudska aktivnost (potkopavanje, preopterećenje...), umiren/arhivski.							kolovoz, slojevi asfaltnog zastora, kaldrma/kocka, .	male investicije:1	0.71	5
4	Гаврила Ћ	20692	0.65 loc-9	470316	4842112	9	Dimenzije: 40x30x15, jednom u nekoliko godina, kiša, zemljotres, aktivan.							kolovoz, slojevi asfaltnog zastora, kaldrma/kocka, .	male investicije:3; velike investicije:1	0.64	5
5	Гаврила Ћ	20692	0.65 loc-8	469957	4842002	8								kolovoz, slojevi asfaltnog zastora, most, popravka površinskih elemenata mosta, zemljani radovi, uklanjanje zemljanog materijala, kaldrma/kocka, .	male investicije:3; velike investicije:1	0.64	5
6	Гаврила Ћ	20692	0.65 loc-12	470393	4842102	12								trotoar, kaldrma, odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja, most, novi most, šljunak, .	male investicije:3; velike investicije:1	0.64	5
7	Гаврила Ћ	20692	0.65 loc-10	470219	4842072	10								kolovoz, slojevi asfaltnog zastora, kaldrma/kocka, .	male investicije:3; velike investicije:1	0.64	5
8	Гаврила Ћ	22037	0.33 loc-13	470469	4842074	13								kolovoz, slojevi asfaltnog zastora, kaldrma/kocka, .	male investicije:3; velike investicije:1	0.64	5
9	Гаврила Ћ	22037	0.33 loc-14	470515	4842007	14								kolovoz, slojevi asfaltnog zastora, kaldrma/kocka, .	male investicije:3; velike investicije:1	0.64	5
10	Светосавк	21035	0.99 loc-7	469869	4841930	7								kolovoz, slojevi asfaltnog zastora, kaldrma/kocka, .	male investicije:3; velike investicije:1	0.64	5

Opservacije na geolokacijama sortirane po bodovanju (prioritetu)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
row_id	road_name	road_line	start_x	start_y	end_x	end_y	length	surface_course	road_function	hazard_type	affected_road	investment_category	priority	priority_class
1	Светосавска	23344	469577.37	4841564.85	4841876.91	4841876.91	0.32	gravel	Rural (transit), Urban transit	Observations:2, landslide:2	bridge, new bridge:1; drainage, cleaning or repair of light drainage elements:2; pavement, asphalt layers:1; pavement, cobble stone:1	light investment:1; heavy investment:1	1	5
2		20694	470144.70	4842027.89	4841834.86	4841834.86	0.20	cobbled stone	Rural (transit)	Observations:1, landslide:1, rockfall:1	pavement, asphalt layers:1	light investment:1	0.71	5
3	Гаврила Карапанџића Гаја	20692	470481.60	4842248.05	4841972.49	4841972.49	0.65	cobbled stone	Rural (connecting villages), Urban (other), Urban transit	Observations:4, landslide:1, rockfall:1, poplava:2, flash flood:3	bridge, light surface repair:1; earthworks, removal of soil:1; pavement, asphalt layers:2; pavement, cobble stone:1; retaining wall, new wall (sections):1	light investment:3; heavy investment:1	0.64	5
4	Гаврила Карапанџића Гаја	22037	470442.38	4842131.30	4841835.74	4841835.74	0.33	macadam	Rural (transit), Urban transit	Observations:2, landslide:1, rockfall:1, poplava:1	pavement, all layers:1; pavement, concrete layer:1; retaining wall, wall repair:1	medium investment:1; heavy investment:1	0.53	4
5	Светосавска	21035	468997.05	4841915.85	4841972.49	4841972.49	0				bridge, light surface repair:2; bridge, new			



# PUTNE MREŽE

A	B	C	D	E	F	G	H	I	J	K	L	M	N
row_id	road_name	road_line	start_x	start_y	end_x	end_y	length	surface_course	road_function	hazard_type	affected_road	investment_category	priority
1	Светосавска	23344	469577.37	4841564.85	4841876.91	4841876.91	0.32	šljunak	Gradski prevoz, Ruralni (tranzit)	Opervacije:2, klizište:2	kolovoz, slojevi asfaltnog zastora:1; most, novi most:1; odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja:2; trotoar, kaldrma:1	male investicije:1; velike investicije:1	1
2		20694	470144.70	4842027.89	4841834.86	4841834.86	0.20	kaldrma/kocka	Ruralni (tranzit)	Opervacije:1, klizište:1, odron:1	kolovoz, slojevi asfaltnog zastora:1	male investicije:1	0.71
3	Гаврила Карапанџића Гаја	20692	470481.60	4842248.05	4841972.49	4841972.49	0.65	kaldrma/kocka	Gradski prevoz, Ruralno (povezivanje sela), Urbano (drugo)	Opervacije:4, klizište:1, odron:1, poplava:2, bujica:3	kolovoz, slojevi asfaltnog zastora:2; most, popravka površinskih elemenata mosta:1; potporni zid, novi zid (sekcije):1; trotoar, kaldrma:1; zemljani radovi, uklanjanje zemljanog materijala:1	male investicije:3; velike investicije:1	0.64
4	Гаврила Карапанџића Гаја	22037	470442.38	4842131.30	4841835.74	4841835.74	0.33	makadam	Gradski prevoz, Ruralni (tranzit)	Opervacije:2, klizište:1, odron:1, poplava:1	kolovoz, betonski zastor:1; kolovoz, svi slojevi:1; potporni zid, popravka zida:1	srednje investicije:1; velike investicije:1	0.53
5	Светосавска	21035	468997.05	4841915.85	4841972.49	4841972.49	0.99	asfalt, kaldrma/kocka, šljunak	Ruralni (tranzit), Ruralno (povezivanje sela), Urbano (drugo)	Opervacije:3, klizište:1, odron:1, poplava:1, bujica:2	kolovoz, slojevi asfaltnog zastora:1; kolovoz, svi slojevi:1; most, novi most:1; most, popravka površinskih elemenata mosta:2; odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja:1; odvodnjavanje, sanacija propusta:1; trotoar, kaldrma:1; zemljani radovi, uklanjanje zemljanog materijala:1	male investicije:1; velike investicije:2	0.48
6	Четврта Чибуквачка	20695	470261.09	4842058.31	4841305.20	4841305.20	1.17	kaldrma/kocka, makadam	Gradski prevoz, Ruralni (tranzit), Ruralno (povezivanje sela), Urbano (drugo)	Opervacije:5, klizište:2, odron:1, poplava:2, bujica:2	kolovoz, betonski zastor:1; kolovoz, slojevi asfaltnog zastora:2; kolovoz, svi slojevi:1; nasip, oštećenje nasipa:1; odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja:1; potporni zid, novi zid (sekcije):1; trotoar, kaldrma:1	male investicije:2; velike investicije:3	0.47
7	Светосавска	23343	469415.38	4841620.91	4841782.21	4841782.21	0.24	šljunak	Gradski prevoz	Opervacije:1, klizište:1	kolovoz, slojevi asfaltnog zastora:1; odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja:1	male investicije:1	0.46
8	Осма Чибуквачка	20709	470289.20	4841058.19	4841377.83	4841377.83	0.78	asfalt	Ruralni (tranzit)	Opervacije:1, klizište:1, odron:1, bujica:1	kolovoz, betonski zastor:1; kolovoz, slojevi asfaltnog zastora:1; nasip, oštećenje nasipa:1	velike investicije:1	0.38
9	Јована Цвијића	20696	470394.69	4841844.63	4841949.60	4841949.60	0.18	makadam	Ruralno (povezivanje sela)	Opervacije:1, odron:1	nasip, oštećenje nasipa:1	velike investicije:1	0.31
10	Чибуквачка	21037	471378.98	4841515.86	4840572.72	4840572.72	2.34	beton, makadam, zemlja	Gradski prevoz, Ruralni (tranzit), Ruralno (povezivanje sela), Urbano (drugo)	Opervacije:4, klizište:2, odron:3, poplava:1, bujica:2	kavanje, kavanje stena:1; kolovoz, slojevi asfaltnog zastora:2; kolovoz, svi slojevi:1; most, popravka površinskih elemenata mosta:1; odvodnjavanje, čišćenje ili popravka manjih elemenata odvodnjavanja:2; potporni zid, novi zid (sekcije):1; trotoar, kaldrma:1	male investicije:2; velike investicije:2	0.26

Podaci o linkovima sortirani po bodovanju