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Broadband mapping in Slovenia

AKOS GEOportal

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- History and background of mapping in Slovenia
- Legal background
- Short introduction of mapping
- Presentation of AKOS GEOportal
- Questions and discussion?

Key milestons in BB mapping

- 1974 - **Land Cadastre Act**
  - Data on public infrastructure networks and facilities were collected
  - Managed for territory of municipalities by a local surveying authority
  - Data were not properly maintained and data were incomplete
  - Used mainly for the needs of local communities
- 1991- After gaining independence, Slovenia started to redesign the entire legal system.
- 2002 - The **Spatial Planning Act** was adopted
- 2004 – Slovenian Surveying and Mapping Authority started with the development of the central database, called **consolidated cadastre of public infrastructure**,
- 2006 - **Real Estate Records Act**
- 2012 – The Information Society Directorate in coorporation with AKOS and mapping authority started with mapping process of **Network termination points**,

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MINISTRY OF THE ENVIRONMENT AND SPATIAL PLANNING
THE SURVEYING AND MAPPING AUTHORITY OF THE REPUBLIC OF SLOVENIA

- December 2013 – Based on Electronic Communications Act, **AKOS issued General act** on entry, collection and access to data on Network termination points,
- 2015 – AKOS establish **its own database:** AKOS published the first public tender for consulting services, Project group to launch a mapping project was appointed and project was launched

Legal background - ECA

Article 14 of Electronic Communications Act (ZEKom-1)
(entry in the register)

- The owner of a communications network and associated infrastructure **must supply information** directly to the **body responsible for surveying and mapping (GURS).**
- Data about **locations, type, usage, including number of communications lines** (optic fibre, copper pair, coaxial cable) and **capacity.**
- **Publically available data**
- Every amendment to this information shall be reported to the competent body **within three months of its occurrence.**

Article 15 of Electronic Communications Act (ZEKom-1)
(supervision)

- The Agency **shall oversee the implementation of the provisions** of this Chapter and of the regulations and acts issued pursuant thereto, and cooperate with the inspectorate responsible for construction in doing so.
- The Agency has a possibility to act as a supervisor whether the input data is reported or not and if the data is correct.
- The fine for the medium or large firm (in case they don‘t report data) is **from 50.000 - 400.000 €.**

Technical parameters – open source policy

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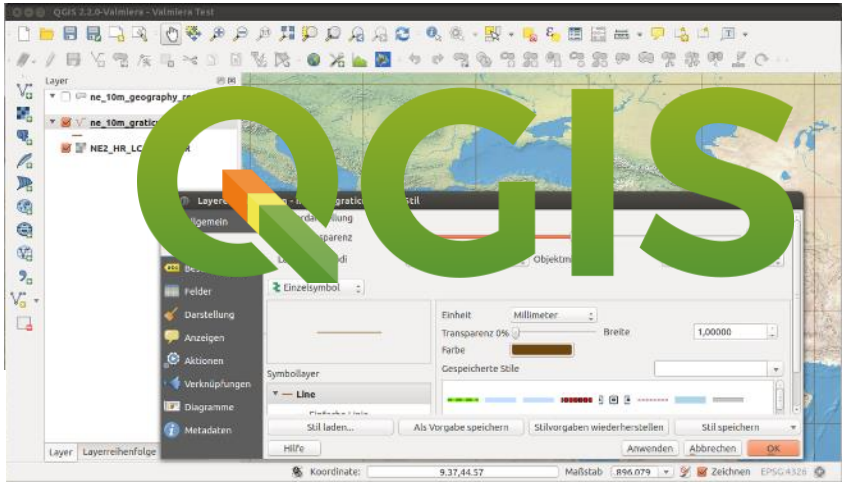
PostgreSQL

PostGIS

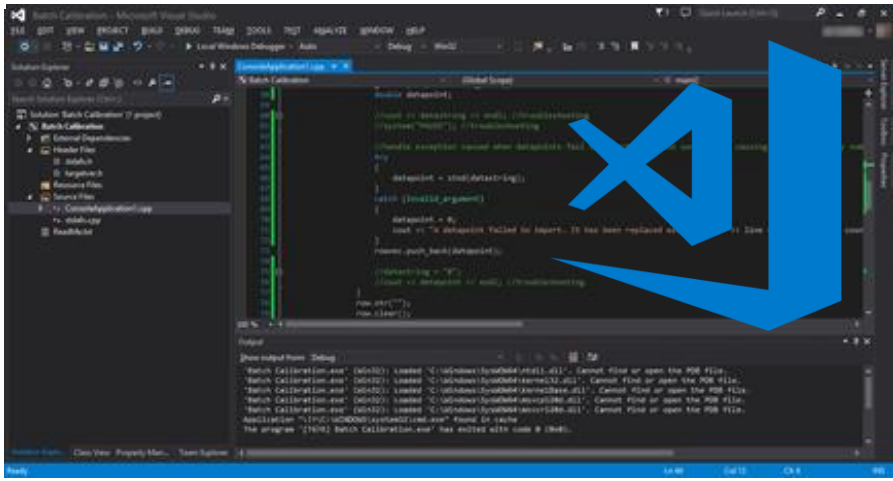
Spatial PostgreSQL

Apache HTTP SERVER



ASP.NET

GeoServer



Spatial and attribute data

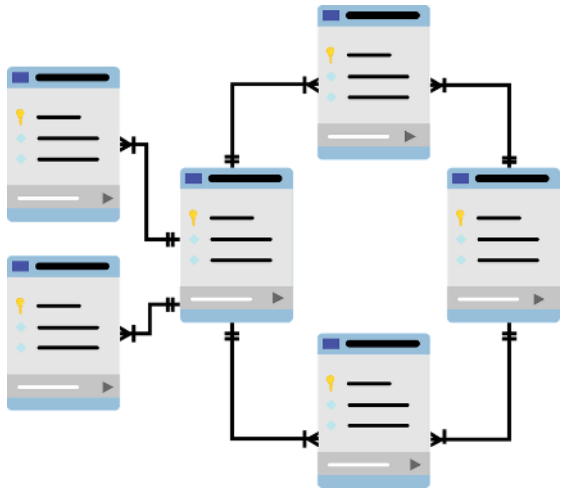
AKOS established its own database which includes several publicaly available databases and non-public databases in order to get complete picture of the networks coverage and availability in Slovenia. ***(Decree on the provision and re-use of public information)***

BASIC DATA:

- **Consolidated cadastre of public infrastructure (PUBLIC)**
- **Network termination points database (PUBLIC)**

ADDITIONAL:

- **Register of spatial units (PUBLIC)**
- **AJPES business register (PUBLIC)**
- **The building cadastre (PUBLIC)**
- **Central population register (NON-PUBLIC)**

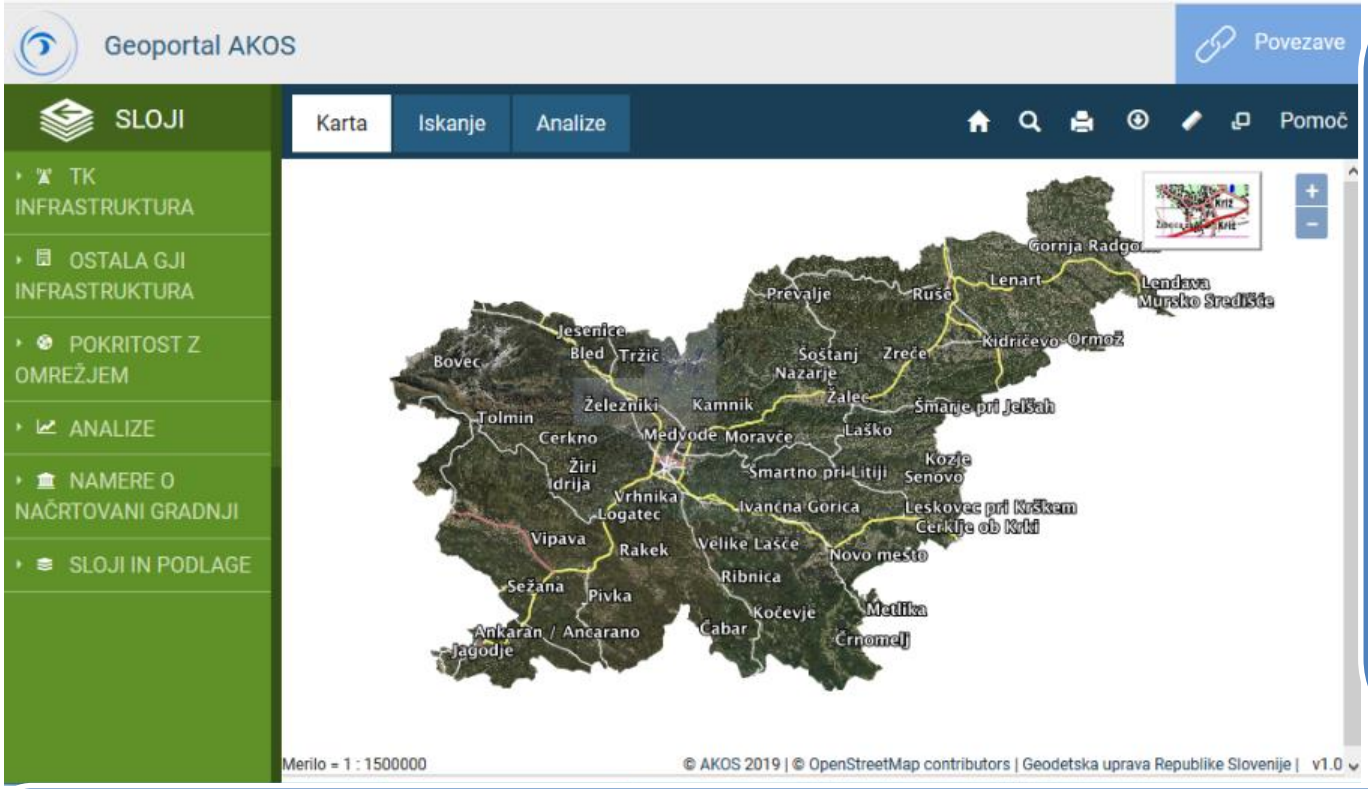


AKOS:

- **Retail mapping (prices, technologies, speed, services – 100m grid)**
- **Wholesale mapping (prices, technologies, services – 100m grid)**

GEOportal AKOS

Geoportal AKOS was launched in 2019.



The main purpose of the AKOS Geoportal is to reduce the cost of building very high-speed networks (VHCN) and to encourage sharing and joint construction.

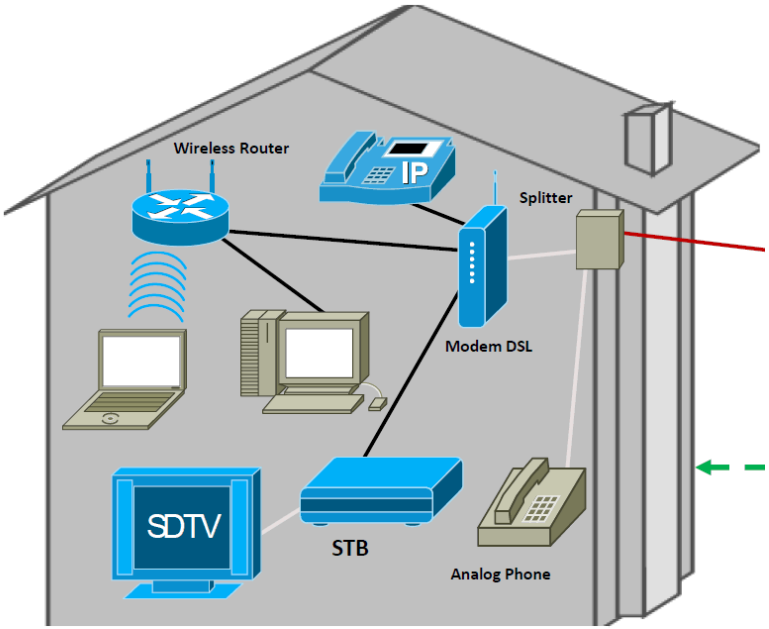
AKOS geoportal allows public access to AKOS data and provide access to the data that has not been accessible so far in one place. Main goals of providing these data are related to higher transparency of operation and proactive publication of spatial information.

New options for public

- GEOportal enables users quick insight to the various types of electronic communications infrastructure and their descriptive data, the results of analysis and associated spatial layers,
- To review fixed and mobile networks coverage,
- The information displayed in the geoportal enables users to compare providers and options for electonic communication network access for every address in Slovenia,
- New options for showing spatial analysis results

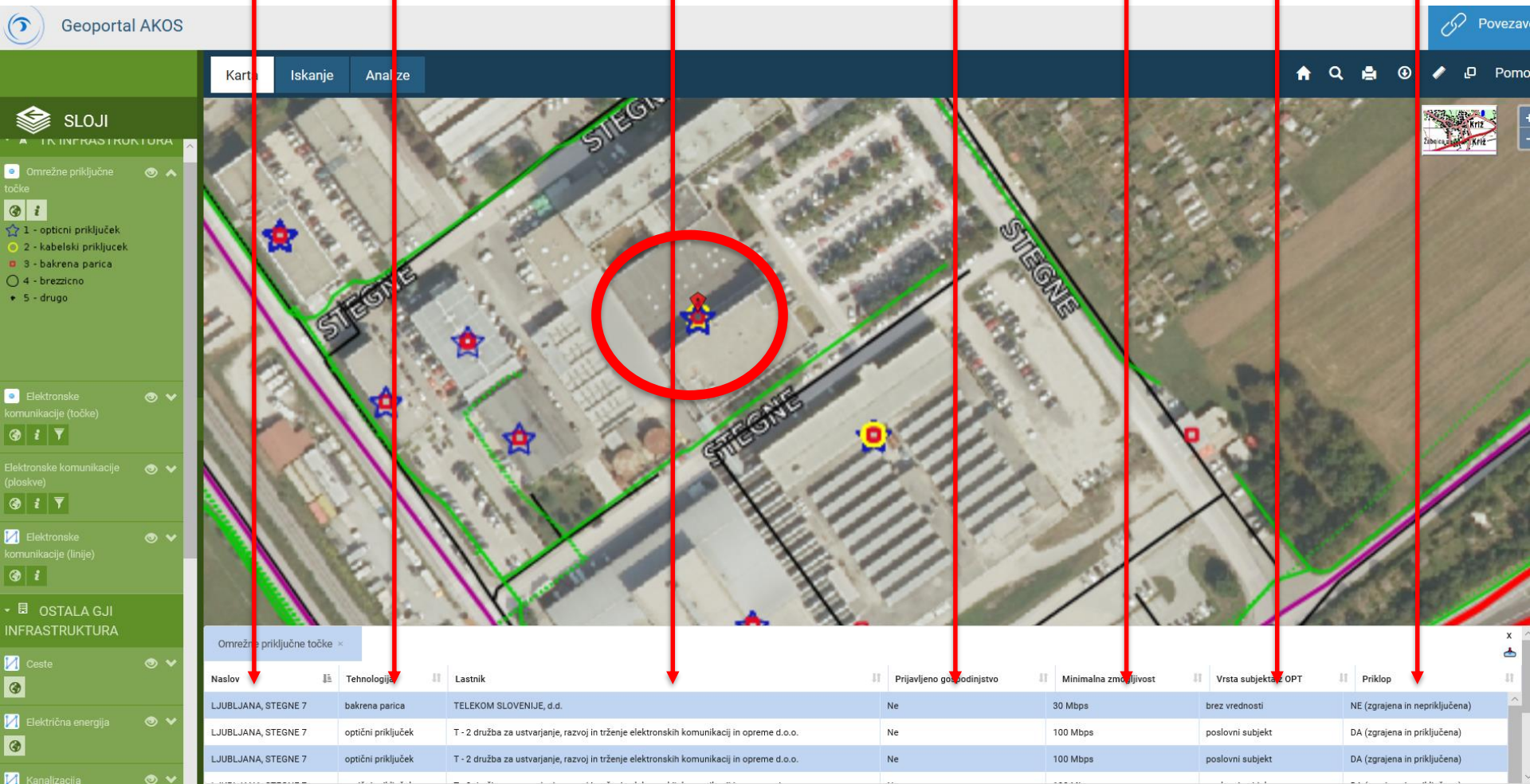
Network termination point

‘Network termination point’ shall mean the physical point at which a subscriber is provided with access to a public communications network; in the case of networks involving switching or routing, the network termination point shall be identified by means of a specific network address, which may be linked to a subscriber number or name.



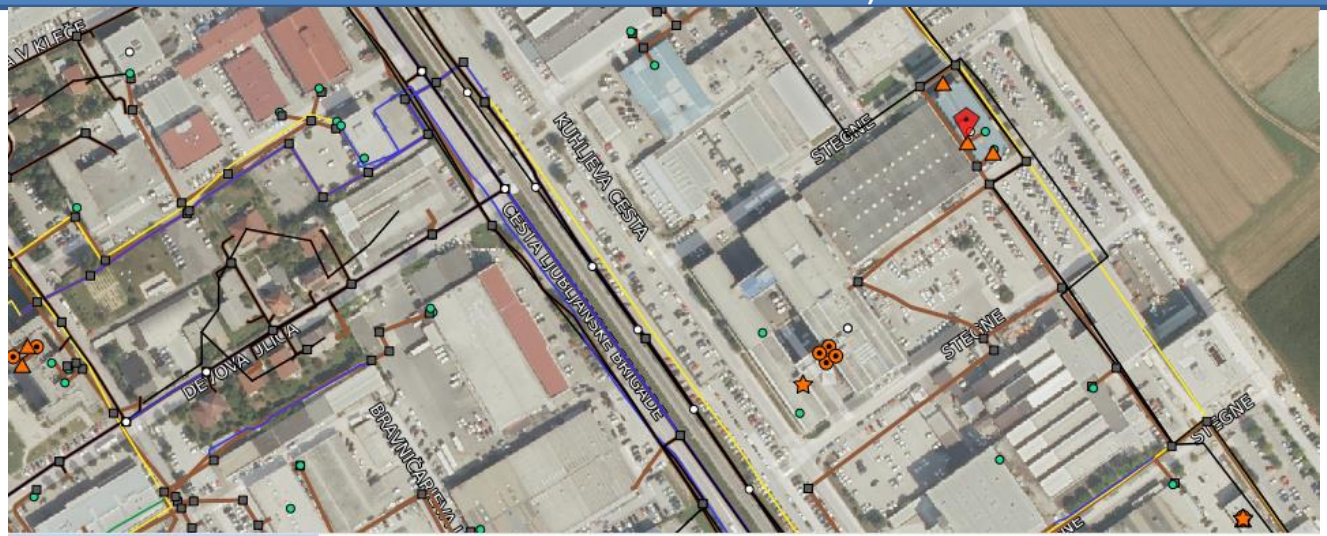
Network termination point

Location/address
Technology
Owner
Household
Minimum speed
Type of objects
Connection



Electronic communications

Electronic communications - points, lines, polygons (electronic communication network are transmission systems and other sources that allow the transmission of signals by wire, radio waves, optical or other electromagnetic means, including satellite networks, fixed and mobile terrestrial networks, electrical cable systems , if they are used for transmission of signals, networks used for radio and television broadcasting and cable television networks regardless of the type of information transmitted)



Elektronske komunikacije (točke) × | Elektronske komunikacije (linije) × | Elektronske komunikacije (ploskve) ×

Vrsta Objekta	Vrsta Omrežja	Dodaten Opis	Upravljalec
Antenski stolp	mobilno prizemno omrežje	Antenski stolp BP	A1 Slovenija, telekomunikacijske storitve, d. d.
Drugi objekti elektronskih komunikacij	fiksno prizemno omrežje	Funkcijska lokacija	TELEKOM SLOVENIJE, d.d.

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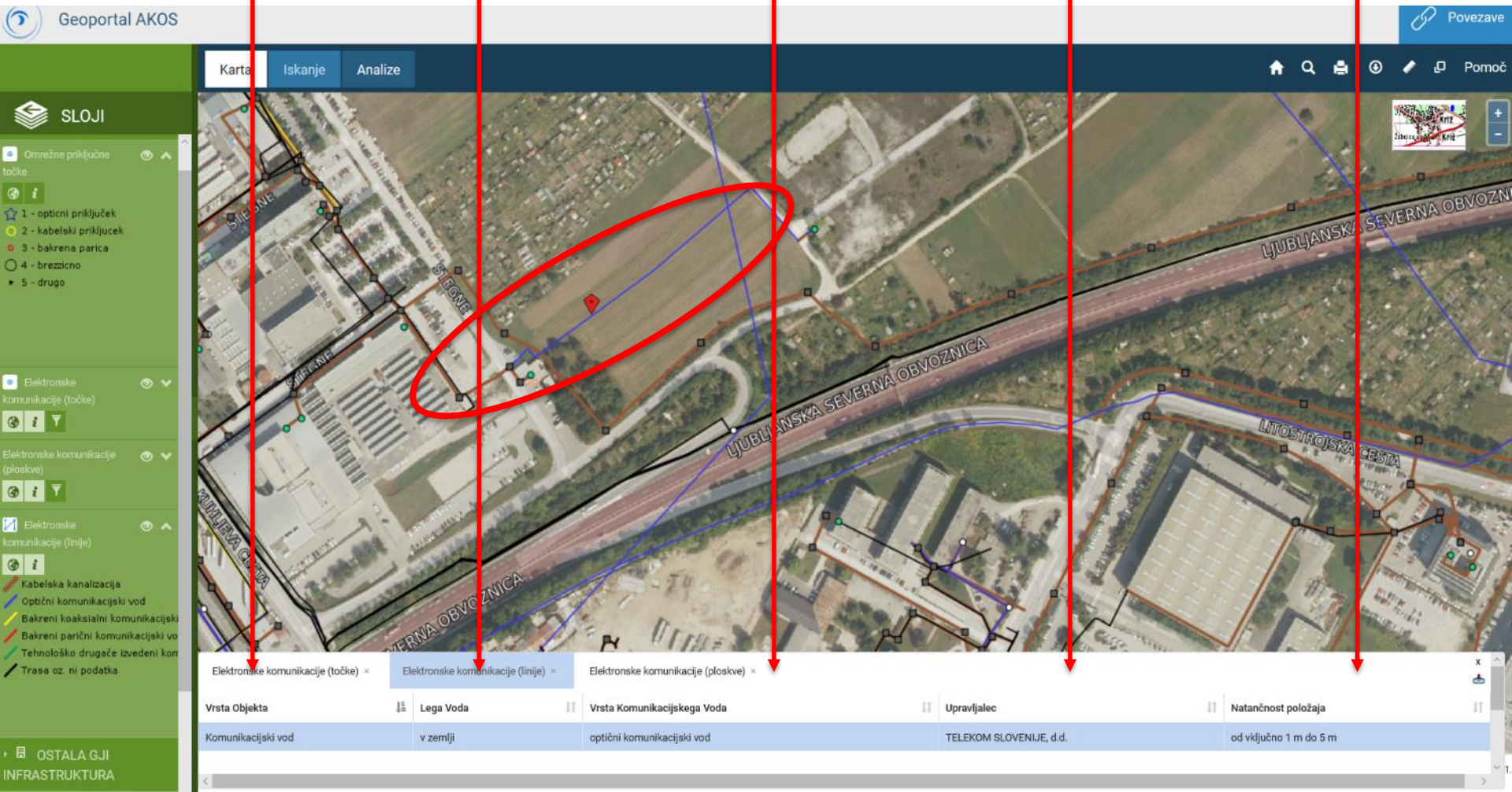
Info

Type of object | Position of line | Type of line | Owner | Accuracy



Fixed broadband coverage (by speed)

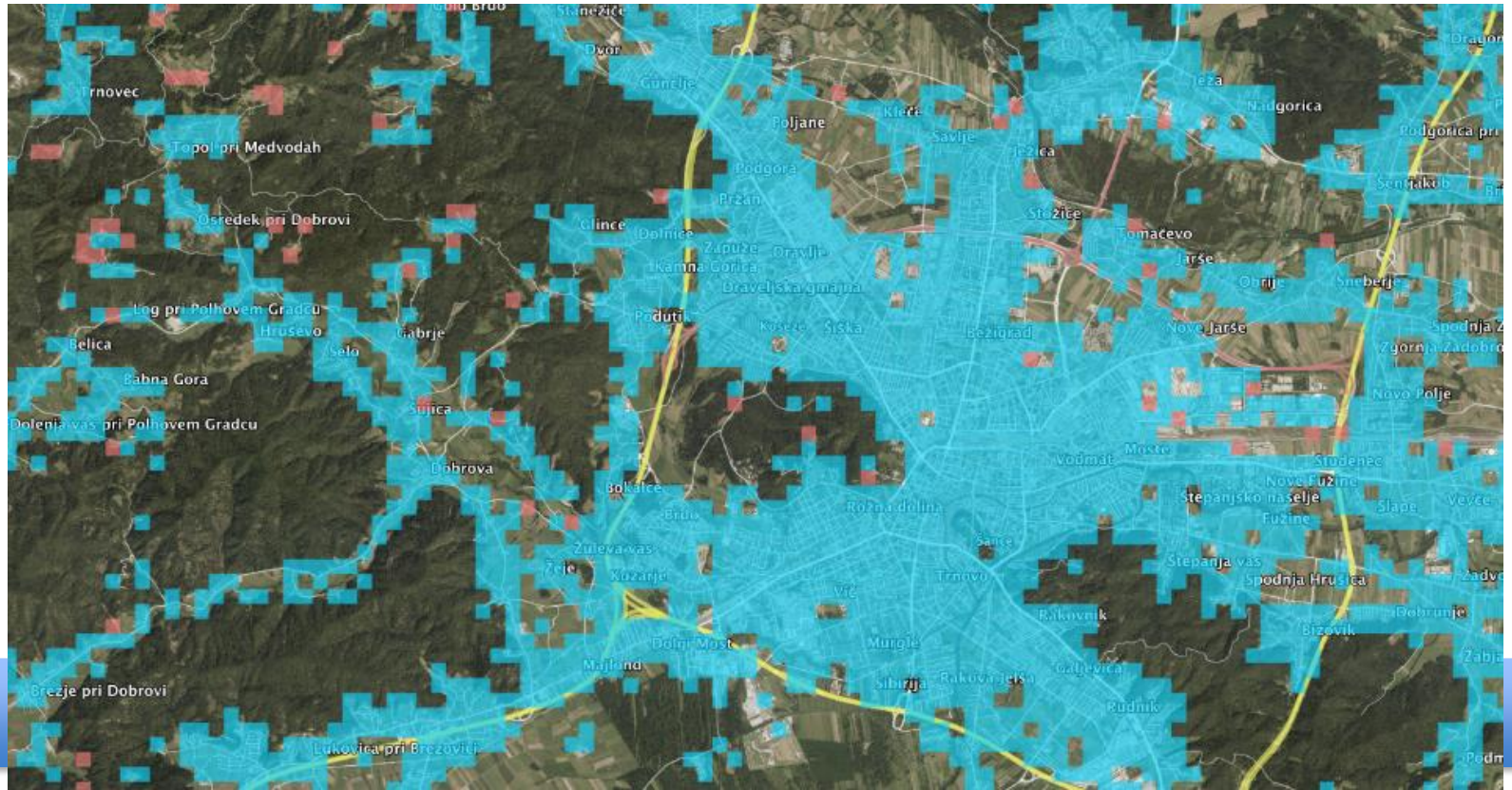
Category	Speed (mbps)	Households (%)
1. Category	< 30	98,74
2. Category	30 < 100	89,41
3. Category	> 100	80,45

Methodology:

- 200m grid cell (homes passed definition)
- At least one household with NTP in one cell

Input data:

- cadastre of building, Central population register (households), Network termination points database



Mobile coverage (by technology)

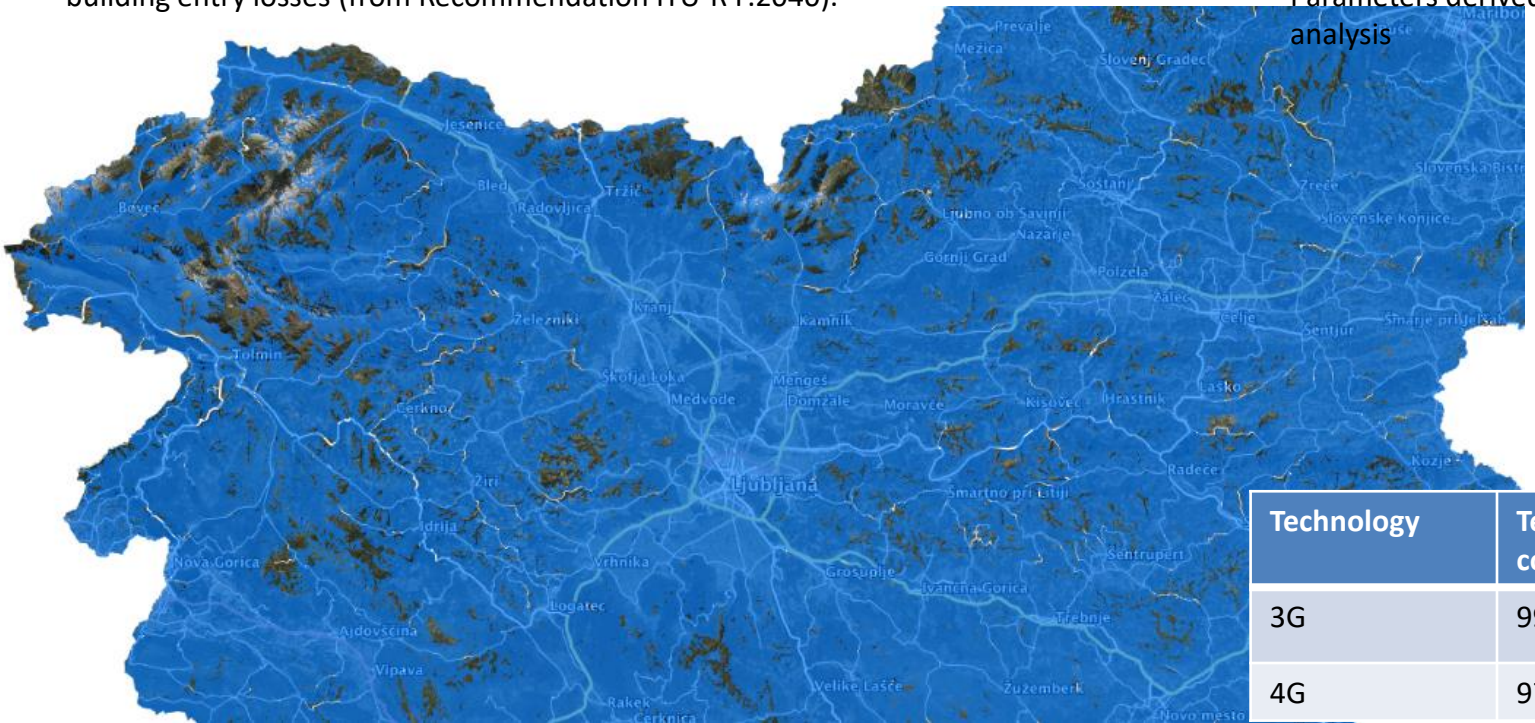
Methodology:

- 25m grid cell
- Calculation made in ATDI (ICS Telecom EV)
- Model ITU-R P.1812-4
- This propagation prediction method takes account of the following model elements:

– line-of-sight (LoS)
– diffraction (embracing smooth-Earth, irregular terrain and sub-path cases)
– tropospheric scatter
– anomalous propagation (ducting and layer reflection/refraction)
– height-gain variation in clutter
– location variability
– building entry losses (from Recommendation ITU-R P.2040).

Input data:

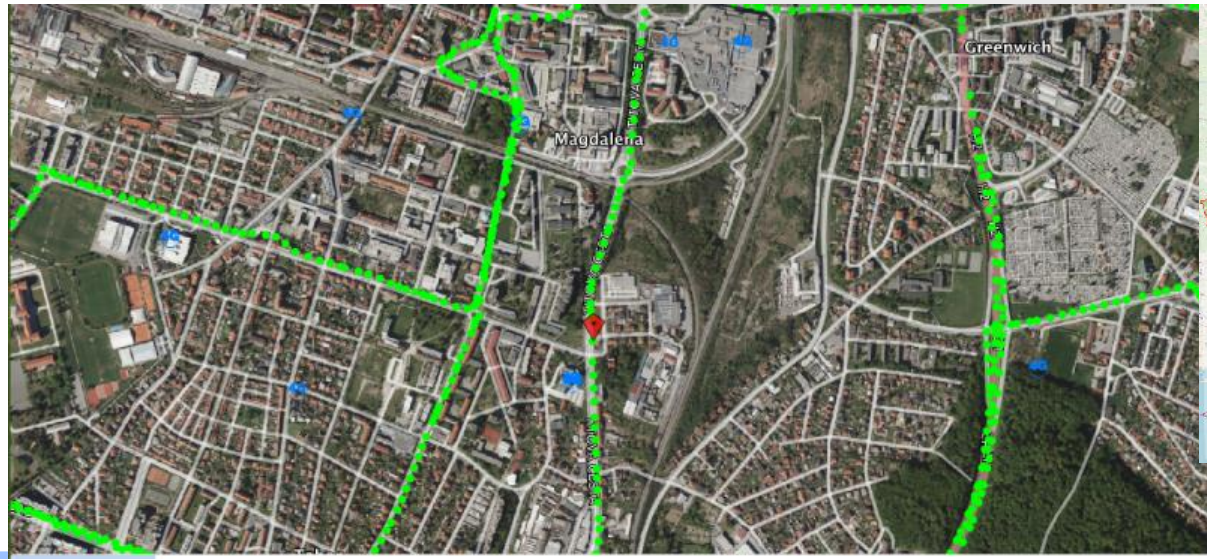
- Radio terminals
- The frequency
- Percentage time
- locations
- Terrain profile
- Radio-climatic zones
- Terminal distances from the coast
- Basic radio-meteorological parameters
- Incidence of ducting
- Effective Earth radius
- Parameters derived from the path profile analysis

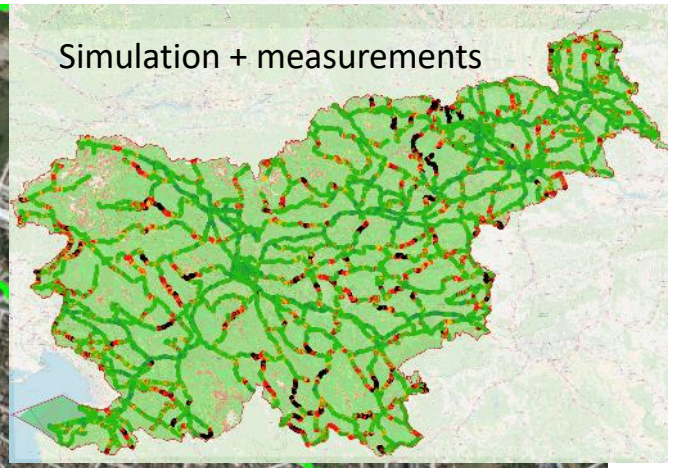


Technology	Territorial coverage	Households coverage (%)
3G	99	99,97
4G	97	99,25

Drive tests

Drive tests – base stations and measurement of the strength of mobile signals on the road network





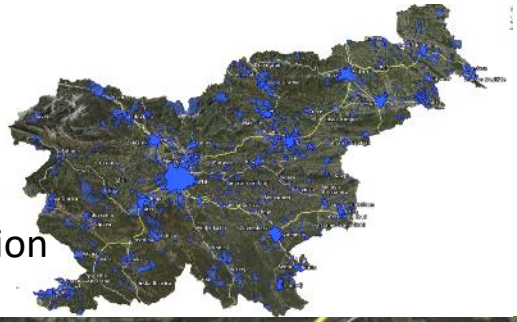
Telekom - 4G × | TS - 4G postaje ×

Id	Omrežje	Država	Naziv Operaterja	RSRP	RSRQ	ECI	Name	Tehnologija
2748879	4G	Slovenija	Telekom Slovenije (TS)	-74,54	-20,94	51430602	MB - TLK	LTE800

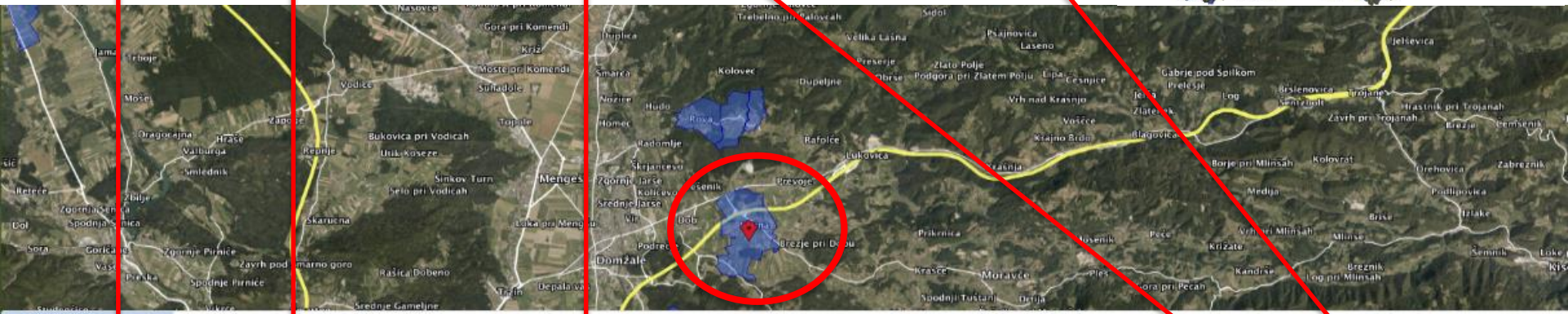
Intentions on planned construction

Intentions on planned construction

(telecommunications, electricity, gas, water supply, sewage, roads, railways and other infrastructures)

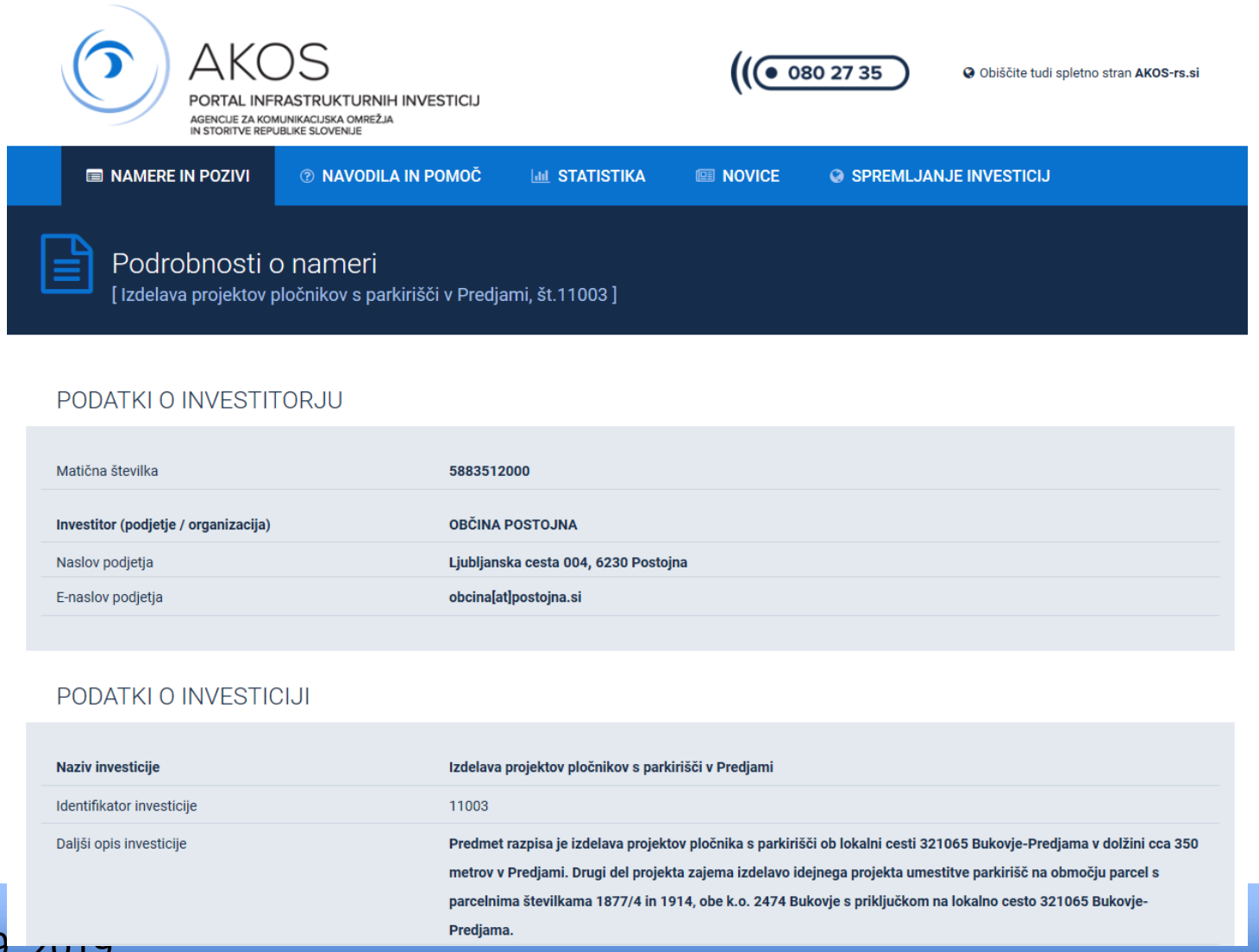


Investor Type of investition Description of investition Year of intention Link to the intention



Id	Investitor Naziv	Investicija Naziv	Investicija opis	Leto namere	Povezava do namere
10925	OBČINA DOMŽALE	Izgradnja sekundarnega kanala in obnova vodovoda v Krtini	V naselju Krtina v Občini Domžale imamo namen izgraditi manjkajoči sekundarni kanal ter izvesti investicijsko vzdrževalna dela in obnovo ceste - dela bodo potekala po cesti z oznako JP573026.	2019	http://investicije.akos-rs.si/Nemere-pozivi/Namera/nam/10925

Intentions on planned construction – dedicated portal



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NAMERE IN POZIVI | NAVODILA IN POMOČ | STATISTIKA | NOVICE | SPREMLJANJE INVESTICIJ

Podrobnosti o nameri

[Izdelava projektov pločnikov s parkirišči v Predjami, št.11003]

PODATKI O INVESTITORJU

Matična številka	**5883512000**
Investitor (podjetje / organizacija)	**OBČINA POSTOJNA**
Naslov podjetja	**Ljubljanska cesta 004, 6230 Postojna**
E-naslov podjetja	**obcina[at]postojna.si**

PODATKI O INVESTICIJI

Naziv investicije	**Izdelava projektov pločnikov s parkirišči v Predjami**
Identifikator investicije	11003
Daljši opis investicije	**Predmet razpisa je izdelava projektov pločnika s parkirišči ob lokalni cesti 321065 Bukovje-Predjama v dolžini cca 350 metrov v Predjami. Drugi del projekta zajema izdelavo idejnega projekta umestitve parkirišč na območju parcel s parcelnima številkama 1877/4 in 1914, obe k.o. 2474 Bukovje s priključkom na lokalno cesto 321065 Bukovje-Predjama.**

Printable map - PDF

Geoportal enables the production of a printable map in PDF format.

Map consists of currently displayed layers with the current view and scale.

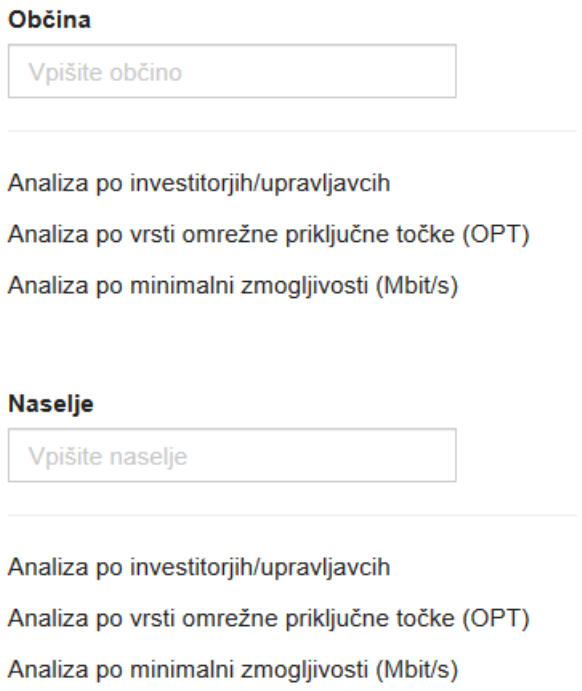
Search by address

Search by exact address enables users close up view of the location, NTFs shows type of communication technology on the building address.

Fast web analysis

Geoportal allows users to make quick website analysis. Analysis can be make on two spatial levels: municipality and settlement. User can get data for choosen territory on:

- Investors: name of the owner/operator of the communication network and type of NTPs
- Type of NTPs: copper, cable, optical, wireless, other
- Minimum capacity: number of NTPs by minumum capacity



Future plans

Geoportal content is now regularly updated (**implementation of WFS for all data).**

The results of different analysis could be published in a **manner of transperency of callculation and methodology review** (e.g. geographical segmentation).

We plan to improve the **user interface** and presentation of spatial layers with descriptive data of the geoportal for even **better user experience.**

New set of data: network incidents, end users dispute, postal contact points etc.

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Thank you for your attention

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