








AKOS

Broadband mapping in Slovenia

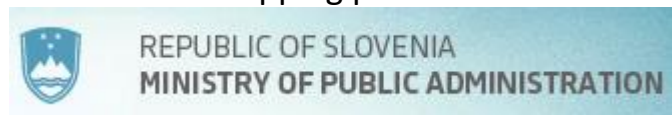
AKOS GEOportal

Marko Simončič

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

Key milestones 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 cooperation with AKOS and mapping authority started with mapping process of **Network termination points**,



- **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**:
 - March 2015 – AKOS published the first public tender for consulting services
 - June 2015 – Project group to launch a mapping project was appointed and project was launched

AKOS established its own database which includes several publically 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)

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

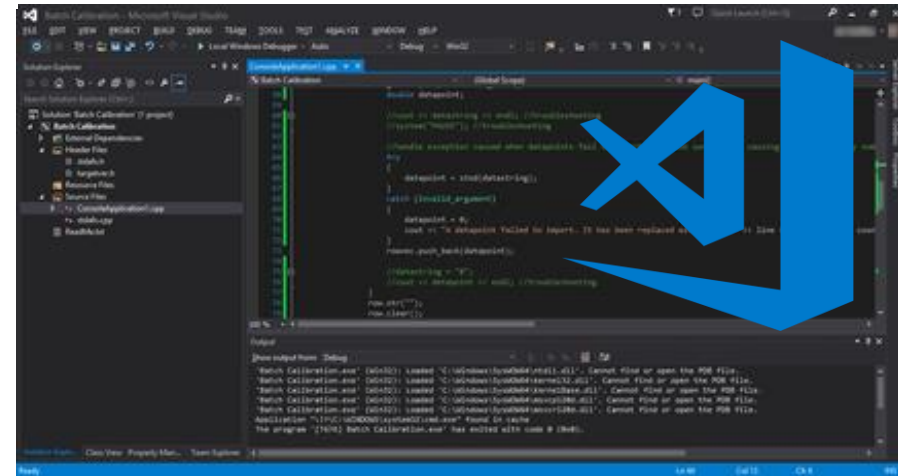
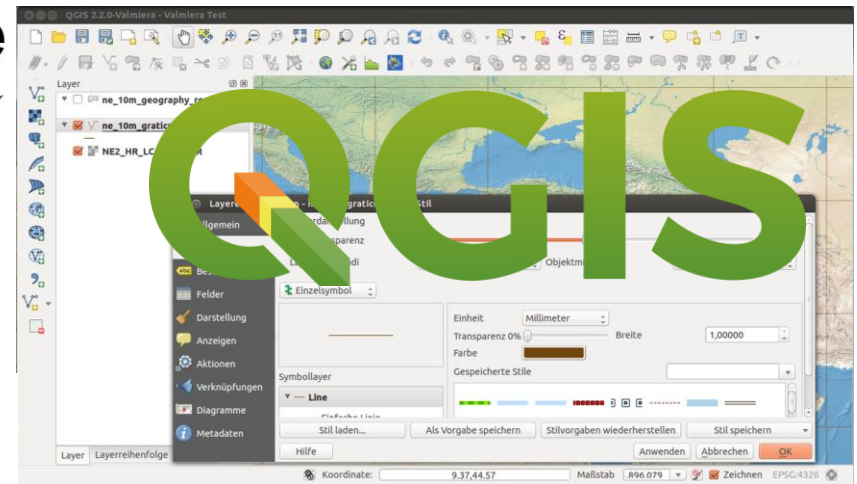
- The owner of a communications network and associated infrastructure **must supply information** directly to the **body responsible for surveying and mapping (GURS)**.
- Data about **locations, type, usage, including number of communications lines** (optic fibre, copper pair, coaxial cable) and **capacity**.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

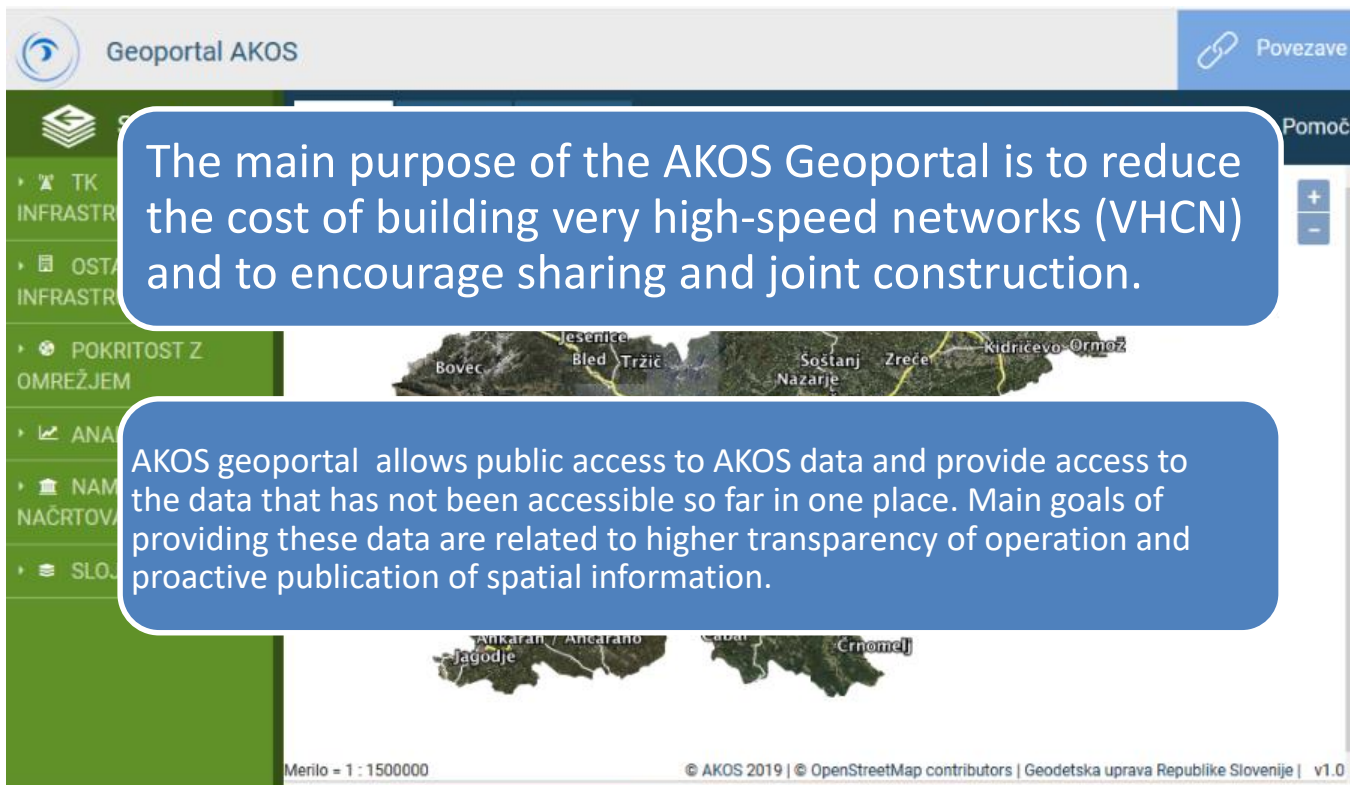
Article 15 of Electronic Communications Act (ZEKom-1) (supervision)

- 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





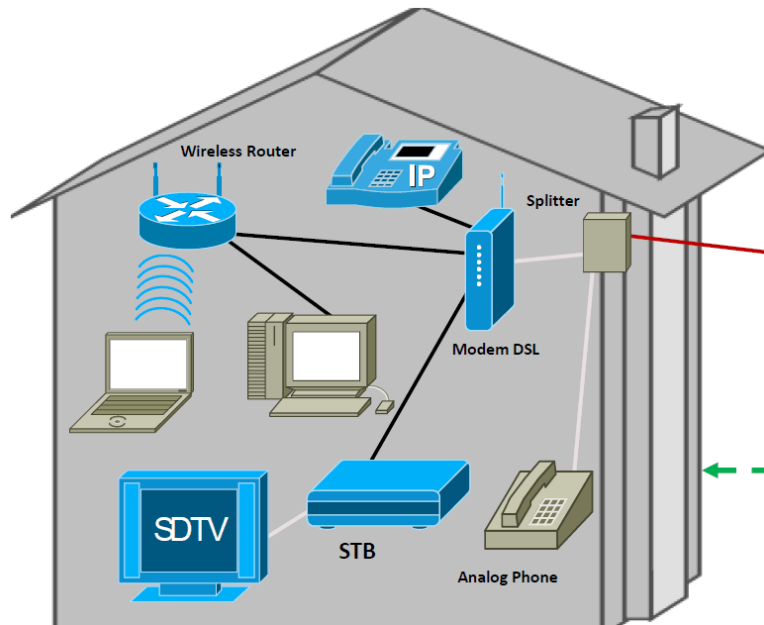
The main purpose of the AKOS Geoportal is to reduce the cost of building very high-speed networks (VHCN) and to encourage sharing and joint construction.

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.

- ④ 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,
- ④ To review fixed and mobile networks coverage,
- ④ The information displayed in the geoportal enables users to compare providers and options for electronic communication network access for every address in Slovenia,
- ④ 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

Geoportal AKOS

Karta Iskanje Analize

SLOJI

Omrežne priključne točke

- 1 - optični priključek
- 2 - kabelski priključek
- 3 - bakrena parica
- 4 - brezžično
- 5 - drugo

Elektronske komunikacije (točke)

Elektronske komunikacije (ploskve)

Elektronske komunikacije (linije)

OSTALA GJI INFRASTRUKTURA

Ceste

Električna energija

Kanalizacija

Povezav

Pomo

Location/address

Technology

Owner

Household

Minimum speed

Type of objects

Connection

Omrežne priključne točke

Naslov	Tehnologija	Lastnik	Prijavljeno gospodinjstvo	Minimalna zmožljivost	Vrsta subjekta ZOPT	Prikllop
LJUBLJANA, STEGNE 7	bakrena parica	TELEKOM SLOVENIJE, d.d.	Ne	30 Mbps	brez vrednosti	NE (zgrajena in nepriključena)
LJUBLJANA, STEGNE 7	optični priključek	T - 2 družba za ustvarjanje, razvoj in trženje elektronskih komunikacij in opreme d.o.o.	Ne	100 Mbps	poslovni subjekt	DA (zgrajena in priključena)
LJUBLJANA, STEGNE 7	optični priključek	T - 2 družba za ustvarjanje, razvoj in trženje elektronskih komunikacij in opreme d.o.o.	Ne	100 Mbps	poslovni subjekt	DA (zgrajena in priključena)

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)



Network termination point

Type of object

Position of line

Type of line

Owner

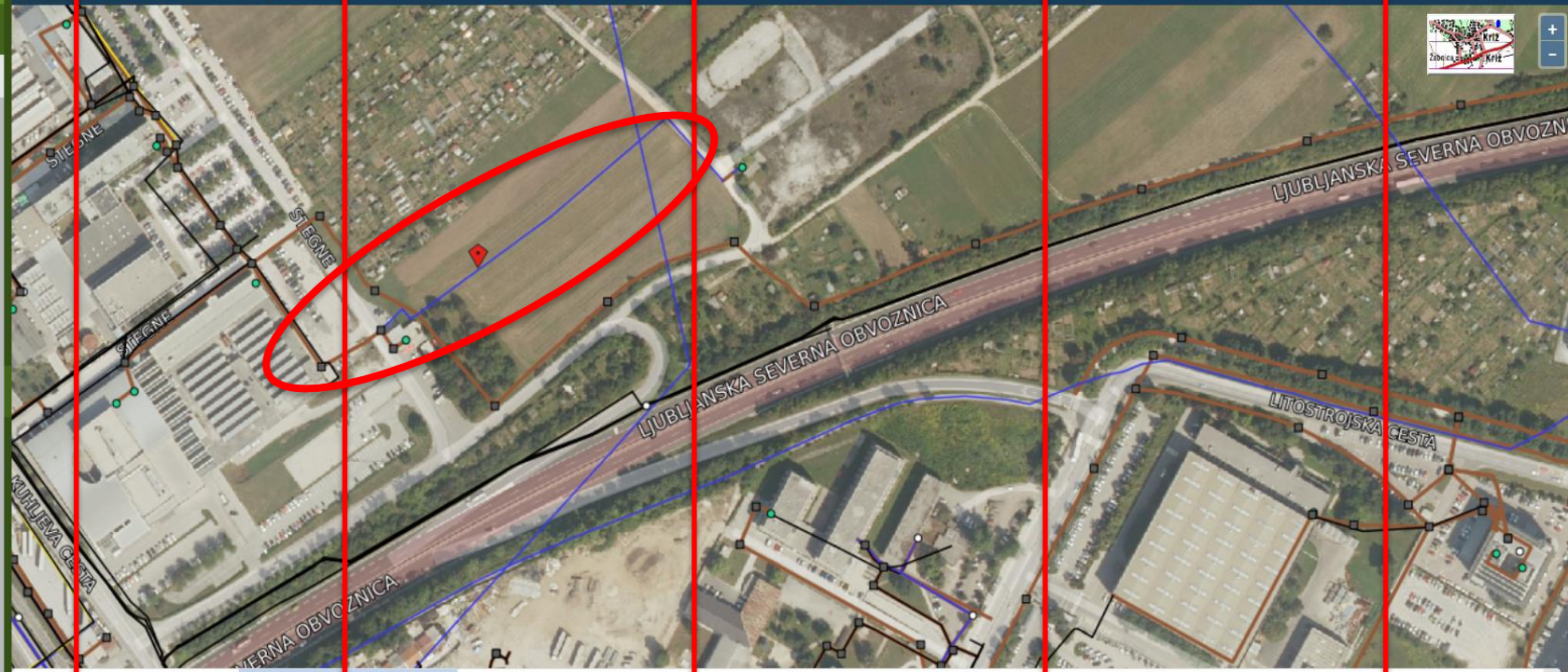
Accuracy

Geoportal AKOS

Karta Iskanje Analize

SLOJI

- Omrežne priključne točke
 - 1 - optični priključek
 - 2 - kabelski priključek
 - 3 - bakrena parica
 - 4 - brezicno
 - 5 - drugo
- Elektronske komunikacije (točke)
- Elektronske komunikacije (ploskve)
- Elektronske komunikacije (linije)
 - Kabelska kanalizacija
 - Optični komunikacijski vod
 - Bakreni koaksialni komunikacijski vod
 - Bakreni parični komunikacijski vod
 - Tehnološko drugače izvedeni komunikacijski vod
 - Trasa oz. ni podatka



Elektronske komunikacije (točke) Elektronske komunikacije (linije) Elektronske komunikacije (ploskve)

Vrsta Objekta	Lega Voda	Vrsta Komunikacijskega Voda	Upravljalec	Natančnost položaja
Komunikacijski vod	v zemlji	optični komunikacijski vod	TELEKOM SLOVENIJE, d.d.	od vključno 1 m do 5 m

OSTALA GJI INFRASTRUKTURA



AKOS

Fixed broadband coverage (by speed)

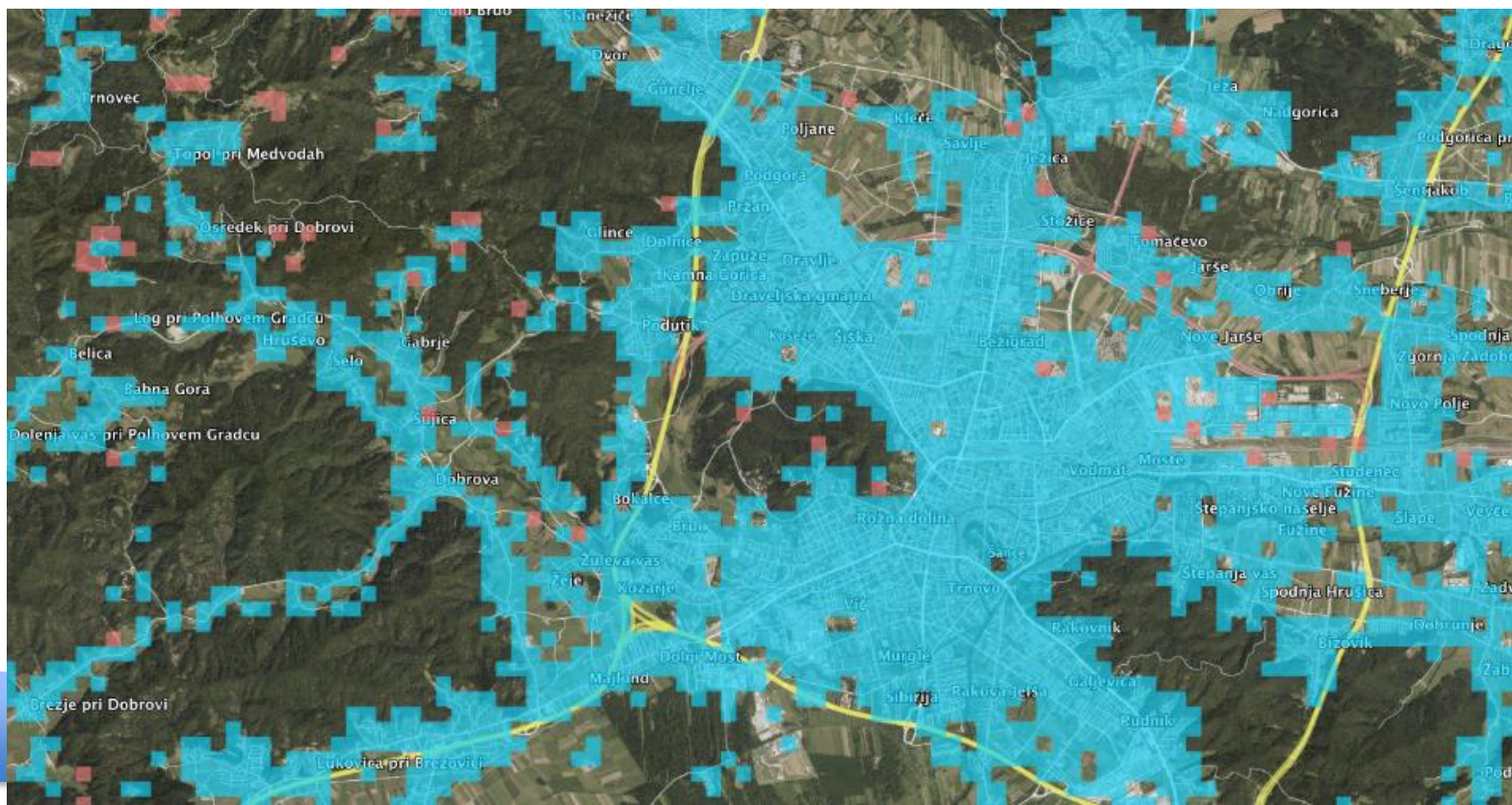
Category	Speed (mbps)	Households (%)
1. Category	< 30	98,74
2. Category	30 < 100	89,41
3. Category	> 100	80,45

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)

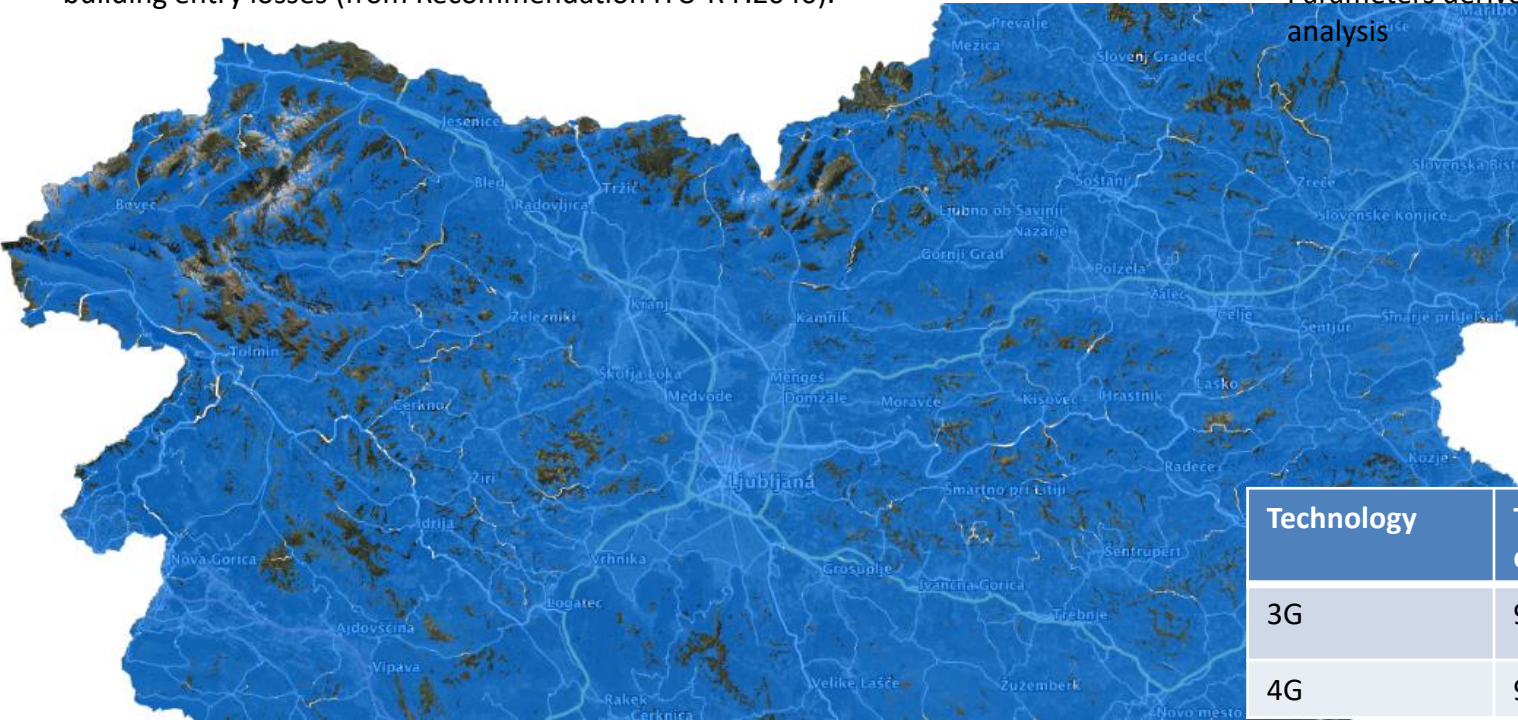
Methodology:

- 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:

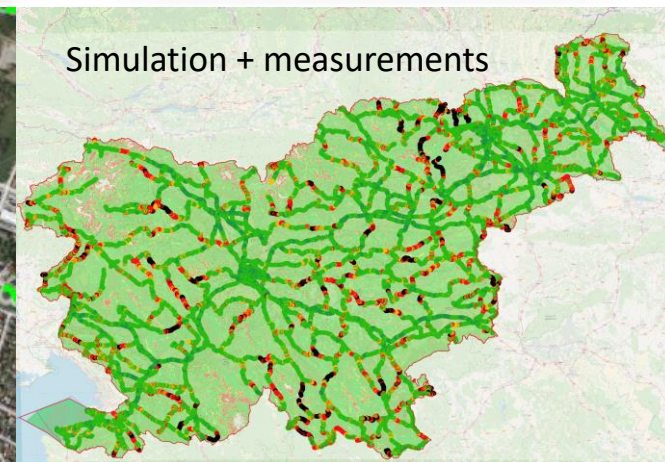
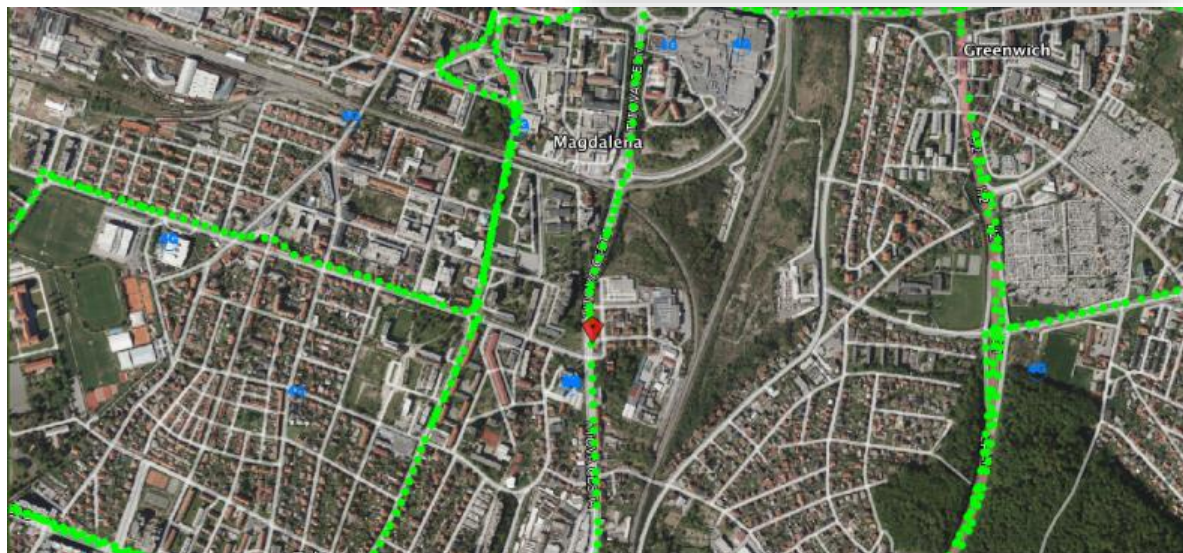
- Radio terminals
- The frequency
- Percentage time
- locations
- Terrain profile
- Radio-climatic zones
- Terminal distances from the coast
- Basic radio-meteorological parameters
- Incidence of ducting
- Effective Earth radius
- Parameters derived from the path profile

analysis



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

Drive tests – 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	

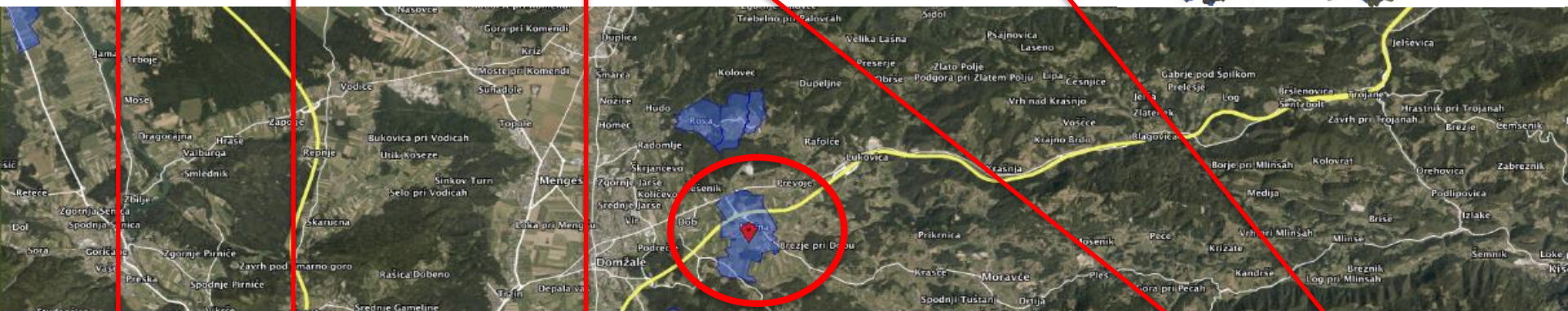
Intentions on planned construction

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



Investor Type of investment Description of investment

Year of intention Link to the intention



Aktivne namere in pozivi					
Id	Investitor Naziv	Investicija Naziv	Investicija opis	Leto namere	Povezava do namere
10925	OBČINA DOMŽALE	Izgradnja sekundarnega kanala in obnova vodovoda v Krtni	V naselju Krtna 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



AKOS

PORTAL INFRASTRUKTURNIH INVESTICIJ
AGENCIJE ZA KOMUNIKACIJSKA OMREŽJA
IN STORITVE REPUBLIKE SLOVENIJE




Obiščite tudi spletno stran AKOS-rs.si

 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 številka 1877/4 in 1914, obe k.o. 2474 Bukovje s priključkom na lokalno cesto 321065 Bukovje-Predjama.

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

Iskanje

Naslov

Občina

Poštna številka

Naselje

Ulica

Hišna številka

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

- ④ Investors: name of the owner/operator of the communication network and type of NTPs
- ④ Type of NTPs: copper, cable, optical, wireless, other
- ④ Minimum capacity: number of NTPs by minimum capacity

Občina

Analiza po investitorjih/upravljalcih

Analiza po vrsti omrežne priključne točke (OPT)

Analiza po minimalni zmogljivosti (Mbit/s)

Naselje

Analiza po investitorjih/upravljalcih

Analiza po vrsti omrežne priključne točke (OPT)

Analiza po minimalni zmogljivosti (Mbit/s)

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

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

@PROSPERITYQUOTES

**THE BIGGEST ROOM IN THE WORLD
IS THE ROOM FOR IMPROVEMENT**

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.

☺ Thank you for your attention

☺ <https://gis.akos-rs.si/>

☺ Marko.Simoncic@akos-rs.si

