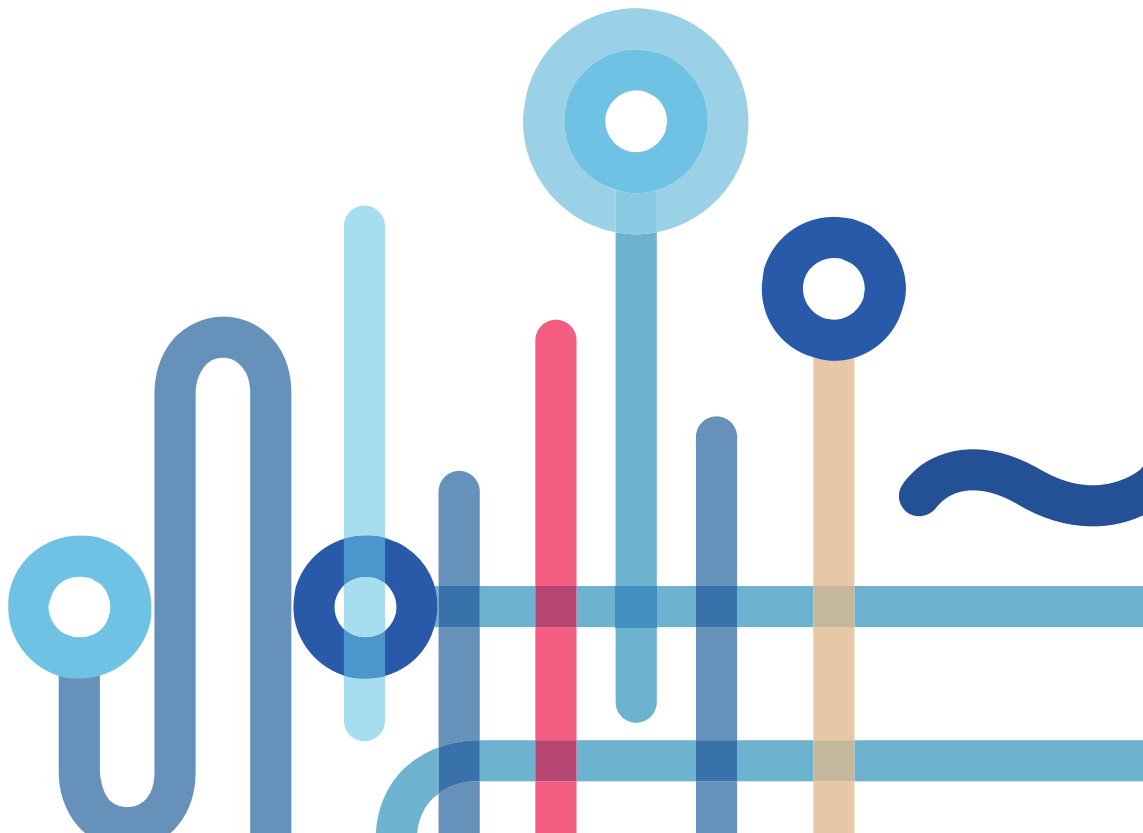


System for continuous EMF monitoring

ALEKSANDAR BORIĆ



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i poštanske usluge



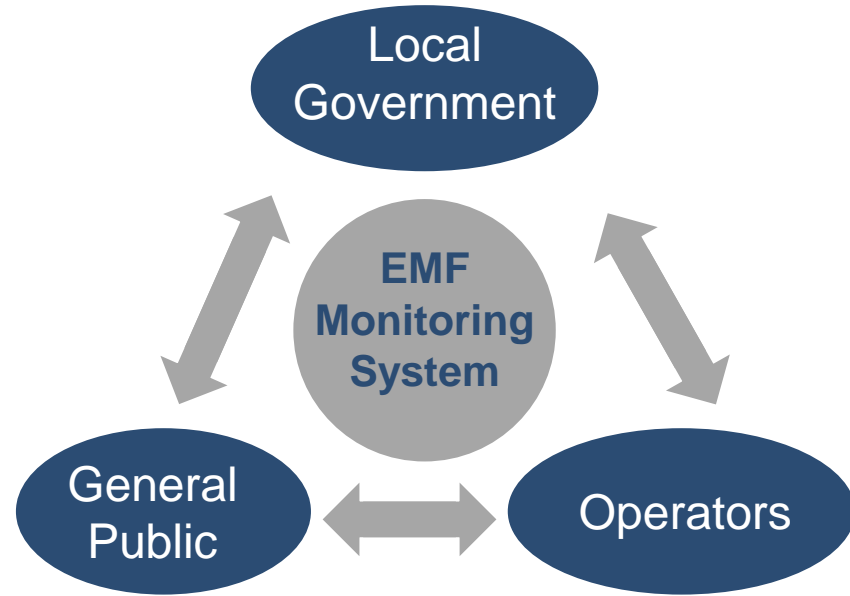
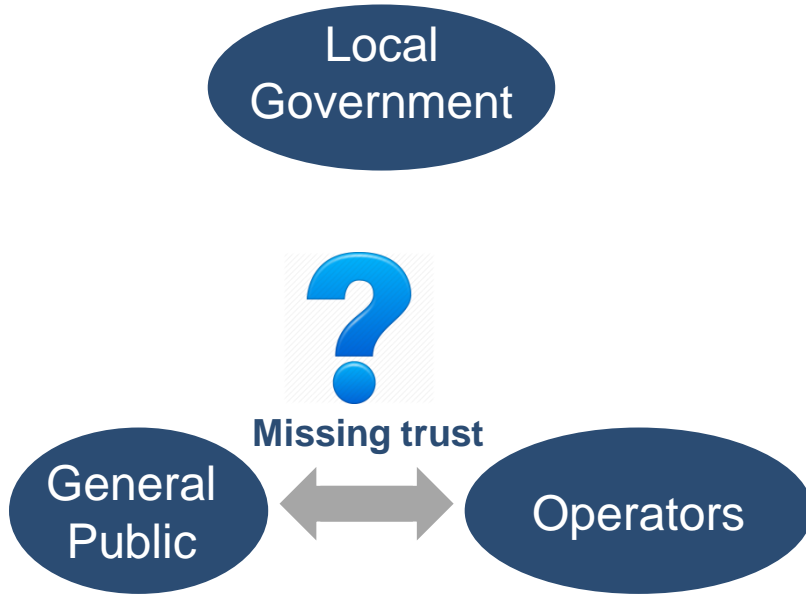
Background

- Rapid development of wireless telecommunications services
- Increasing number of transmitting sources of radiation
- Public fear of electromagnetic radiation affects further development of wireless networks



Background

Why EMF monitoring?



Project Scope

4 phases:

I year (19 + 2)

II year (16 + 2)

III year (26 + 4)

IV year (30 + 0)

100 monitors:

- 92 wide band area monitors
- 8 selective area monitors

Locations criteria:

- Increased sensitivity locations (schools, hospitals, kindergardens)
- Measured EM values



EMF Monitoring System Overview

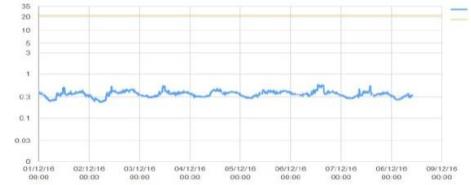


EMF radiation source

Sensors
Location of interest



Central server with database and web access



Results presented through an intuitive web interface for the public



Wide Band Area Monitor AMB-8059

- Frequency range: 100 kHz to 7 GHz
- One frequency band
- Solar and AC/DC Power Supply
- Measurement range: 0.2 V/m – 200 V/m
- Measurement resolution: 0.01 V/m
- Communication: 2G, 3G, WiFi, Ethernet



Band Selective Area Monitor AMS-8061

- Frequency range: 100 kHz to 6 GHz
- Up to 20 frequency bands
- Solar and AC/DC Power Supply
- Measurement range: 0.01 V/m – 200 V/m
- Measurement resolution: 0.01 V/m
- Communication: 2G, 3G, WiFi, Ethernet



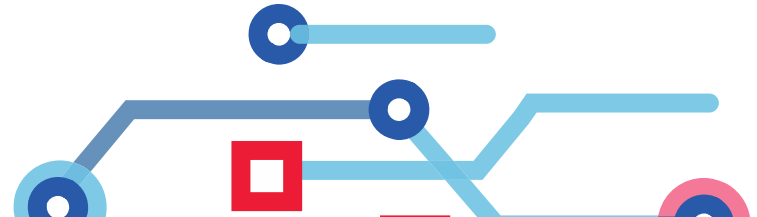
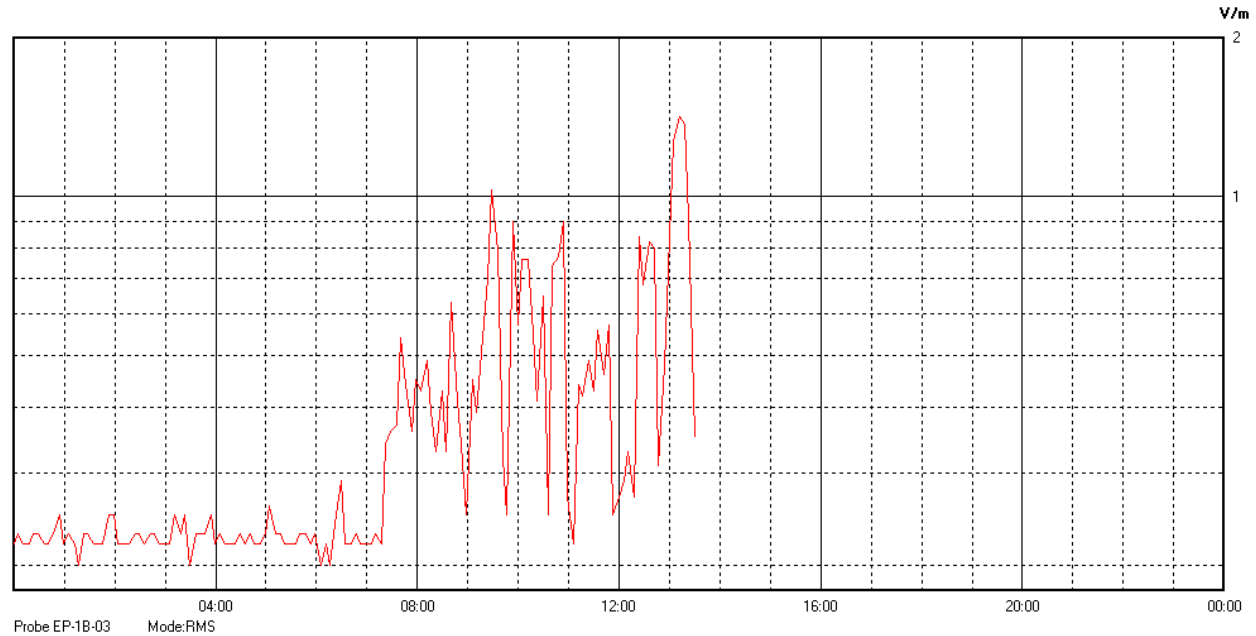
Measurement software

The screenshot displays the RATEL measurement software interface for station 150WY70217. The main window shows a 'Last Field' reading of 0.17 V/m. A blue callout box highlights this reading, with arrows pointing to the 'Max Field ALARM Settings' section where the 'WARNING' threshold is set to 6.00 V/m. Other visible settings include a 'Last Voltage' of 4.05V, a 'Temperature' of 28.00, and a 'Relative Humidity' of 60.00. The interface also features sections for 'Battery Section', 'Rate Settings' (with 6 minute selected), 'GPS' (Latitude: 4450.9600 N, Longitude: 02012.7196 E), and 'Notify Alarms through' (MODEM and SMS). A 'Get DATA' panel on the right shows the current date and time as 29/08/2017 14:18, with buttons for 'Recall', 'Get Recent Events', and 'Get All Events'.



Measurement results

Name: Fullday1 Date: 29/08/2017 Time: 00:00



Micro Location 1: Novi Sad



Area Monitor

- City: Novi Sad
- Altitude: 122m
- Values (V/m): 0.9 – 1.7
- AMB-8059
- Probe EP-1B-03



Micro Location 2: Niš

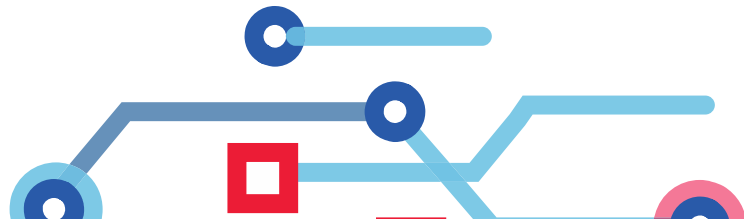
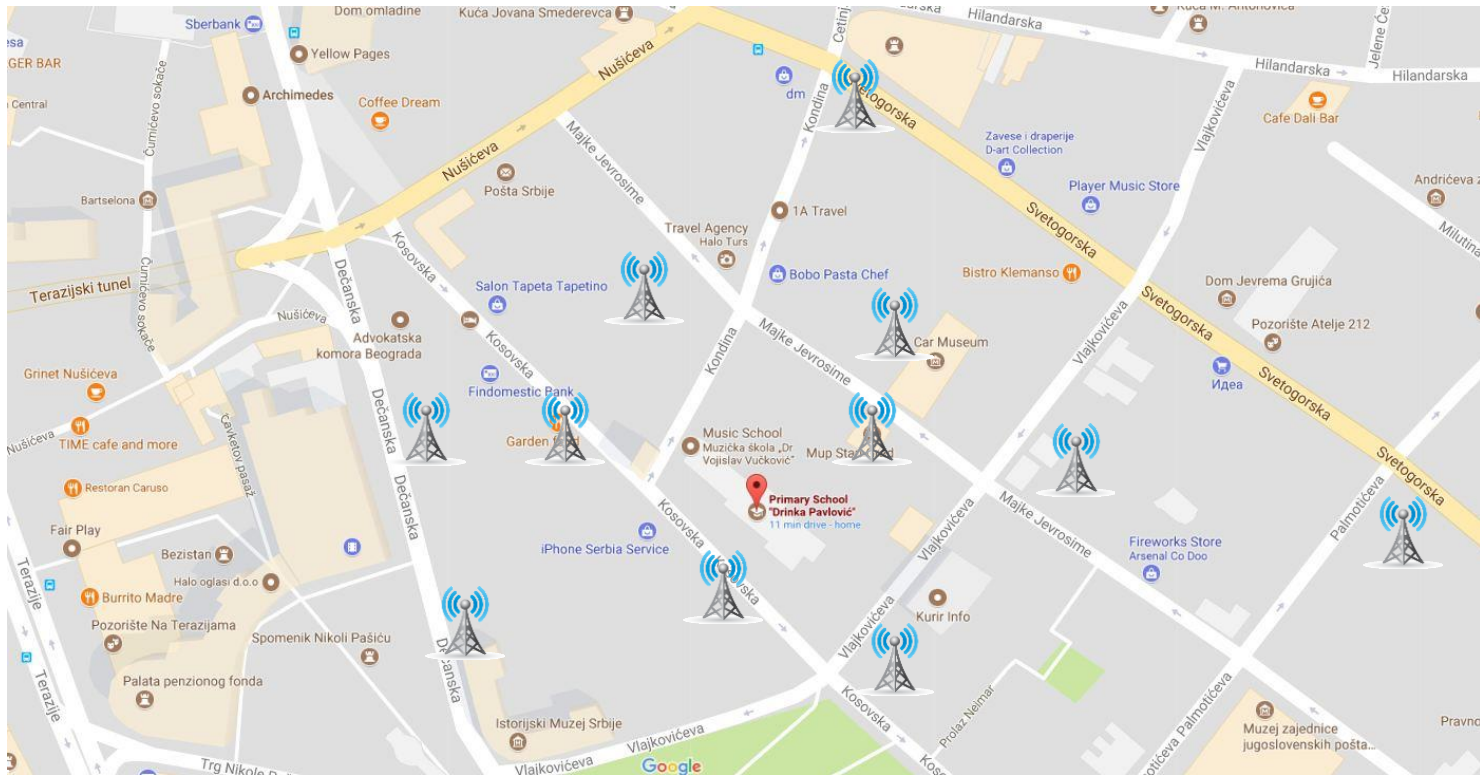


Area Monitor

- City: Niš
- Altitude: 76m
- Values (V/m): 1.7 – 4.2
- AMB-8059
- Probe EP-1B-03



- Value (V/m): 3,4 - 3,8
- 39 Radio systems
- 11 Locations



Publishing results

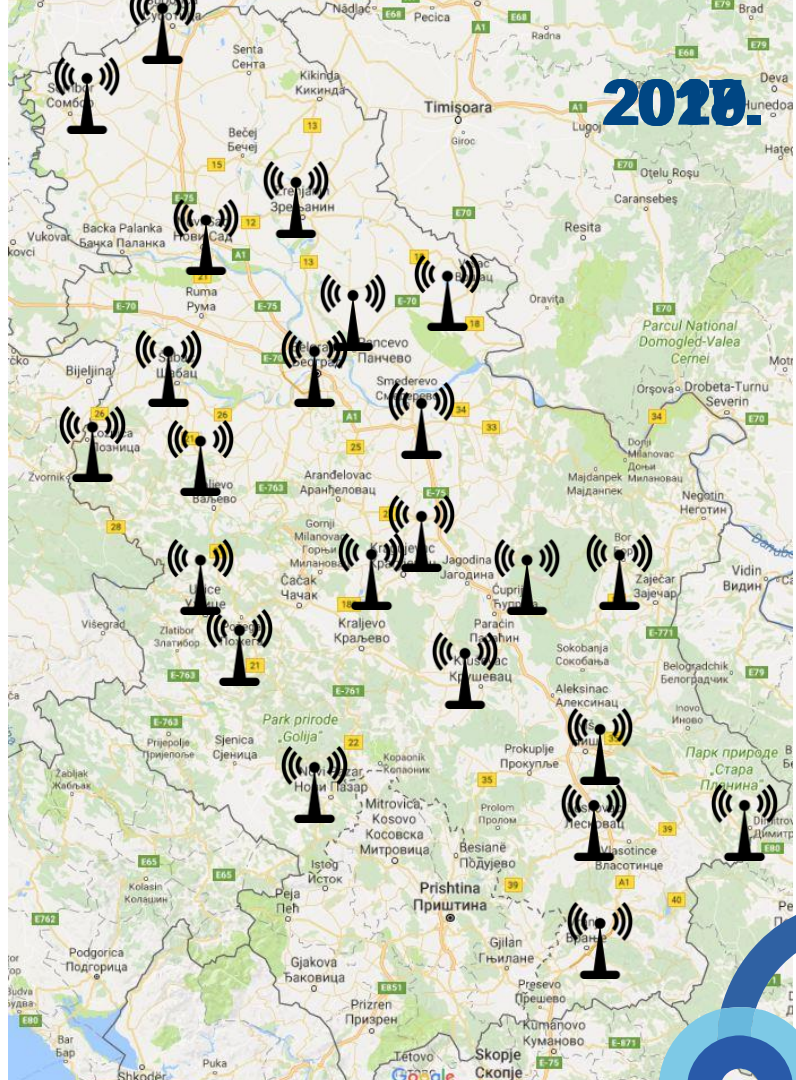
Check www.ratel.rs
on December 1st 2017

- Transparent results of EM radiation
- Open to implement new sensors from different institutions

Continuous EMF monitoring



Future plans



Thank you !

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