

# SensLog

## solution for sensors and VGI

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# Content

- SensLog – application structure
- Data model
- Interface
- Applications on SensLog
- Ongoing and future steps
- Conclusions

# SensLog application

- sensor data management application on the Web
- provides receiving, storing, processing,

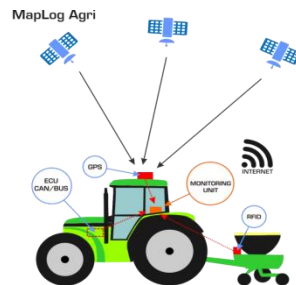
*Terminological window*

analyzing and publishing of sensor data

- suitable for both static in-situ and on mobile device deployment scenarios

*volunteer geographic information/  
citizen science / crowdsourcing*

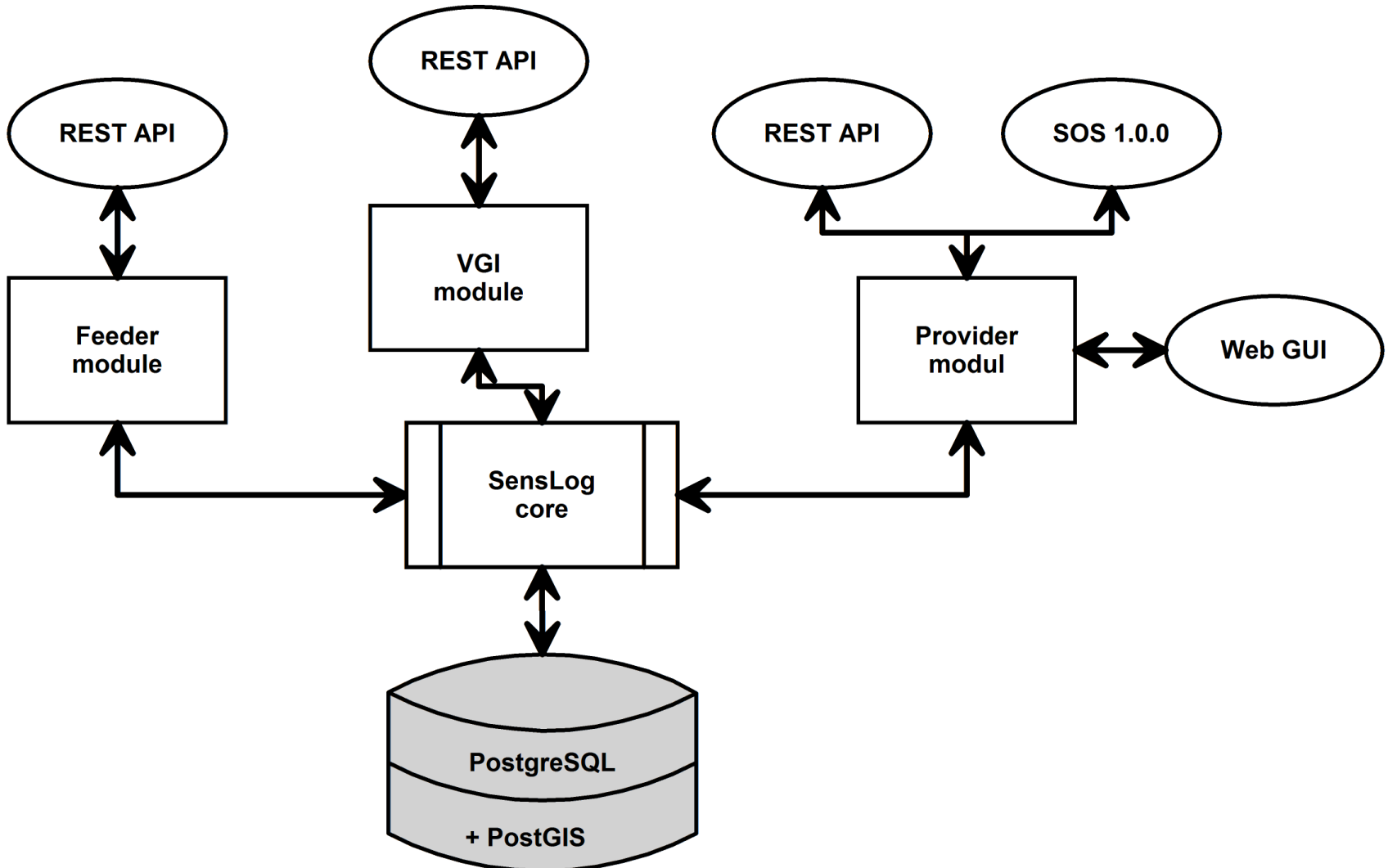
recently handles VGI



# SensLog technically

- modular server-side application
- written in Java
- database part – data model in PostgreSQL 9+ with spatial extension PostGIS 2+
- server-side part – Java servlets
- REST API, various encoding formats

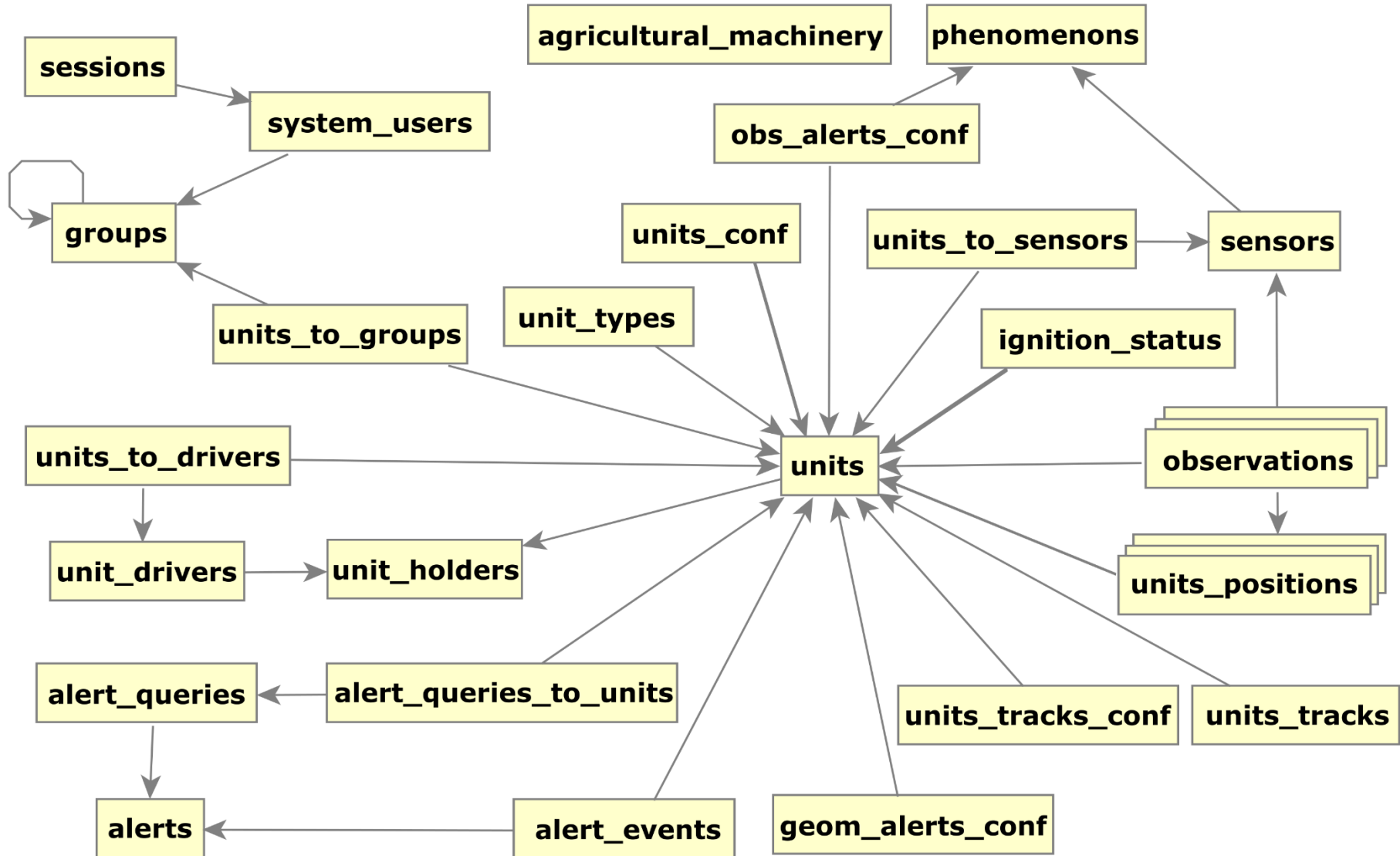
# SensLog structure



# Data model

- stores raw sensor data, results of analyses, metadata of sensor (networks)
- based on ISO 19156:2011 (Geographic information - Observations and measurements)
- enhanced by hierarchy of users, alerts, structure of sensor network(s)
- improved on partitioning of large tables
- extendable by other profiles (VGI, telemetry)

# Data model

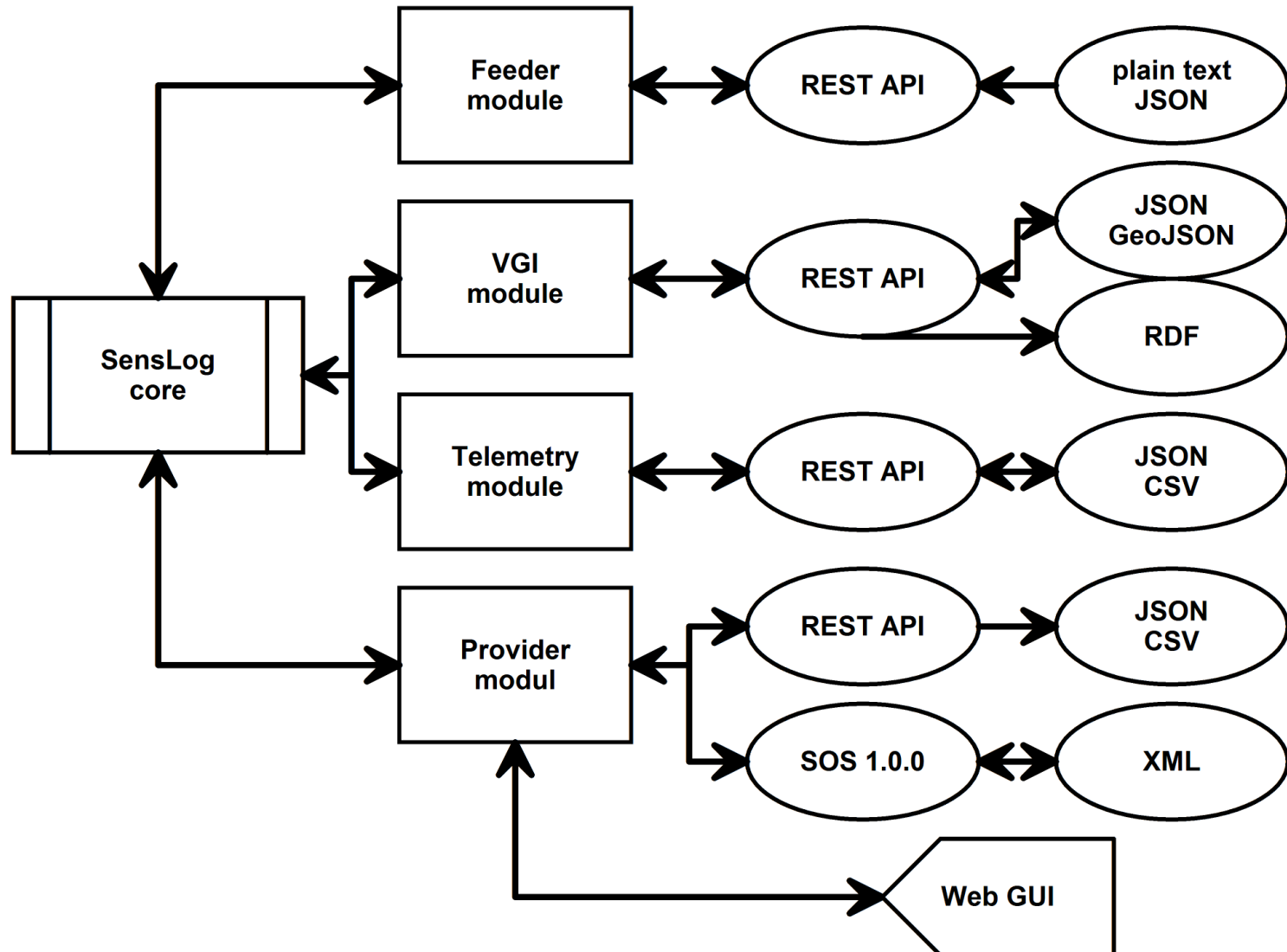


# Interfaces

- REST API – system of Web services
  - proprietary services
  - receiving and publishing of data
  - encoding in JSON, CSV, plain-text
  - services goal-directed, self-describing documents
- standardized – OGC SOS 1.0.0
  - core profile
  - data publication only
  - XML encoded



# Interfaces

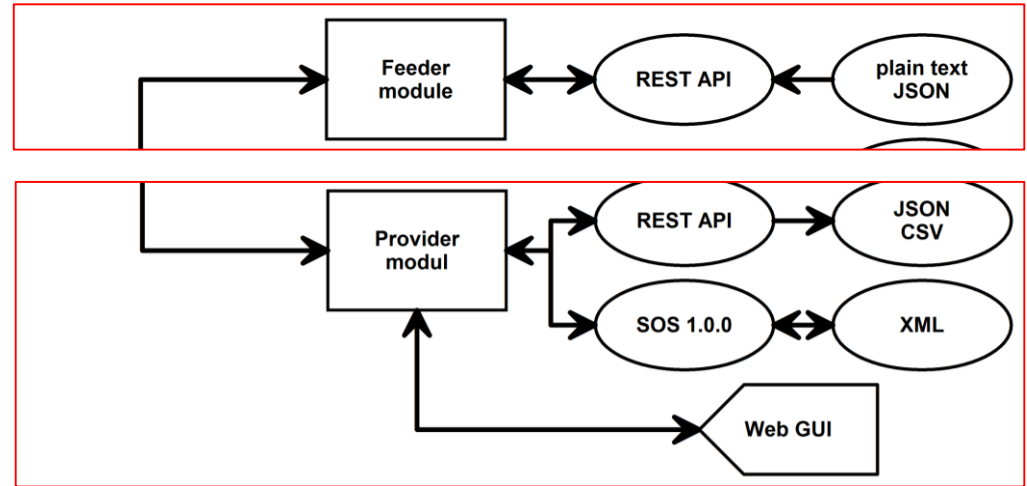


# Applications on SensLog

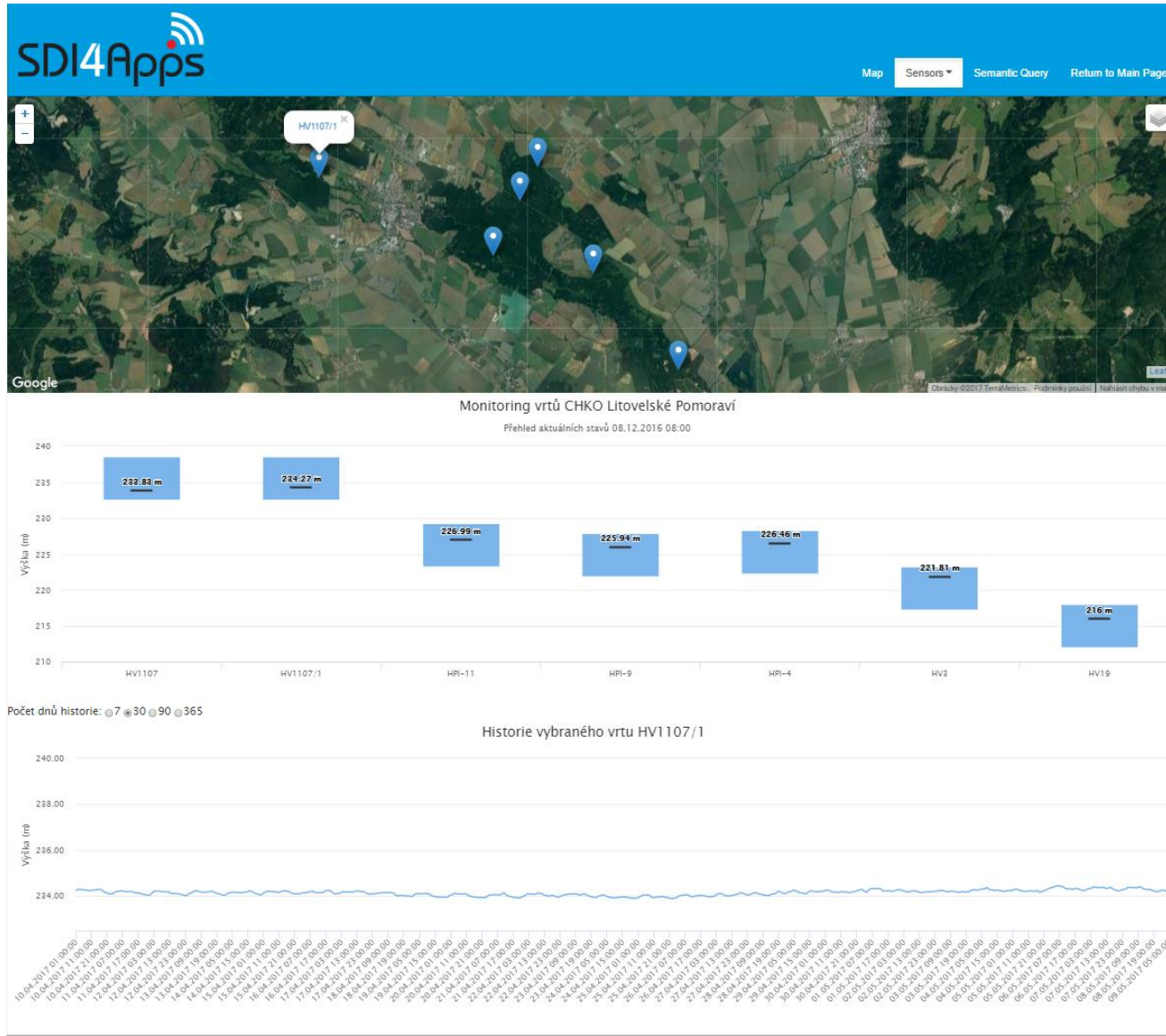
- SensLog as data storage, analytical module
- several applications built on SensLog
- from light Web clients to standalone mobile applications
- using different modules from SensLog

# Groundwater monitoring

- monitoring of ground water in protected area Litovelské Pomoraví (CZ)
- static in situ sensors in in shallow boreholes
- evaluation of annual cycles, alerts on rapid changes to both trend directions

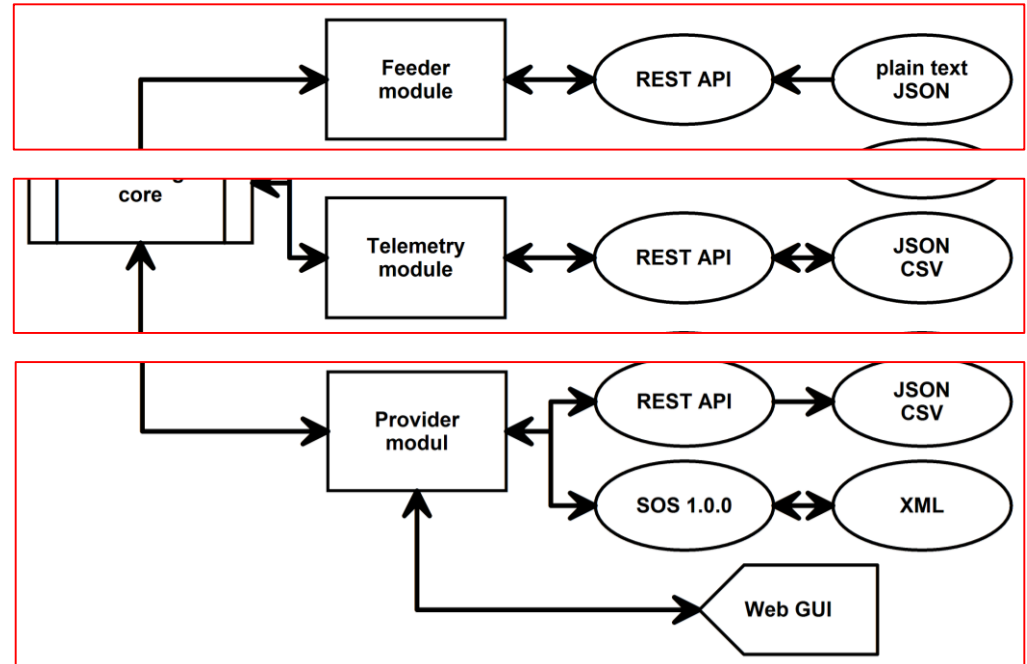


# Groundwater monitoring



# FarmTelemetry

- monitoring of agro meteorological phenomena
- tracking of agricultural machinery
- source data and analysis for evaluation of efficiency and economy of farm
- farms in CZ, IT, LV



# Farm Telemetry



Prohlížení mapy Trsice Pro Farmáře Poskytování dat a služeb FOODIE Kontaktujte nás **Traktory** Lysice Traktory Analýza Meteo COW

### Seznam traktorů

- 2016-11-01
- 2016-11-01
- Aktualizovat
- CASE 140 M01-0110 MA7
- CASE 140 MA8
- CASE 140 MA9
- CASE 165 M01-0058 MA4
- CASE 165 M01-0059 MA3**
- CASE 180 M01-1017 MA5
- CASE 285 M00-0474 MA2
- CASE 340 M01-1049 MA1
- STEYR 6230 M01-1103 MA6

CASE 165 M01-0059 MA3 - 2016-11-01

Čas	LPIŠ blok
01:26:19	530-1120/9805/1
00:50:31	530-1120/8601/2
00:27:48	530-1120/9705
00:26:30	530-1120/9701
00:24:16	530-1120/9707/1

### STEYR 6230 M01-1103 MA6: Spotřeba l/h

- 0.0 - 8.8
- 8.8 - 17.6
- 17.6 - 26.4
- 26.4 - 35.2
- 35.2 - 44.0



Minimální čas práce. Minimální čas prodlevy. Povolení čas opuštění pole.

20 5 3

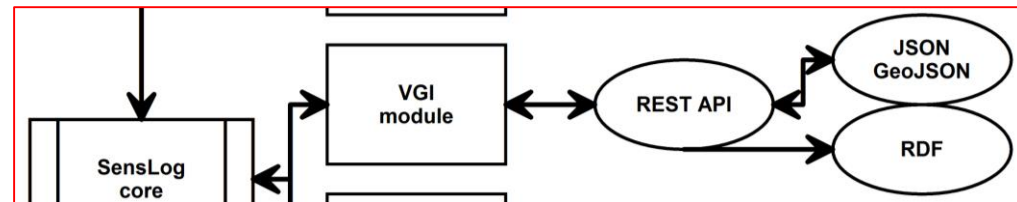
Standardní hodnoty

### CASE 165 M01-0059 MA3 - 2016-11-01

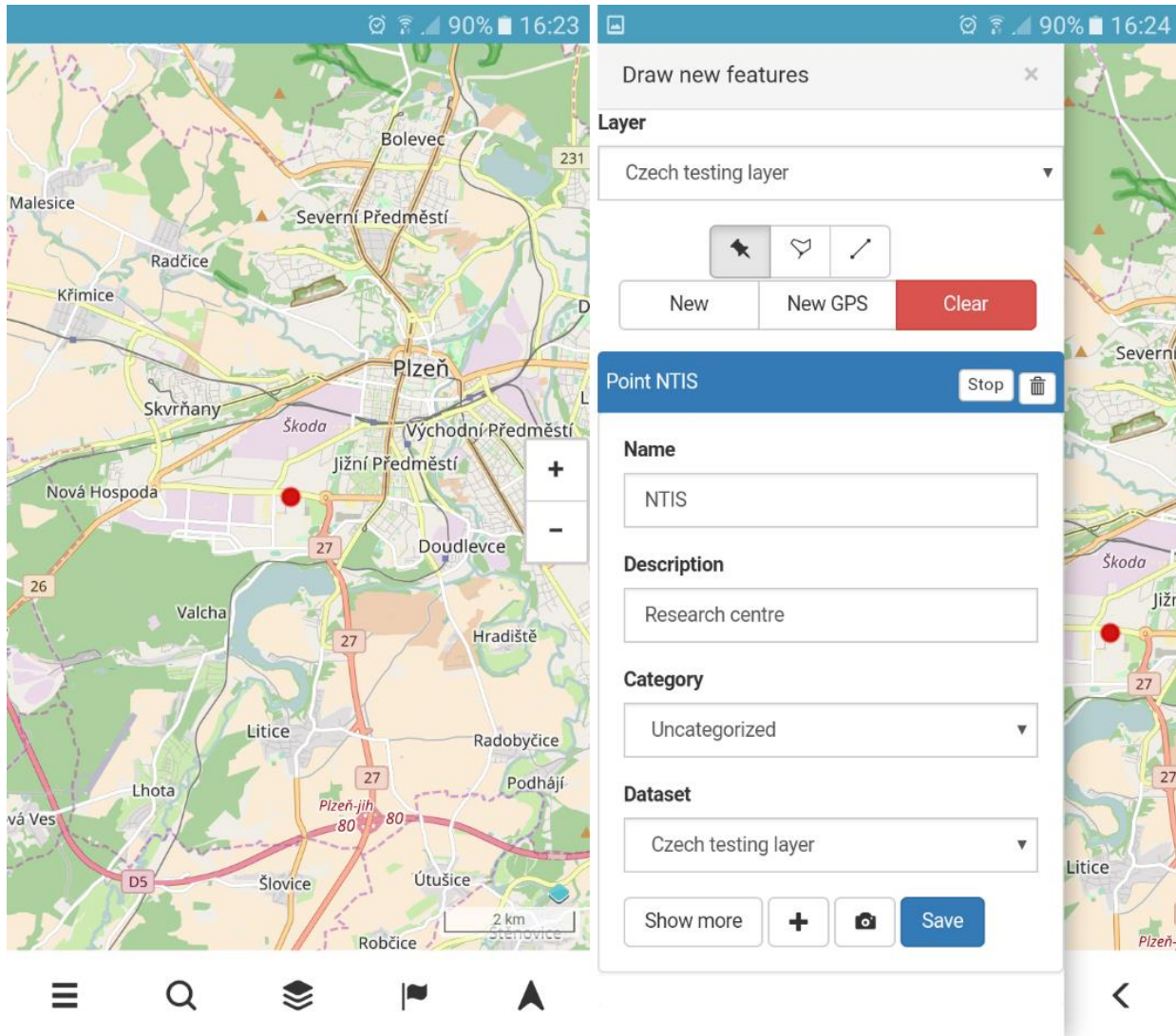
Od	Do	Poloha	Činnost	Zařízení	Spotřeba	Čas celkem	Prodlevy	Trasa
00:00:00	07:14:23	Jiná	Stání	NA	0.00	07:14:23	07:14:23	
07:14:23	07:17:08	Jiná	Jízda	NA	0.00	00:02:45	00:00:00	004
07:17:08	07:22:08	Jiná	Stání	NA	0.00	00:05:00	00:05:00	004
07:22:08	07:25:45	Jiná	Jízda	NA	0.00	00:03:37	00:00:00	004
07:25:45	07:40:49	Jiná	Stání	NA	0.00	00:15:04	00:15:04	004
07:40:49	07:43:05	Jiná	Jízda	NA	0.00	00:02:16	00:00:00	004
07:43:05	07:48:05	Jiná	Stání	NA	0.00	00:05:00	00:05:00	

# Collecting VGI

- mobile application for collecting user-defined POIs in terrain
- POI with variable structure of attributes
- additional multimedia content
- RDF encoding for integration with SDI4Apps SPOI data set



# Collecting VGI



The image displays two screenshots of a mobile application interface for collecting VGI (Volunteered Geographic Information).

**Left Screenshot:** Shows a map of Plzeň, Czech Republic, with a red dot indicating a location. The map includes labels for various districts and landmarks, such as Bolevec, Severní Předměstí, Radčice, Křimice, Skvrňany, Škoda, Východní Předměstí, Jižní Předměstí, Doudlevice, Hradiště, Valcha, Litice, Radobyčice, Podhájí, Útušice, Šlovice, and Robčice. The status bar at the top shows 90% battery and 16:23.

**Right Screenshot:** Shows the "Draw new features" form. The form includes a "Layer" dropdown menu set to "Czech testing layer", a "Point NTIS" section with a "Stop" button and a trash icon, and a "Save" button. The form fields are:


- Name:** NTIS
- Description:** Research centre
- Category:** Uncategorized
- Dataset:** Czech testing layer

The status bar at the top of the right screenshot shows 90% battery and 16:24.



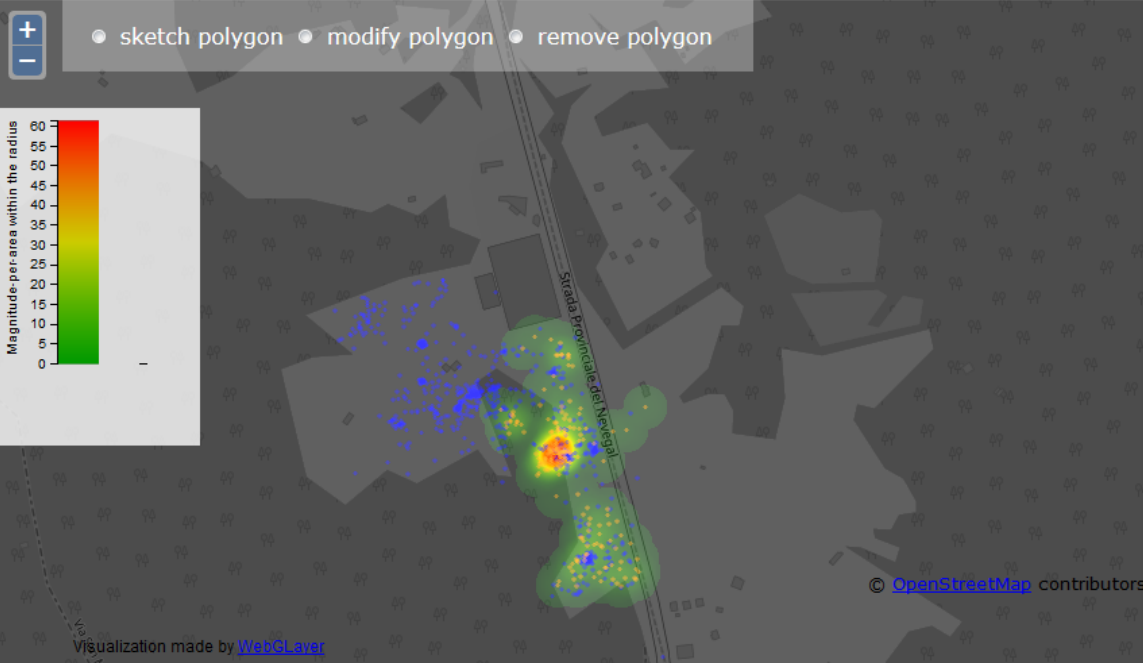
# Crowdsourcing

## Sensors list



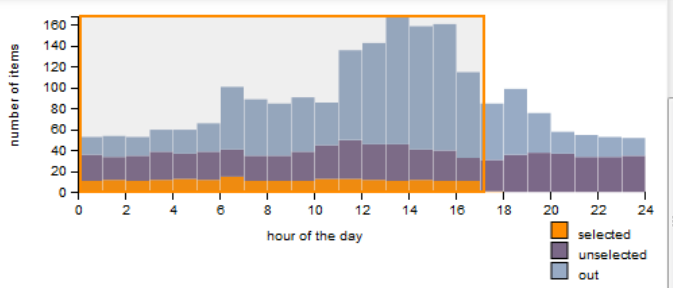
Prohlížení mapy
Trsice
Pro Farmáře
Poskytování dat a služeb ▾
FOODIE ▾
Kontaktujte nás
COWS ▾
Fertilizer

sketch polygon  
  modify polygon  
  remove polygon



© [OpenStreetMap](#) contributors

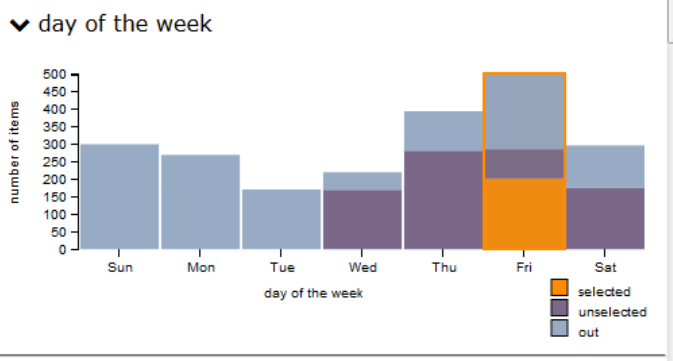
Visualization made by [WebGLayer](#)



hour of the day

selected  
 unselected  
 out

▾ day of the week



day of the week

selected  
 unselected  
 out

# Ongoing and future steps

- implementation of NGSI interface – connection to FIWARE tools
- implementation of OGC SOS 2.0 standard
- adding user-defined RDF encoding of VGI
- closer integration with sensor catalogue (IoT Discovery, SensorDCAT)

# Thank you for your interest!

## Questions?

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[www.senslog.org](http://www.senslog.org)

[github.com/mkepka/senslog](https://github.com/mkepka/senslog)