SensLog

solution for sensors and VGI

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Content

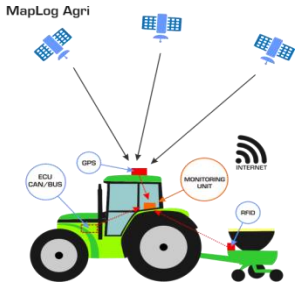
- SensLog – application structure
- Data model
- Interface
- Applications on SensLog
- Ongoing and future steps
- Conclusions

SensLog application

- sensor data management application on the Web
- provides receiving, storing, processing, analyzing and publishing of sensor data
- suitable for both static in-situ and on mobile device deployments
- recently handles VGI

Terminological window

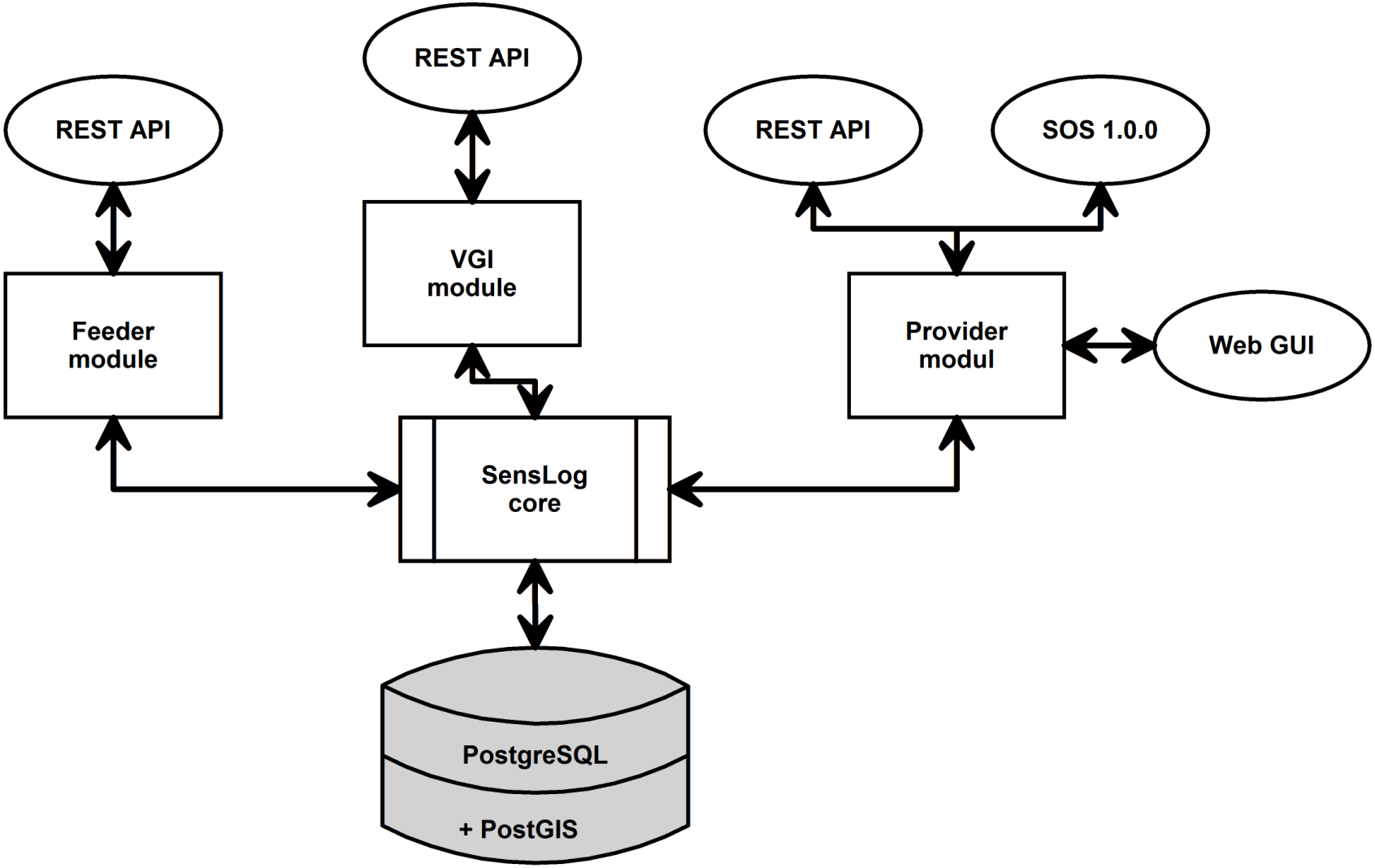
volunteer geographic information/
citizen science / crowdsourcing



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

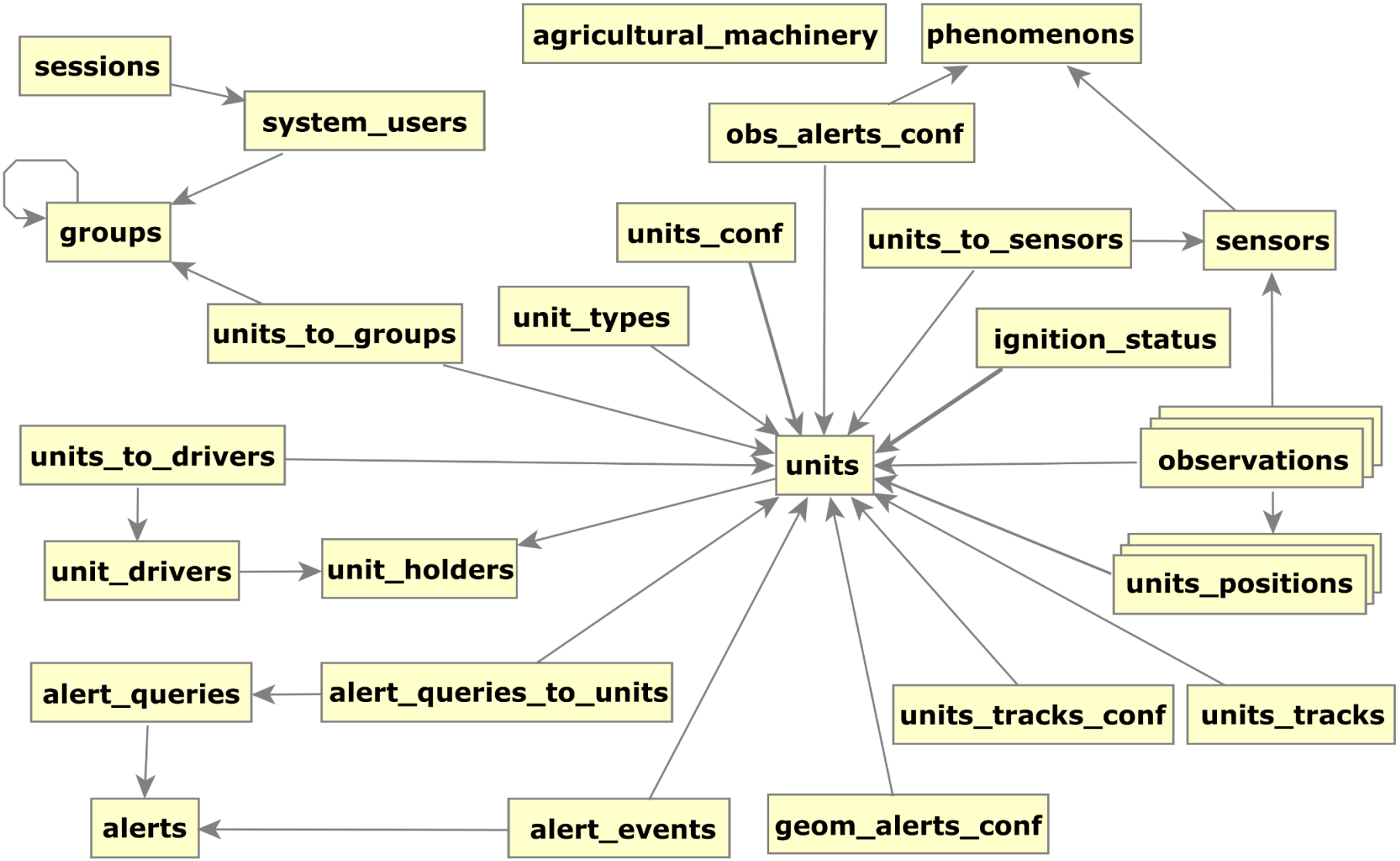


Data model

- 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)

SensLog
solution for sensor data

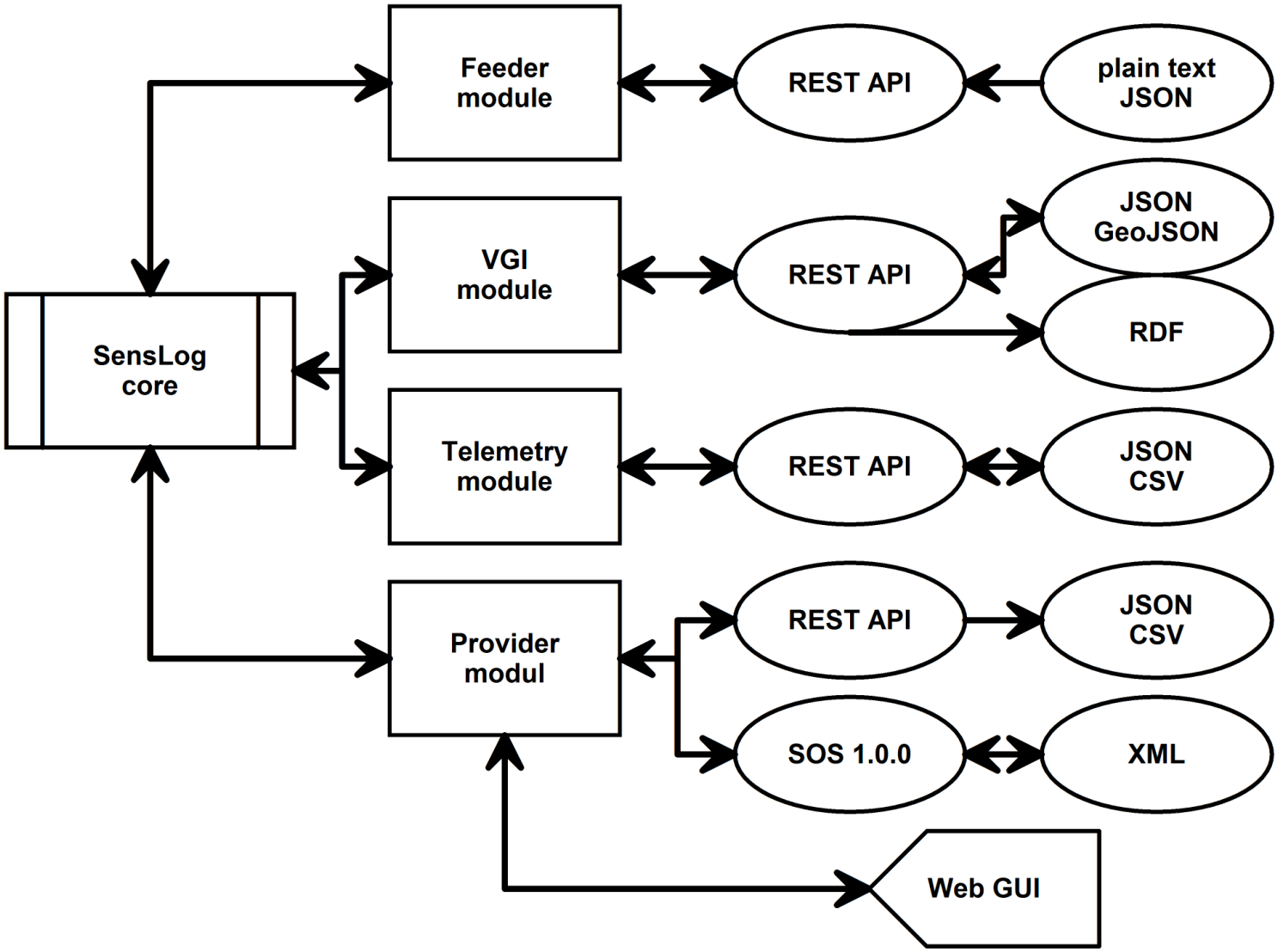
Data model



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

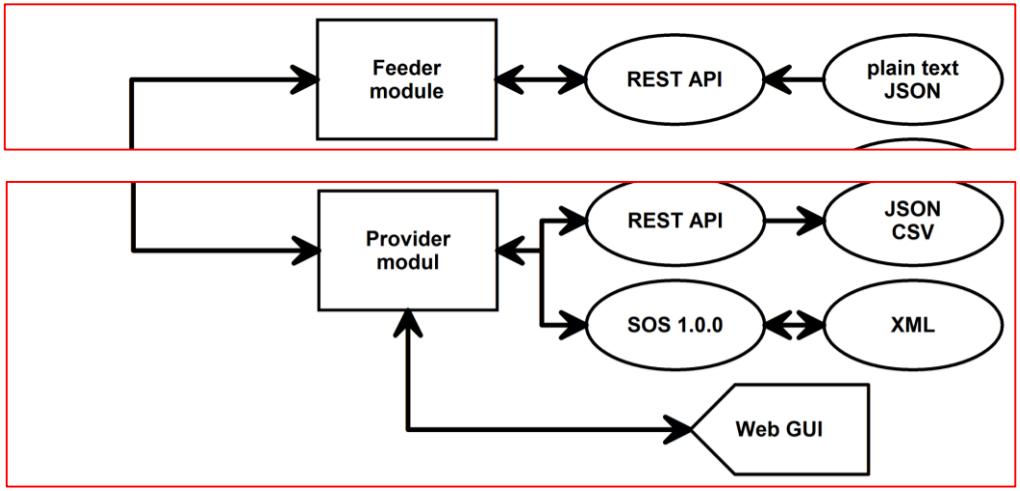

Feeder module
REST API
plain text JSON
VGI module
REST API
JSON GeoJSON
RDF
SensLog core
Telemetry module
REST API
JSON CSV
Provider modul
REST API
JSON CSV
SOS 1.0.0
XML
Web GUI

Applications on SensLog

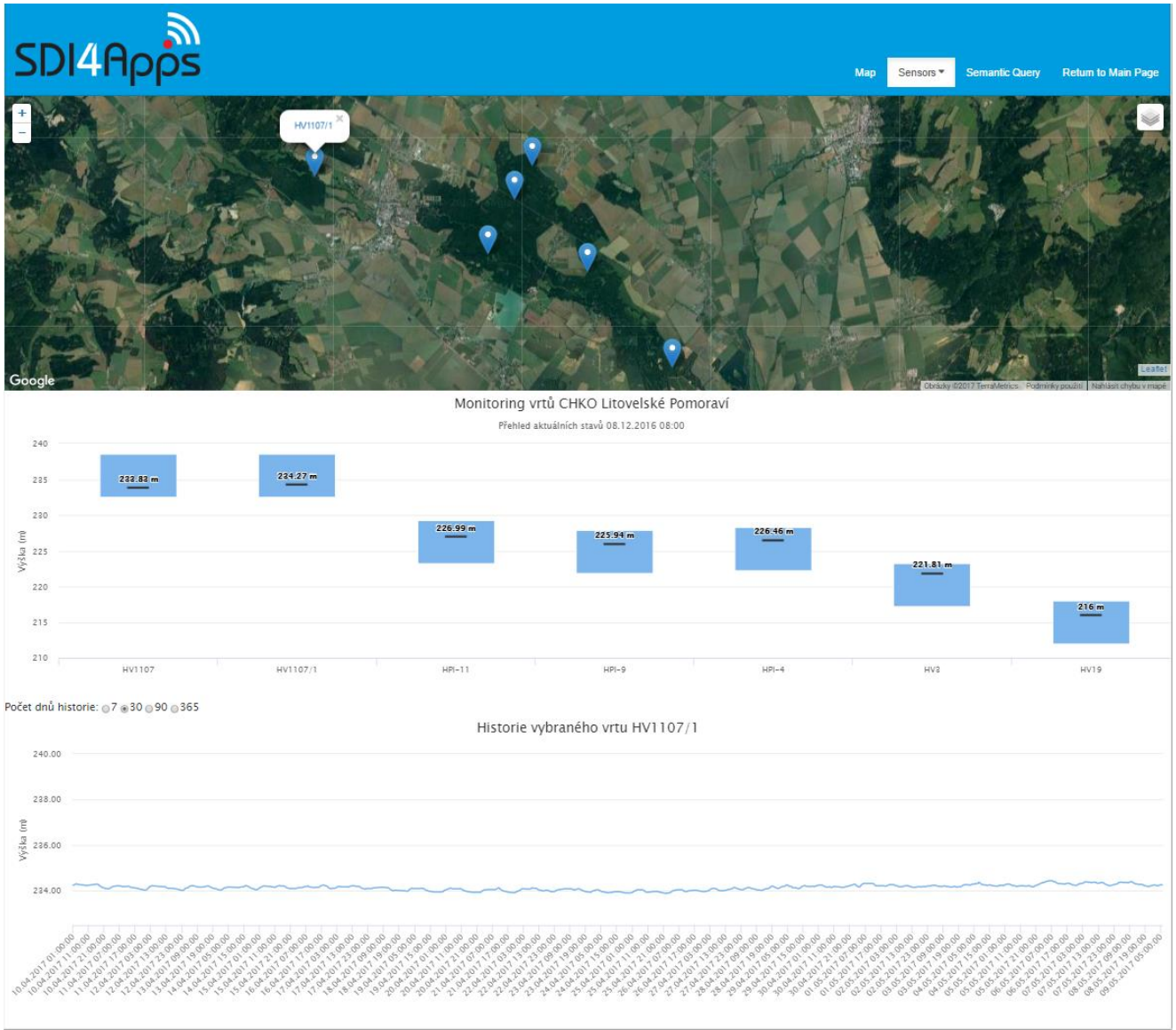
- SensLog as data storage, analytical module
- several applications built on SensLog
- from light Web clients to standalone mobile applications
- using different modules from SensLog

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

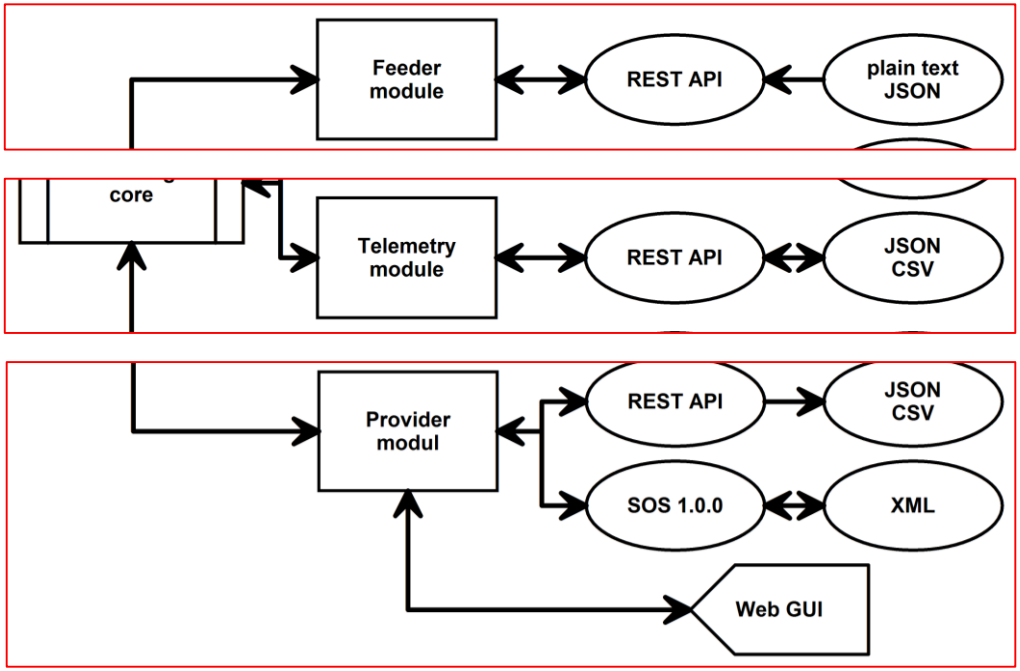


Groundwater monitoring



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



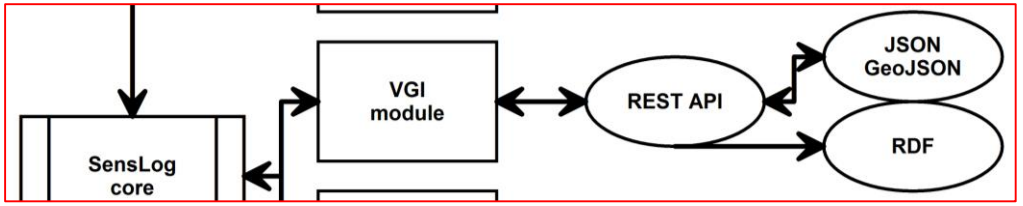
FarmTelemetry

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

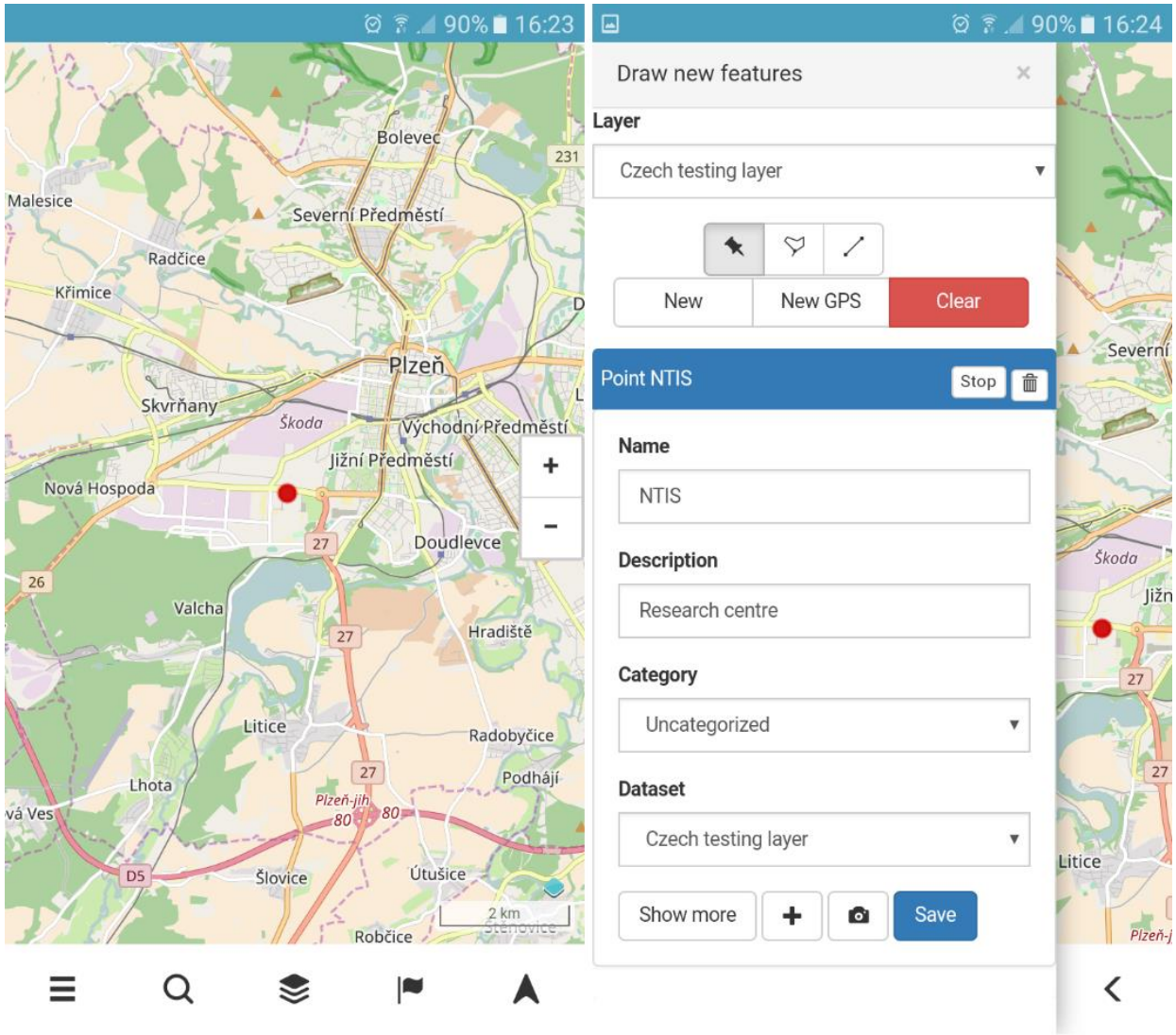
Od	Do	Poloha	Činnost	Zařízení	Spotřeba	Čas celkem	Prodlevy	Trasa
00:00:00	07:14:23	Jiná	Stání	NA	0.00	07:14:23	07:14:23	
07:14:23	07:17:08	Jiná	Jízda	NA	0.00	00:02:45	00:00:00	
07:17:08	07:22:08	Jiná	Stání	NA	0.00	00:05:00	00:05:00	
07:22:08	07:25:45	Jiná	Jízda	NA	0.00	00:03:37	00:00:00	
07:25:45	07:40:49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

Collecting VGI

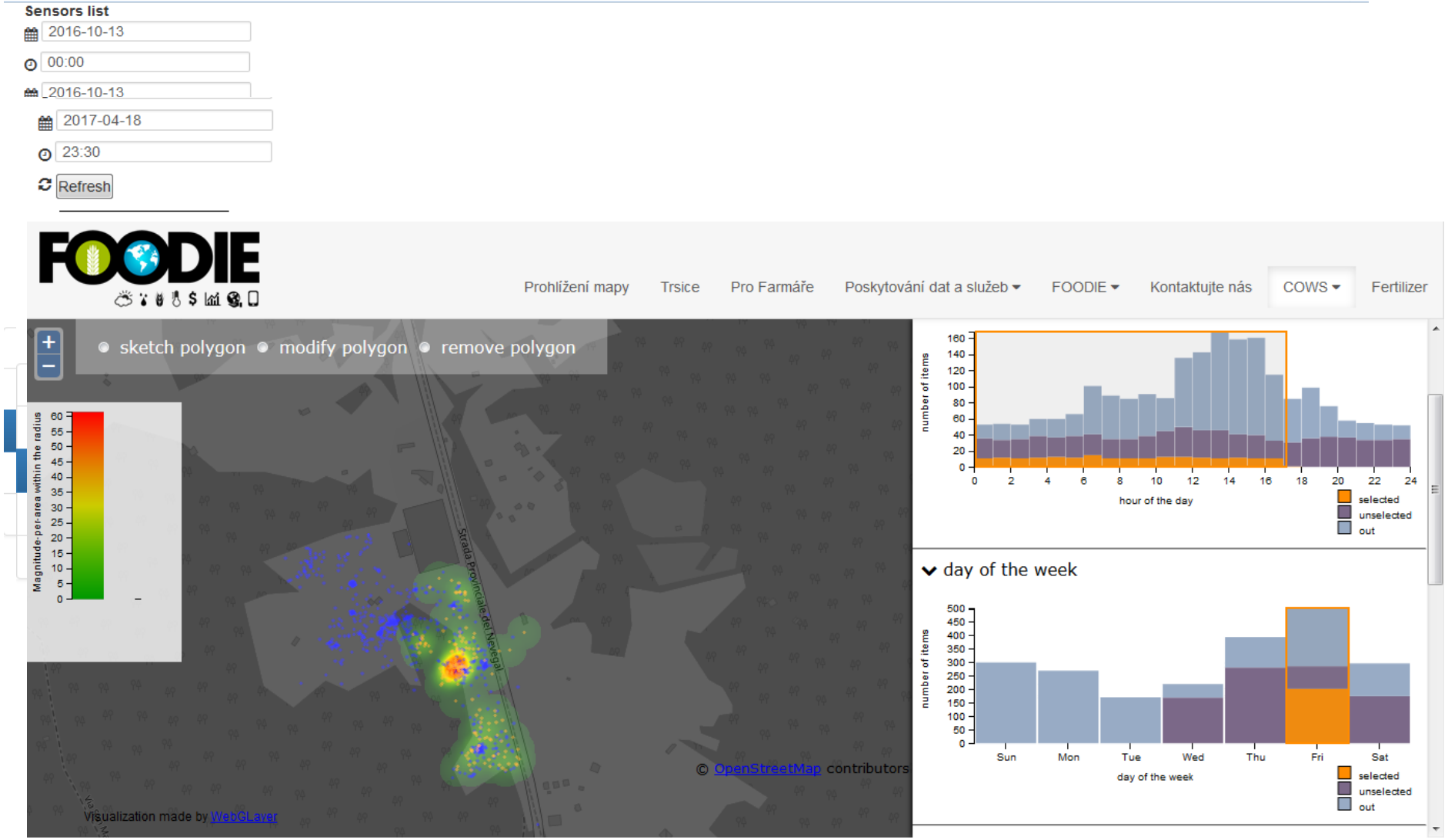
- mobile application for collecting user-defined POIs in terrain
- POI with variable structure of attributes
- additional multimedia content
- RDF encoding for integration with SDI4Apps SPOI data set



Collecting VGI



Crowdsourcing



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
github.com/mkepka/senslog