# INSPIRE geophysical data specification – technical workshop

Dana Čápová, Lucie Kondrová, Roman Kujal, Olga Moravcová, Eva Hudečková, Jan Sedláček, Pavla Kramolišová, Vladimír Ambrozek

# Presentation outline

- **CGS data sources**
  - Geophysical and support geological data
- **How to find and access data**
  - metadata (catalogues, geoportals)
  - data (web applications, web services, data delivery)
- **INSPIRE**
  - Open issues
  - Implementation problems
- **Future plans**

# CGS Data Sources

## CGS data - diverse types

## Form of information:

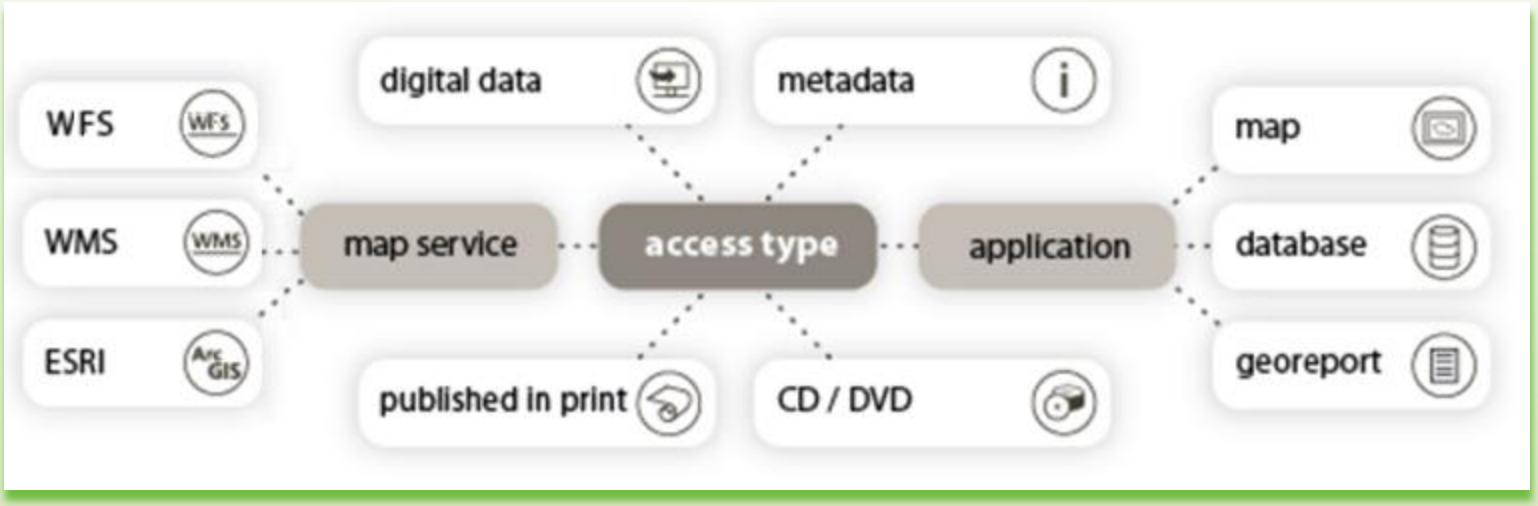
- structured (database, GIS)
- unstructured (file system, digital archive)
- document (paper reports, primary documentation)

## Content groups:

- primary (measured data)
- derived (processed data, for example grids)
- overview (localization and basic information)

# Standard access to CGS data

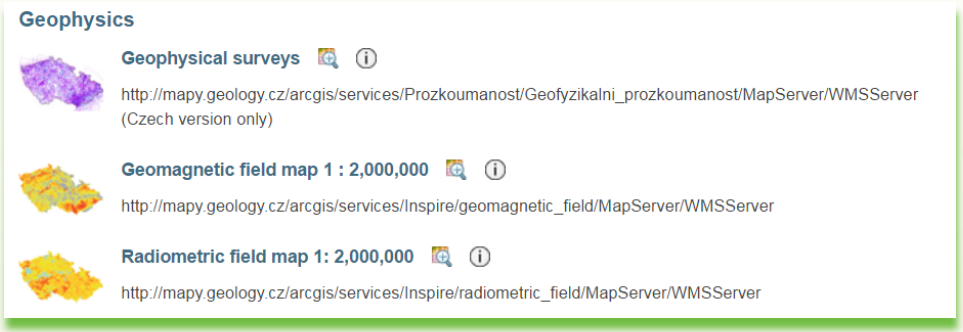
- Metadata
- Data
- Web services
- Applications



# Public access – what is available

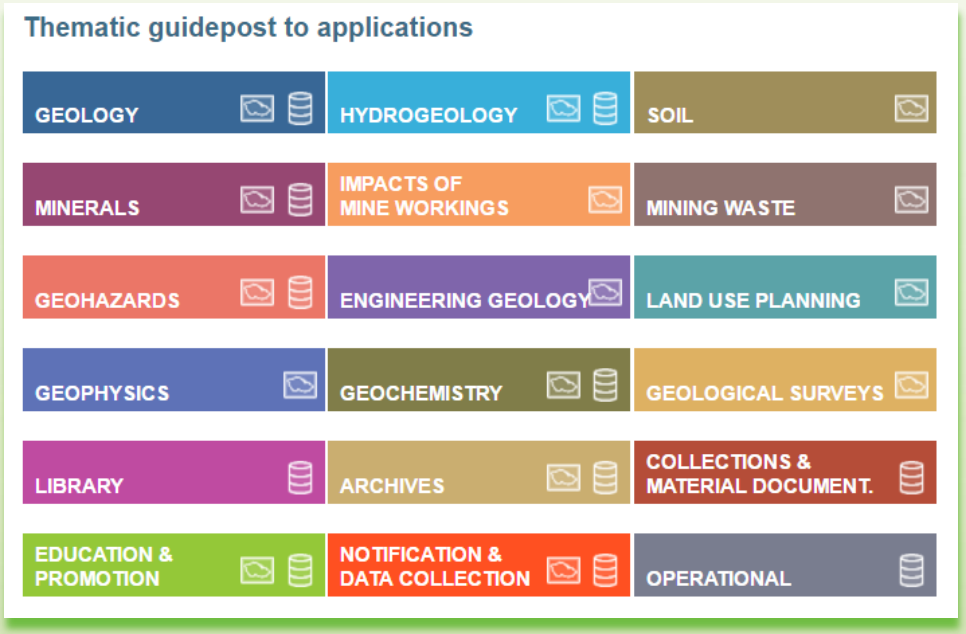
## Web services

- WMS: http://wms.geology.cz/
- WFS




## Applications

- http://applications.geology.cz/
- http://aplikace.geology.cz/



# Geophysics in INSPIRE

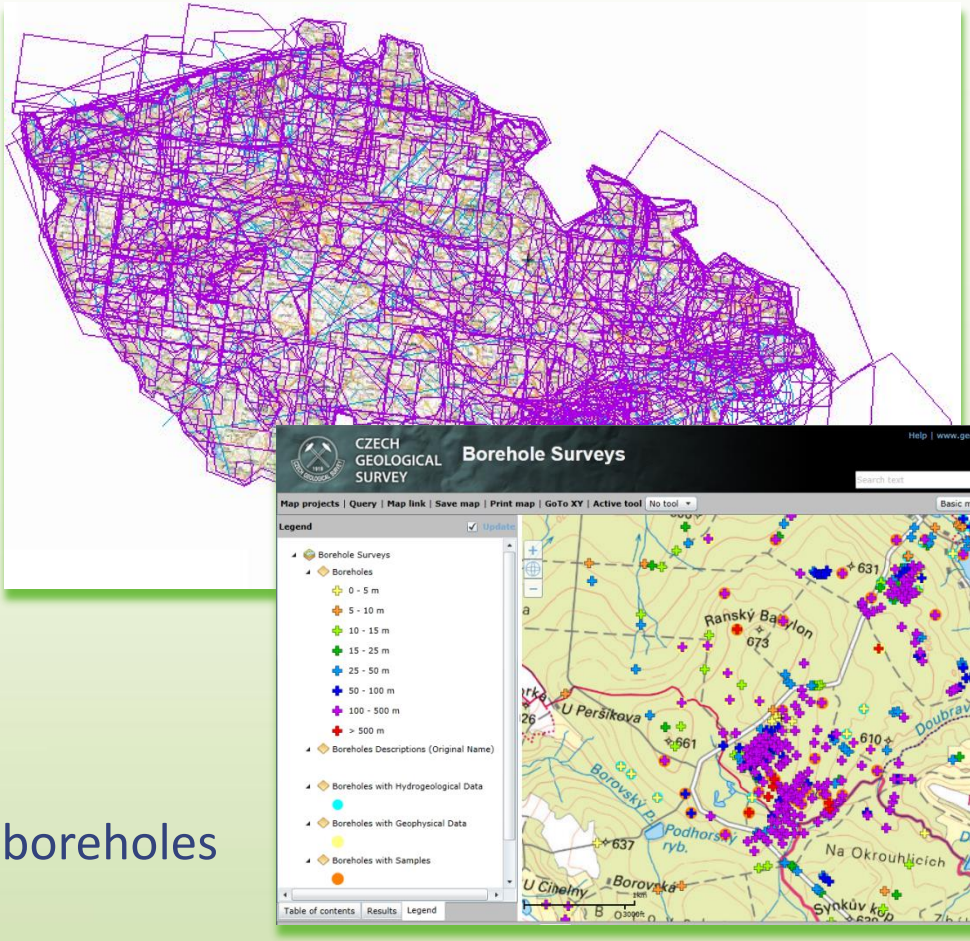
## Geophysical data specification

- In Annex II: Theme Geology
- Complex specification structure
- Implementation
  - Main Workshop theme
- Main featureTypes
  - Campaign
  - GeophMeasurements

# CGS Data – specific relevance for Geophysics

## Geophysical data groups:

- gravimetry
- magnetometry
- geoelectrical methods
- seismics
- radiometry
- borehole logging
- petrophysics




## Background geological data:

- geological maps, tectonics, boreholes

# Form of Geophysics in CGS

- Physical:
  - Primary documentation (paper)
  - Reports (paper, partly scanned)
- Digital
  - Survey catalogue with GIS localization
  - Measured data (for part of surveys only)
  - Secondary, derived data (grids, contours …)
  - Scanned reports

# Centrally stored geophysical GIS data - current status

- Geophysical Survey http://mapy.geology.cz/GISViewer/?mapProjectId=18
- GIS „Catalogue“ mentioned above, based on reports
  - Similar to featureType Campaign
- Areas of Particular Method Survey (VES, Seismic Profiles)

  http://mapy.geology.cz/GISViewer/?mapProjectId=10020

  http://mapy.geology.cz/GISViewer/?mapProjectId=10000
  - Measured and processed data GIS „catalogue“
  - Similar to featureType GeophMeasurement
- Well Logging http://mapy.geology.cz/GISViewer/?mapProjectId=15&cultureInfo=en
  - Point featureClass of borehole data curves
  - Similar to featureType GeophMeasurement

# Open issues (1)

## Geophysical Survey – base for Campaign featureType

- Geometry of all types – point, line, polygon
  - Point and line to be transformed to polygons?
- Surveys involve more methods with one geometry
  - Geometry redundancy?
- More surveys of different geometry belong to one report
  - Grouping geometries to Project featureTypes?
- Code list 70 items, 50% possible to map to INSPIRE code list
  - New INSPIRE special codes to be created?
  - General codes to be created (geoelectrics – not distinguished)?
- Relation  from Survey to Measured data not always clear
  - Manual search of relations?

# Open issues (2)

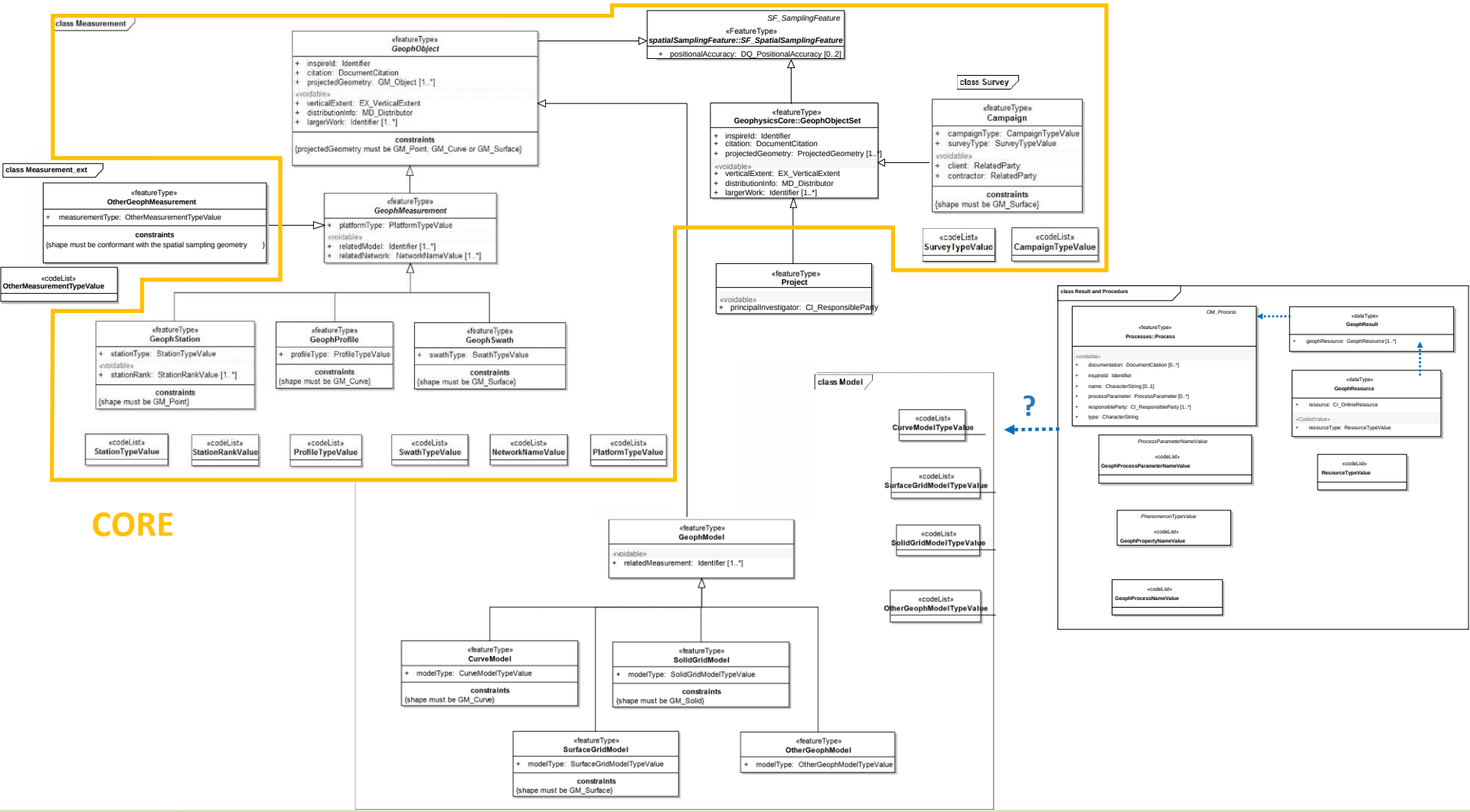
## VES, Seismic Profiles, Well Logging

- Base for GeophMeasurement featureType
  - VES are grouped to lines and then polygons
    - Find out relations to Geophysical Survey?
  - Relationship to measured datasets is not in a database
    - Creation  of relationship pick up process?
  - Well logging is in point geometry
    - 3D vertical lines
    - Line creation process

# INSPIRE Implementation Steps

- Mapping current similar structures to INSPIRE
  - Core specification
  - Simple transformations
- Structures and Data transformations
  - Core and Extension specification
  - Automated transformations
- Manual data addition and modification
  - Core and Extension specification
  - Long term continual task

# INSPIRE Complex Structure



# Primary and Secondary Data

| | CORE | | EXTENSION | | | |
|---|---|---|---|---|---|---|
| | **Primary** data ČGS | | | **Secondary** data ČGS | | |
| Dataset | ***Measurement*** geometry type | ***Measurement*** subtype | ***Measurement_ext*** geometry | ***Model*** | ***Model*** subtype | ***TypeValue*** codelist |
| Gravimetry | | | Areas of point measurements | grids CR – Bouguer | SurfaceGridModel | horizontalParameterGrid |
| Gamma spectrometry | Flight line | *GeophProfile* | | grids CR concentration K | SurfaceGridModel | horizontalParameterGrid |
| | | | | grids CR concentration U | SurfaceGridModel | horizontalParameterGrid |
| | | | | grids CR concentration Th | SurfaceGridModel | horizontalParameterGrid |
| Total gamma activity | Flight line | *GeophProfile* | | grids CR total gamma | SurfaceGridModel | horizontalParameterGrid |
| Magnetometry | Flight line | *GeophProfile* | | grids CR dT | SurfaceGridModel | horizontalParameterGrid |
| VES | Vertical electric sounding (point) | *GeophStation* | | geoelectrical layers | CurveModel | layerModel |
| Seismics | Seismic line | *GeophProfile* | | time sections | CurveModel | seismicTimeSection |
| | | | | depth sections | SurfaceGridModel | seismicDepthSection |
| Vertical seismic profiling | Vertical seismic profile (line) | *GeophProfile* | | VSP curves | CurveModel | compositLog |
| Well logging | borehole logging (line) | *GeophProfile* | | well logging curves | CurveModel | compositLog |

# Project CzechGeo: future plans

MINISTRY OF EDUCATION, YOUTH AND SPORTS

- Inventory of geophysical and geological data in CR
  - CGS data sources
  - Other available data sources
- Consolidation of geophysical and geological data in CR
- Effective access to geophysical data including INSPIRE
- Relation to RIs:
  - EPOS
  - further development of EGDI
  - coordination with GeoERA

http://czechgeo.cz/

**Poděkování:**
Velká infrastruktura CzechGeo/EPOS je podpořena v letech 2016-2019 projektem LM2015079 Ministerstva školství, mládeže a tělovýchovy ČR.

http://czechgeo.cz/

# Thank you for your attention!

***Dana Čápová***
*Eva Hudečková, Lucie Kondrová, Pavla Kramolišová, Roman Kujal, Olga Moravcová*