# WHAT IS LAYMAN AND HOW IT WORKS

JIŘÍ KOZEL

Workshop 4

Big and Open Data and Innovative Hubs in Agriculture, Transport and Rural Development

Czech University of Life Sciences, Prague

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# ABOUT ME

- 14 years of work experience in geoinformatics
- started at Masaryk University
  - GIS specialist
  - software developer
  - system analyst
  - leader of GIS group @ Institute of Computer Science

# ABOUT ME

- full-time **freelancer** since 2016
  - maitainer of OpenMapTiles for 2 years
  - BrnoUrganGrid
  - technical leader of GIS4DIS project
  - Layman

# ABOUT ME

- geospatial data
- data modeling, analysis, and processing
- web systems
- maps
- automation and optimization

- open-source tools
- pen & paper

# WORKSHOP 4

https://github.com/jirik/layman-workshop

- Karel Charvát - Purpose of workshop
- Jiří Kozel - What is Layman and how it works
- Raitis Berzins - Map composition
- Jiří Kozel, Jiří Kvapil - How to install Layman in cloud
- Jiří Kozel - Layman API
- Jiří Kozel - Authentication and authorization
- Jiří Kozel - Interaction with Metadata (Micka)
- Jan Vrobel - QGIS plugins for accessing maps and map composition from server
- Jan Vrobel - QGIS plugin for Web data publishing using Layman
- Raitis Berzins - HSLayers NG as client for Layman

# WHAT IS LAYMAN?

Ask ~~Google~~ DuckDuckGo!

# JAKE LAYMAN

# LAYMAN

*someone who is **not a professional** in a given field*

from Wikitionary

# SO THE LAYMAN IS NOT SO FAMOUS...

...YET!

# WHAT IS LAYMAN?

- web service for publishing geospatial data online through REST API
- developed since 2018 as part of Databio and Sieusoil projects
- written in Python, published under GNU-GPL license at GitHub
- https://github.com/jirik/layman

# HOW LAYMAN WORKS?

1. Input
    - vector data in **GeoJSON** or **ShapeFile** format
    - cartographic style in OGC Styled Layer Descriptor or Symbology Encoding format
2. **Layman's Magic**
3. Output
    - standardized OGC APIs
        - Web Map Service
        - Web Feature Service
        - Catalogue Service

# LAYMAN KEY FEATURES

Layman supports two main models of geospatial data:

- **Layer** is created from combination of vector data (GeoJSON or ShapeFile) and visualization (SLD or SE style).
- **Map** is collection of layers described in JSON format. Also known as **map composition**.

# LAYMAN KEY FEATURES

There are **multiple client applications** for communication with Layman through its REST API:

- simple web client shipped with Layman
- QGIS desktop client
- HSLayers library

# LAYMAN KEY FEATURES

Layman`s **security system** uses two well-known concepts: authentication and authorization.

Common configuration

- **authentication** based on widely used OAuth2 protocol
- **authorization** ensuring that only owner of the data may edit it.

# LAYMAN KEY FEATURES

- Large data files can be easily uploaded from browser thanks to chunk upload.
- Asynchronous processing ensures fast communication with REST API.
- Processing tasks can be distributed on multiple servers.

# LAYMAN KEY FEATURES

- Layman stands on the shoulders of widely used programs like Flask, PostgreSQL, PostGIS, GDAL, GeoServer, Celery, and Redis.

# LAYMAN'S MAGIC

1. wait till all data is uploaded
2. start asynchronous tasks
    1. import vector data into PostgreSQL
    2. publish vector data to GeoServer (WMS, WFS)
    3. publish style to GeoServer (SLD, SE)
    4. generate thumbnail
    5. publish metadata to Micka (CSW)

# WHAT IS LAYMAN?

## SUMMARY

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