

Development of Online QGIS Training Material for UN OpenGIS

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Objectives and motivations

- 🔗 Development of online training material on geo-analysis functions available in QGIS
- 🔗 The material is intended for training UN staff involved in the peacekeeping operations and its promoted by the UN OpenGIS Committee
- ▲ Foster the transition from proprietary GIS software (ArcGIS) to FOSS4G (QGIS)



UN Open GIS and PKO

- ✓ The OSGeo UN Committee promotes the development and use of open source software that meets UN needs and supports the aims of the UN
- ✓ The idea for this initiative has risen following a meeting between OSGeo Board of Directors and the UN GIS team at FOSS4G in Seoul, Korea in September 2015
- ✓ The aim is “...to identify and develop an Open Source GIS bundle that meets the requirements of UN operations, taking full advantage of the expertise of mission partners including partner nations, technology contributing countries, international organisations, academia, NGOs, private sector.”



Requirements analysis

- ✓ The preparation of the material encompasses the definition of hands on exercises with sample spatial datasets, following provided guidelines, and the development of documentation to guide users through a step by step process

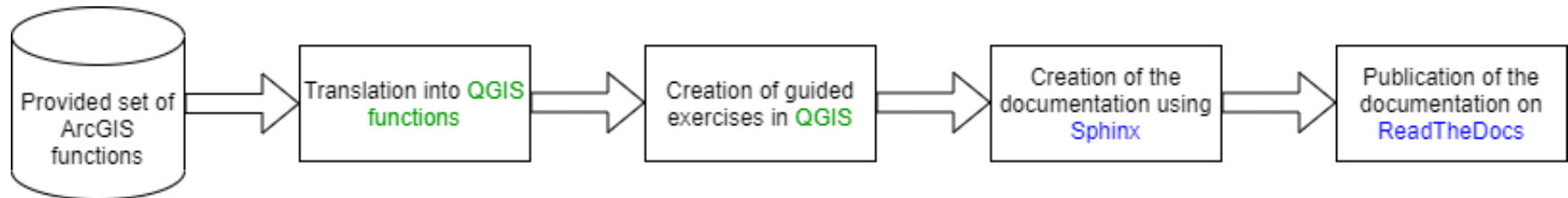
- ✓ Functions to be translated from ArcGIS to QGIS were chosen starting from the geo-analysis tools most commonly used by UN staff*:
 - Proximity analysis
 - Interpolation and extrapolation
 - Overlay analysis
 - Density (heatmaps)
 - Spatial statistics (hotspots)
 - Network analysis
 - Geoprocessing
 - Proximity analysis (nearest feature)
 - Coordinate conversion



* Survey by KRIHS - Geospatial Information Research Division

Workflow

- ✓ Identify the corresponding **QGIS functions** to the provided set of **ArcGIS functions**
- ✓ Create the **guided exercises** to train UN staff
- ✓ Develop the documentation using **Sphinx** Python documentation generator
- ✓ Management of the project code using **git**
- ✓ Publication of the documentation on the web to be easily reachable, using the hosting functionality provided by **ReadTheDocs**



FOSS tools



Data

- ✓ The data used in the exercise have been published using Zenodo and are available at this link <https://doi.org/10.5281/zenodo.4108294>
- ✓ Zenodo is a general-purpose open-access repository that allows researchers to deposit data sets, research software, reports, and any other research related digital artifacts
- ✓ The dataset covers an area around the city of Seoul, Korea and contains three different types of information:
 - Landsat8 satellite images
 - Aster Digital Elevation Map
 - OpenStreetMap vector dataset



Online Documentation

The screenshot shows a web browser window displaying the online documentation for QGIS 3.10 - Geo-analysis Practice. The page features a blue header with the QGIS logo and the text "QGIS 3.10 - Geo-analysis Practice" and "latest". Below the header is a search bar and a "CONTENTS:" section with a list of topics: 1. General Info, 2. Preparation, 3. Vector operations, and 4. Raster operations. There is also an "INDEX:" section with a "Functions" link. A small advertisement for "Hiring Python devs?" is visible. The main content area has a breadcrumb "Docs > QGIS 3.10 - Geo-analysis Practice" and an "Edit on GitLab" link. The title "QGIS 3.10 - Geo-analysis Practice" is followed by a paragraph of text: "This educational material has been developed by Eng. Lorenzo Amici, Dr. Daniele Oxoli, Prof. Maria A. Brovelli and Prof. Fabio Salice of Politecnico di Milano (Italy) with the mentorship and support of Dr. HaeKyong Kang of the Korea Research Institute for Human Settlements, within the project of collaboration between the OSGEO foundation and the UN Open GIS initiative." Below this is a link to "Download PDF version". The "Contents:" section lists the following items:

- 1. General Info
 - 1.1. Purpose of this documentation
 - 1.2. Target audience
 - 1.3. License
- 2. Preparation
 - 2.1. Install QGIS
 - 2.2. Download the data
 - 2.3. Create a new project
 - 2.3.1. Import vector data
 - 2.3.2. Import raster data
 - 2.3.3. Layers panel
 - 2.4. Manipulate CRS of the project and the data
 - 2.4.1. Reprojecting vector layers
 - 2.4.2. Reprojecting raster layers
 - 2.5. Clip all the data to the study area

<https://qgis3-10-geoanalysis-un.readthedocs.io/en/latest>

PDF version: https://qgis3-10-geoanalysis-un.readthedocs.io/_/downloads/en/latest/pdf



Conclusion and further work

- ✓ Best advantage of FOSS documentation generators also for training material (versioning, hosting, collaborative exercises development, updates)
- ✓ Include requested ArcGIS functions that do not have a correspondent QGIS core function, such as:
 - Kriging interpolation
 - Natural neighbor interpolation
 - Spline interpolation
 - Aggregate (for rasters)
 - Shrink (for rasters)
 - Visibility analysis (for both vectors and rasters)



Thank you for your attention ...Questions?

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