

Design, setup, and management of a local spatial data server using OpenStreetMap as the principal mapping platform.

At the beginning of our research project related to provided free and open access to environmental research data in Ireland we decided that OpenStreetMap (OSM) has the most potential as a base mapping platform for our spatial data. Proprietary data in Ireland, like other European countries, is very expensive and linked with restrictive usage license conditions. The key deliverable in the project is to build a flexible framework to provide environmental research data for location-based services which an emphasis on map-based distribution. This presentation outlines the software tool chain which we have configured to support the distribution of this data. We begin with regular downloads of fresh OSM data for Ireland and automated insertion and updated to our local PostGIS database. Environmental data (point-based and polygon-based vector data) is added to the same PostGIS database. A local tag-set is used. For example licensedFacility=WWTP. Mapnik is then used to generate tiles according to the styling information in several different style files – for tiles which include certain combinations of our environmental data. Tiles which display all geographical features using the Irish language rather than English are also created. Tilecache is then used to present these tiles for consumption over Web Map Services. Some PHP scripts have been developed to automatically extract combinations of the OSM spatial data and the environmental data and save them as KML or GML. For desktop GIS users ESRI Shapefiles can be generated in a number of ways – using the ogr2ogr tool or connecting directly to our local PostGIS database using Q-GIS. Some of our data consumers prefer data in Shapefile format as it can be opened in proprietary GIS packages. To allow users to explore the contents of the local PostGIS database containing all of this data we have developed a small web-based application. This acts as a general purpose browser for the spatial data in the database. The user can click on the map and information (spatial information such as area, perimeter) and OSM tags are displayed for each line or polygon within a specified buffer around the click-point location. By maintaining the general structure of the OSM tables (as setup by the osm2pgsql tool) we can easily (1) integrate our own spatial data and (2) add additional tags which are only of local relevance or are specific to our environmental applications. The software framework we have developed is being used successfully by our research group within our department. It also serves as a working example to other GIS groups who are interested in maintaining and distributing their spatial data in this way. Our presentation will focus heavily in showing how we “got things working” and emphasise that the OSM software ecosystem is not as daunting as it might first appear.