Open Source Software GIS (a Very Brief Overview)

Software is one of the components in GIS that enable us to work with geospatial data. GIS software development change rapidly in which free and open source software (FOSS) are available to users in addition to proprietary software. For organizations that lack of enough financial resource to purchase proprietary software, open source software GIS (OSGIS) become potential tools for spatial analysis. Compared to proprietary software OSGIS provide some advantages [1]: (1) No software purchasing costs; (2) Easy to learn by personnel with general IT background; (3) Ease of compatibility with existing IT infrastructure; (4) The developed system has the potential to interoperate with other open-specifications-compliant systems and applications.

Number of OSGISs have been rapidly growing as needs for spatial analysis increase. One of the famous website that provides overview for OSGIS, http://www.freegis.org/, listed 351 software as 21 October 2010. Some of desktop GIS software are available such as Geographic Resources Analysis Support System (GRASS) and Quantum GIS (QGIS). GRASS is a free Geographic Information System (GIS) software used for geospatial data management and analysis, image processing, graphics/maps production, spatial modeling, and visualization (http://grass.itc.it). Quantum GIS (QGIS) is a user friendly GIS software. QGIS supports vector, raster, and database formats. It supports many common spatial data formats (http://qgis.org). In addition to features that available in Quantum GIS, a set of advanced spatial analysis tools namely ftools was designed to extend the functionalities of Quantum GIS. fTools is a comprehensive suite of analysis and data management tools that extend the functionality of Quantum GIS without the need for additional libraries or tools (http://www.ftools.ca).

Another open source software for spatial analysis is PostGIS that has been developed by Refractions Research as a project in open source spatial database technology. PostGIS adds support for geographic objects to the PostgreSQL object-relational database. In effect, PostGIS "spatially enables" the PostgreSQL server, allowing it to be used as a backend spatial database for GISs (http://postgis.refractions.net). PostgreSQL is an object-relational database management system (ORDBMS) based on POSTGRES, Version 4.21, developed at the University of California at Berkeley Computer Science Department [2]. PostgreSQL offers substantial additional power by incorporating the concepts of inheritance, data types, and functions in such a way that users can easily extend the system [2]. In addition, PostgreSQL also provide features for additional power...
and flexibility including constraints, triggers, rules and transactional integrity [2].

References:

2. PostgreSQL 7.3.2 user’s guide, Copyright © 1996-2002 by The PostgreSQL Global Development Group.