Quantum GIS as a platform

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At the age of web and mobile GIS application, it could be considered a strange idea to focus on desktop GIS. But still, desktop software have a future and are still really pertinent when it comes to advanced analysis or visualization features, where web applications are currently limited.

Quantum GIS (QGIS) [1] is a user friendly Open Source desktop Geographic Information System (GIS) licensed under the GNU General Public License. QGIS is an official project of the Open Source Geospatial Foundation (OSGeo). It runs on Linux, Unix, Mac OSX, Windows and Android and supports numerous vector, raster, and database formats and functionalities.

The Quantum GIS project was officially born in May of 2002 when coding began. The idea was conceived in February 2002 when Gary Sherman began looking for a GIS viewer for Linux that was fast and supported a wide range of data stores. That, coupled with an interest in coding a GIS application led to the creation of the project. The first code was checked into CVS on SourceForge on Saturday July 6, 2002, and the first, mostly non-functioning release came on July 19, 2002. The first release supported only PostGIS layers.

Nowadays, QGIS has evolved a lot, and is gaining more and more attention from the geospatial comunity. From a simple PostGIS data viewer, it became a full-featured desktop GIS, with little lacking compared to the proprietary industry leaders.

Current version 1.8 and the next major 2.0 releases, are slowly changing the way QGIS is considered and used. It mutated from a desktop GIS to a GIS platform.

Wikipedia, the collaborative encyclopedia, defines a platform as «a term for technology that enables the creation of products and processes that support present or future development. It establishes the long-term capabilities of research & development institutes. It can be defined as a structural or technological form from which various products can emerge without the expense of a new process/technology introduction.» Latest QGIS versions correspond to this definition.

First of all, on a structural point of view, the opensource side of this software makes it ease collaboration and innovation. QGIS is GPL-licenced, and has the particularity of being completely community-driven. There are a lot of various contributors to the core of Quantum GIS, and decisions are taken after general community consensus. The Project Steering Comittee's interventions are limited to the bare minimum. QGIS core source code is hosted on Github, available to fork for anyone, and all development versions are hackable. The QGIS infrastructure is also open, and bug reports, advices, feature requests and patches can be sent seamlessly.

This openness is a strong point in making QGIS a hub for collaboration on GIS software, GIS processing and visualization, be it on ideas, code, or documentation. This freedom in the way QGIS is developped helps innovation to appear. Being part of OSGeo and Google Summer of code is another aspect of this openness in collaboration.

On the technical side, there are a lot of aspects that make QGIS a platform more than a simple software : it has an API, it is a GIS connector to many other components, it is extendable, it is open, it propose a rapid development model, and offers Python bindings.

Quantum GIS is developped in C++ on top of the QT graphical framework. QGIS has an API which is documented, and allows anyone to develop new components to enhance it, or even build a full C++ GIS application using only QGIS library.

QGIS acts as a connector to many other GIS components. It opens a lot of GIS formats, including databases, thanks to the GDAL/OGR library at its heart. Geometry processing is done with the GEOS library. A powerful connector to the GRASS GIS is also integrated into the software, letting the user benefit from all GRASS features and algorithms. A 3D globe is also available, based on OpenSceneGraph and OSG Earth libraries. Of course it is a client for various OGC standards and can connect to WMS, WMSC, WFS or WFS-T servers and more.

Quantum GIS is extendable in many ways. Through code source contribution for new core features obviously, but mainly through the plugin mechanism. QGIS allows a user to extend it through plugins, and particularly plugins written in Python. QGIS expose its API as Python bindings (known as PyQGIS), which let a user write powerful new custom features. Writing Python plugins to QGIS is easy and fast, therefore leads to great innovation. New plugins are added to the main repository every week, for classic processing as well as very unique features. Python is great as a glue language, and QGIS benefits from this characteristic, becoming more and more a framework on top of which new tools and new usages are developped.

The next step will boost QGIS into the platform world : Sextante integration will make the difference. Sextante in QGIS is the future QGIS geoprocessing framework. Ported from GvSig/Java to QGIS/Python, the framework design is already mature, and the code is already usable. Its aim is to provide a framework to develop new geoprocessing algorithm, while keeping the integration efforts very low. As soon as a first version has been out, we have seen a lot of module developers integrating their favorite algorithms into Sextante very easily. There are now more than 10 modules available for the framework, each of which provide dozens to hundreds of new geoprocessing algorithm. The main advantages of using the framework are automatic interface generation for options, seamless integration between all algorithms, even from different backends, automatic integration into the workflow modeler, and ease of development.

QGIS LOGO

This new geoprocessing framework is still in beta, but will be intensively worked on in the next months, and there is no doubt that it will be one of the main highlights for QGIS 2.0.

These new features will enable anybody to contribute to QGIS, with a very easy way of integrating external contributions to QGIS geoprocessing framework. This, and the opensource aspect, will lead to more contributions, more links between communities, academics, researchers, private companies, public sector, developer associations, opendata addicts… In the GIS world and all custom domains needing geo-located features and data.

Opensource licence, community-driven project management, open technical framework, acting as a concentration point for every other related component makes QGIS not only a desktop GIS, but also a platform. And it is growing big in that direction.

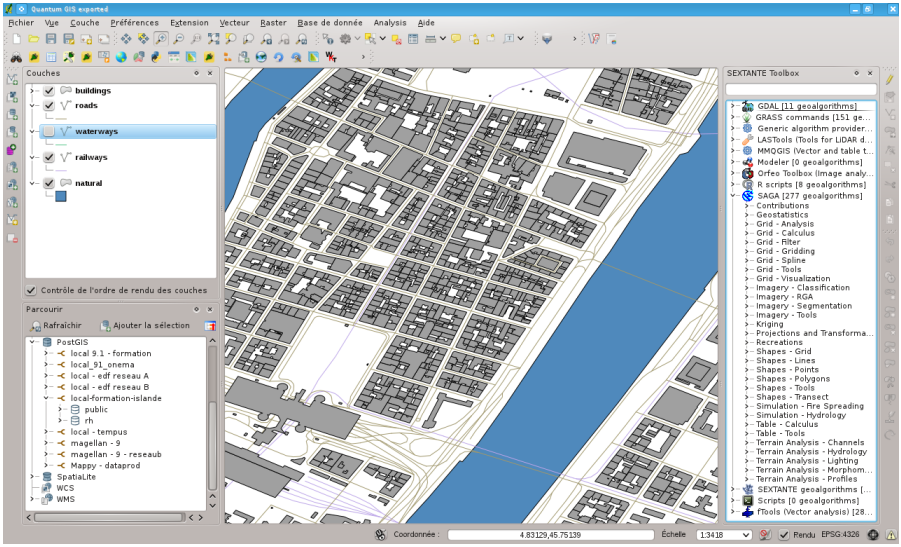

FIGURE 2

Quantum GIS with Sextante toolbox

[1] QUANTUM GIS DEVELOPMENT TEAM. Quantum GIS Project homepage. QGIS website. Retrieved August 31, 2012 from http://qgis.osgeo.org