An Expert Paper

Open Source Software

Jo Cook, OA Digital and Oxford Archaeology

In 5 years time, Open Source Geospatial won't be a niche or a specialism, it will be the standard way that things are done. Entropy and Moore's Law demand it. "... free has become the default, and pay walls the route to obscurity" as Chris Anderson, Wired Editor in Chief, says in his new book "Free: the Future of a Radical Price". The UK Government's restating of their Open Source Action Plan, and the Conservative Party's encouraging stance on the use of Open Source software within government will promote innovation and encourage usage amongst all sectors. Companies traditionally based around licensing shrink-wrapped boxes of software, where the software costs considerably more than the computer used to run it (compare this to the relative cost of dvds and dvd players), will need to adapt to this new market, and begin selling added value and support for basically free programs, or die. Leveraging the power of the community, and crowd-sourcing, to provide basic support and agile, responsive, bug fixing, and in some cases for collecting and creating data, will have everyone wondering how they managed in the days when they had to wait months or even years for a hugely over-hyped point release to get their one problem fixed. Sharing and making code and data open will be the de facto approach, with proprietary file formats that can only be opened in one version of one expensive program so out of date that they will be considered embarrassing. Well, it might happen like that...

Currently open source geospatial software is becoming more popular, partly as a side-product of the increasing popularity of all things "open", such as OpenStreetMap. Fundamentally, phenomena such as OpenStreetMap are about asking why the status quo exists and why we should accept it without questioning, and amongst certain sectors that mind-set is becoming more common. This has already led to discussions about the openness of data - the Ordnance Survey's derived data and licensing policies, and is starting to extend to questioning software licenses and prices, particularly in the current financial climate.

Actual take-up and usage is currently low, but increasing, with more companies and indeed larger organisations choosing to at least evaluate open source alongside proprietary offerings. In general the perception seems to be that the current open source offerings are not quite "enterprise-ready". Usage appears greater amongst the service-level elements of the software stack, ie the database and server components. It is possible to build a data infrastructure with an open source back-end and slot in proprietary products higher up in the stack due to the increasing use of open standards throughout both the open source and proprietary software offerings. There is less take-up of the open source geospatial desktop components, due to a general feeling that these lack the functionality of their proprietary counterparts.

The open source geospatial development community is maturing, with a consolidation of products under the Open Source Geospatial Foundation (OSGeo) banner, and the development of local chapters or groups dedicated to providing community support at a regional or language-specific level. Several different marketing models are evolving around the idea of making money from open source software, mainly around support and "added value". Globally a few companies have begun to offer an enterprise-level SLA for the products that they support and/or develop, although in the UK such companies are limited in number at present.

The technical developments that will impact on open source geospatial software over the next five years will be the same as those that affect proprietary products. Increasing use of "the cloud" for storage and computing power will move much that is currently desktop and file-based online, be that as increasingly sophisticated online user interfaces or using services for communication between different elements of the stack. This will lead to greater interoperability and increased access to data, including use of crowd-sourced data such as OpenStreetMap. As GIS in general penetrates deeper into organisations, such as in the area of Business Intelligence, existing open source implementations will continue to mature, and new ones will be developed. Development focus will also be on ease of use of products, providing higher end analytical tools, improving the user interface and cartographic output.

The impact of these changes on the geospatial industry and its customers will take two forms. The move away from file-based and desktop-based geospatial workflows will require a re-education of both vendors and customers as the implications of this move become clear. As Seth Godin puts it on his blog (http://sethgodin.typepad.com): "Your industry has been completely and permanently altered by the connections offered by the internet. Your non-profit, your political campaign, your service business. Not a little different, not just email enabled or website marketed, but overhauled." Vendors will no longer be able to rely simply on customer loyalty when it comes to making sales, as the questioning mindset becomes more common, and companies demand more value for their money. Modularisation will force all parties (open source and proprietary) to improve their offerings. It will no longer be enough for a vendor to sell an entire suite as "best practice" when truly "best of breed" products can be mix and matched at will.

It's difficult to come up with a scenario to demonstrate these advances as, in general, open source will no longer be a niche, but will be an accepted part of everyday geospatial life. The consumer may not even realise they are using GIS, let alone open source GIS, as it may be embedded in a superficially non-spatial application or web page, and the only people who will care if the product is open source or proprietary will be the compliance managers.

In summary, in 5 years time, the way everyone uses GIS software and spatial data will have changed massively from the mainly isolated file-based desktop approaches that are still the most common today. The mindset of vendors, customers and users will need to change to take the cloud-computing and data sharing revolution into account. Open Source GIS, with its innate interoperability and standards compliance will be well-placed, if not the logically best way, to meet this challenge, with a strengthened infrastructure and ecosystem to help support it.

Author's Note

In writing this, I asked for opinion from the international geospatial community, via my blog and via twitter, and a number of those replies have been aggregated and worked into this paper. I also used comments from a thread on the OSGeo Discuss Mailing List on OSGeo in 5 years time. I thank everyone who responded.