# Thoughts on a Potential New Business Stream: ExeGesIS Open Source GIS Stack

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# Overview

At the governmental level, there is significant interest[[1]](#footnote-1) and business potential in the use of open source/license free software in public organisations. Some of the main drivers are to have less ‘vendor lockin’, more open standards (to help promote data sharing) and a simpler reduction in license fees charged by vendors for propriety products.

At the ‘exeGesIS client’ level there is growing interest in the use of open source GI-related software to replace existing systems in an effort to keep costs down whilst retaining core products as offered by ESDM (e.g. interest in QGIS for CAMS and CMSi users).

As a result, there may be benefits in ESDM offering a ***coherent*** ‘open source’ strategy for Gi products and providing the expertise, consultancy, value-added products…and above all…the support to these type of organisation.

*NB IMO, ‘Open Source’ is not really the issue for clients, it is a by-product of the type of software that is often used to replace existing (expensive) solution to make savings. The client not interested in OSS itself, they are interested in an alternative that offers ‘open format, industry standard solutions that are no/low license cost, have a long-term future’ and then clients pay for the support and maintenance rather than huge upfront license costs.*

*i.e. the issue is- having a trusted and long-term partner who can support these ‘alternative’ solutions.*

# Where is ESDM?

For the most part, ESDM already does this sort of thing. We use many of the large, standard OSS offerings in our core products and development projects and we already promote their use to specific clients. We also have direct contact with many of the potential customers for this type of product, either people who want to directly switch away from expensive ArcMap/Mapinfo licenses or clients who are looking to re-structure their whole GI setup in their organizations.

For each of these clients, they have a limited set of vendors they can go to for quotes and expertise. Most of them are product specific (e.g. ESRI) and some (e.g. Dotted Eyes) offer an open source alternative. ESDM could offer a similar level of expertise and consultancy mostly using our existing expertise and offer the long-term S+M needed by most serious client. In the main, our efforts would need to be focused on:

* Thinking about whatthis type of product who the market really is
* Developing the ‘marketing’ material to promote the product
* Some research and minor develops to bring together examples, documentation, etc

NB This is not really a ‘new’ product for us…we have an existing portfolio of clients where we have used open source software to very good effect. So it is largely a matter of describing and marketing what we have done with these clients with an emphasis on this ‘new product’ and identifying clients/tenders in this area.

# Interested Groups

The sorts of groups interested in open source GI-related service are:

* Small Public Sector: A local authority with a small GIS team in place. Typically using a mix of corporate databases, shape files, Mapinfo, etc and a small number of trained staff using ArcMap, MapInfo, etc. They typically have issues with the complexity of the desktop GI software, limited people who can use it (licenses and training), disparate/silo data holdings, pressure to process data often for monthly reporting.
  + Benefit from a re-organization of their data in spatially-enabled DB
  + Install of GI web services (e.g. Geoserver) allowing corporate web sites to consume map feeds of their business data
  + Rationalize desktop mapping, hybrid approach providing QGIS (or ArcExplorer) to some power users and potentially full-fat ArcMap/Mapinfo to their principle GI team
  + May be interested in off-the-shelf mobile solutions
* Large Public Sector: Large local authority, quango, etc…has a range of GI solutions in place. Already have main corporate DB but may not be ‘spatially-enabled’. Large principle GI team(s) with various power-users doing complex tasks. Corporate mapping already in place, may be old technology or looking at renewing licenses.
  + Rationalize their desktop mapping. Spending too much on expensive ArcMap licenses and training, replace with ArcExplorer/QGIS and ArcMap for principle team.
  + Might need help developing a spatial DB strategy
  + Looking to replace/rationalize their existing map services, update old technology, increase capacity, etc.
  + Looking for mobile solutions also
* Enterprise Level: Similar to the large public sector. May want support on more specialized areas rather than help replacing an entire section of IT (e.g. help reducing ArcGIS Server licenses, desktop rollout, etc).
* Charity/Small Org: Small organisations looking for low-cost off-the-shelf solutions. Help setting up end-to-end systems and likely looking for hosting?
  + Would be interested in ESRI charity licenses
  + Likely looking for hosting solutions, maybe hybrid with other services (e.g. Google Fusion tables)

Probably more too…my brain is slowing down now!

# Technical Components

As in the previous section, some clients may be interested in a full end-to-end open source solution whereas others may be looking to rationalize/replace just a section of their GI technology. The product offered by ESDM should allow this and provide the expertise (and previous experience) to show how these components can a) work together in the end-to-end solution and b) integrate with existing GI technologies and what steps need to be taken when they are integrated.

In fact, the ‘product’ being offered by ESDM is not the technical components themselves, **but really our expertise and experience in ensuring the best integration of whatever technical component is used with the clients existing systems.** Of course this is true for other businesses also, and that’s why a client would get in ESRIUK to install an ESRI stack – ESRI US provides the technology but ESRIUK provide the expertise and support. The same applies for this product.

However, we have to have some technical components to start with…so here’s the list (but don’t get too fixed on them as they will and should change over time).

**OS:** Windows Server 2008/2012  
This is a big technical issue – are we an MS .NET shop? Can we support a linux OS?

**DB**: SQL Server 2008/2012, PostgreSQL  
Our preferred approach would be SQL Server but PostgreSQL should be offered also as an alternative. Would need to fully understand what the pros/cons are between the two choices here. (Integration with Oracle also)

**Map Services**: Geoserver, Mapserver  
I think Geoserver might be the preferred solution here, but again two choices and the pros/cons for each. (Integration with ArcIMS and ArcGIS Server also)

**Web Server**: IIS, Apache+Tomcat  
Apache+Tomcat are on here as these are important in many enterprise solutions. Can we support these (i.e. the applications themselves and the language to write additional stuff in them – i.e. Java over .NET)?

**Desktop**: QGIS, Dotspatial, ArcExplorer(?)  
Added ArcExplorer as it might make very good sense in some organizations (e.g. ESRI centric shop, need to provide a medium solution to lots of users who want a powerful GI desktop application but without the training requirements or licenses of ArcMap) . (Integration with ArcMap and Mapinfo)

**Web App/Frameworks**: HTML5, OpenLayers, jQuery, mojoPortal  
How restrictive is the .NET approach here? The OS and web server choice impacts here.

**Mobile App**: HTML5, Sencha Touch, Cordova, Leaflet  
Our standard solution. Could relace Sencha with jQuery Mobile.

**ETL and Data Management:** Pentaho, Tilecache  
To be honest, I prefer FME…but Pentaho would be the OSS alternative

**Utilities:** OGR2OGR, Python, more?  
Standard utilities used to process and manage GI data. Probably wrapped in ESDM scripts to make them more useful, etc.

Some key things above:

* You’ll notice this is not a strictly ‘open source’ list. Perhaps a more accurate name would be ‘free license software stack’. Doesn’t sound as good as open source software stack. But the propriety alternatives are there for good reasons.
* We need to be clear that the solution above can be integrated with existing architectures – hence we need to support integration of our stack with Oracle for instance as a client may want the whole stack but may be constrained to stay with Oracle for contractual reasons, etc.
* There is more than one solution in each architectural tier. In part this is because one solution is not always going to fit and also partly because we do not want to rely on one vendor – look at QGIS desktop 1.9 release for an example on what the OSS community can mess-up when they want to!
* For the web app tier, I’m not sure how wedded we are to .NET…it might be that we will remain a .NET shop only and not consider solutio0ns that are outside of .NET
* The utilities and data management side of things is where we are using existing scripts/solution/expertise to package up very useful utilities we use for managing and processing data. For example, the scripts used to generate a tile cache of the UK, etc

# Possible Products

So what could we build with the components above that the clients in the first section would be interested in? The list below is a quick starter:

1. End-to-End GIS Stack (maybe call it something else)  
   **Flavour 1**: Ubuntu, PostgreSQL, Apache, Tomcat, Geoserver, QGIS, 1x example ESDM web app, 1x example ESDM mobile app

**Flavour 2**: Windows Server, SQL Server 2008/12, IIS7, Geoserver, QGIS, 1x example ESDM web app, 1x example ESDM mobile app  
This is the core technical product. We would have experience in setting these up and running end-to-end.

1. ESDM Demo Web App + ESDM Demo Mobile App

Demo web and mobile apps showing the full stack in use. Similar to the discussion Crispin and I had on the general use of the EA Flytipping web site we did. That is, a demo web site with:

* + nice splashscreen, (web and mobile)
  + user authentication, (web and mobile)
  + simple mapping, (web and mobile)
  + gazetteer, (web and mobile)
  + ability to upload photos via a wizard, (web and mobile)
  + ability to edit map features, (web)
  + simple charts/stats shown, (web)
  + some simple reports shown, (web)
  + offline storage (mobile)
  + GPS tracking (mobile)

This product would show an end-to-end solution on how corporate data can be stored at the back-end, managed through Geoserver and QGIS, consumed by a web or mobile user and how edits/comments can be sent from the web or mobile user back through the stack.

1. Data Services (e.g. tile cache of all historic data)  
   Not sure if we are interested in generating huge data sets and hosting tile caches, etc.
2. Integration with other services  
   Although not directly linked to ‘open GIS’, I think another core area of the product is in showing how ‘other cloud based’ sources can be integrated with this technology. For example:
   1. Using map feeds from multiple sources in a web app – easy, we do this already in all of our applications (thought I’d start off easy)
   2. Feature Services – this is a term used by esri to describe their ArcGIS Server web services for doing spatial operations on your spatial data (e.g. if you enable Feature Services for your business data you can do WFS-style requests for ‘get me all features within 10Km of x, etc). Our solution should expose these kind of services also (easy to do, maybe add-on to Geoserver or Mapserver).
   3. How does Arc Online or other external services work? What service do they offer, how can these be integrated into our solutions? Same for Google Fusion tables, something like WeoGeo, CloudMade data sources, etc. How could this relate to the GI strategy of a large organisation, etc
3. Amazon VM, Rackspace VM, etc based on 1. above  
   Publically available VM’s that someone can launch themselves and use the stack on. This might be a free or paid for VM. Used to demonstrate how things work, useful for new clients to be able to jump in and use…then if they find value they come back to ESDM for support and scale-up.
   1. Would also demonstrate the auto-scaling version of this stack. E.g. can set this up so that when 1 person uses the web or mobile app then only 1 VM runs but if 10000 people hit the VM another springs into life, etc.

This product is filling two roles here. Freely available to the public (promotion) and showing how our products can integrate with cloud provides and scale.

# What to do next

I would suggest:

1. More discussion on this area.
   1. Pin down specifically what sort of clients or tenders would be interested in this type of thing
   2. Is there a long-term strategy around this product – will it be more useful/attractive in the next 5 years?
   3. i.e. what is the market for this?
2. Identify a list of tenders or potential clients to aim for now
3. Define a work plan and timescale
   1. Likely based around marketing material and product positioning
   2. Some research needed on technical areas
   3. Bring together some technical ‘demos’ or ‘examples’

1. <http://www.techweekeurope.co.uk/comment/open-source-coming-of-age-in-the-uk-public-sector-89461>

   <http://digital.cabinetoffice.gov.uk/2012/10/12/coding-in-the-open/>

   <http://www.bbc.co.uk/news/technology-20178175> [↑](#footnote-ref-1)