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From the Editor...

by Tyler Mitchell

Welcome to the first edition of the OSGeo Journal for 2010! As a good kick-off to the new year this volume takes a few different perspectives on software development and design. Naturally the various issues related to typical development projects applies quite well to our open source geospatial specific interests. The articles cover a range of topics from a review of various software to a discussion of user-centered design. Along the way you'll also get to read some more technically meaty articles and some perspective pieces.

Each volume of the Journal takes several months of concerted effort by many individuals. Landon Blake played a lead editorial role in getting this volume pulled together so you can read it - thank you Landon! It's always a pleasure to have more section editors, LaTeX masters and reviewers come to help. Thank you to all the volunteers.

With our new online management system, any potential article can be submitted at anytime by simply filling in a form at http://osgeo.org/ojs. As well, over the next couple of months keep one eye open for the OSGeo 2009 Annual Report. Get your articles in soon if you have not already. Enjoy the articles!

Tyler Mitchell
Editor in Chief, OSGeo Journal
http://osgeo.org
tmitchell@osgeo.org

Contents of this volume:

Case Studies

gvSIG is a viable robust alternative to commercially available GIS packages

by Simon Cropper

Abstract

I have been compelled to comment on the latest release of gvSIG (Version 1.9, Build 1253) due to the fact that it is the first Open Source Geographical Information System that I have encountered that has allowed me to fulfill the full complement of workflow processes for a typical project without having to use third party software or falling back to commercial software.

Context

To provide some context to this statement I wish to provide some background on myself and my needs. I am an environmental consultant conducting flora and fauna surveys within Southeastern Australia. Clients range from local, state or national government agencies or land developers addressing their legislative obligations. Every job requires the acquisition and creation of geospatial data, simple geospatial analysis and the preparation of maps. Every job has variations on the theme with clients providing information in various datums and formats. Output is relatively constant with maps being used as JPEGs in reports or supplied as shapefiles to the client. The typical workflow for a job is outlined in Table 1.

Background

Over the last 15 years I have used ArcView with a myriad of third party extensions and scripts, but have over the last year been searching for a reliable and robust alternative. Essentially I needed a package that could implement the workflow outlined in Table 1, with little or no need to export and manipulate in other packages and if that was necessary there was no need to export the data into other formats (i.e. you can manipulate the same data files rather than have multiple versions of the same information lying around).

Over the last year I have tried various versions of

- QGIS
- Grass
- Kosmo
- OpenJUMP

and others to carry out what I needed. I also tried early versions of gvSIG but found some basic requirements were not met. Beta versions of 1.9 looked promising but they were unstable with regular crashes making it difficult to justify the time to acquaint myself with the program.

As you can see from Table 1 the primary failings of the alternative packages was the ability to natively view ECW files, being able to reproject data into new Spatial Reference Systems and map production. All were variously capable of viewing and manipulating

	gvSIG+	QGIS	Grass	Kosmo	OJUMP+
STAGE 1 – DATA ACQUISITION					
Acquire aerial photography of study area and vector data showing existing features. Only gvSIG and Kosmo had native support for ECW files.	Y	Pd	Pd	Y	Yd
Manipulate the various data sets so they all overlap in the appropriate Spatial Reference System (i.e. reproject vector layers).	Y	N	Yd	N	N
STAGE 2 – PREPARATION FOR FIELDWORK					
Identify extent of study area based on cadastral data and the objectives of the client.	Y	Y	Yd	Y	Y
Extract data from state government managed databases and geospatial libraries of environmental data like flora, fauna, vegetation, geology, wetlands, etc. Incorporate into project. Includes the need to import tables as Event Layers.	Y	Y	Yd	P	P
Stratify study area based on aerial photography interpretation, contours, soils and vegetation data (data just represented visually, stratification done manually).	Y	Y	Yd	Y	Y
STAGE 3 – FIELD WORK					
Adjust boundaries of strata based on field observations.	Y	Y	Yd	Y	Y
Mark extent of any significant plant population or animal habitat on base map using features visible on aerial photography.	Y	Y	Yd	Y	Y
STAGE 4 – ANALYSIS					
Clean up the vector data created in the field.	Yd	N	Yd	Y	Y
Calculate and store area of each stratum in attribute table.	Y	N	Yd	N	N
Collate landscape, neighborhood and other miscellaneous attributes for each stratum (i.e. direct data entry into tables and joins).	Y	N	Yd	N	Y
STAGE 5 – MAP PRODUCTION					
Create basic maps showing the results of the analysis – the map should have grid lines showing the SRS of the View.	Y	P	?	P	N
Export map into format that can be directly imported into a Word Processor.	N	Y	?	N	N

Table 1: An outline of the workflow for a typical flora and fauna survey by Botanicus Australia Pty Ltd and whether certain FOSS GIS Desktop Packages were capable of completing the tasks. Y = capable. N = not capable. P = partly capable. d = difficult to achieve (either not intuitive or needs workaround). gvSIG+ = gvSIG 1.9 + Sextante 0.3. QGIS=QGIS 1.3.0 Mimas . GRASS = WinGrass 6.3. Kosmo=Kosmo 1.2.1. OJUMP=OpenJUMP 1.3 with Sextante 0.3.

vector data stored in common vector formats. Packages varied considerably in how intuitive the interface was and their stability.

Conclusion

At the time that this article was being prepared I have been using gvSIG 1.9 (Build 1253) in production for several months. The following points outline my initial observations on its use.

1. The transition from ArcView to gvSIG was seamless with most functions being found in similar locations. I had a similar experience when trialling Kosmo, but not with any of the other packages mentioned. OpenJUMP is intuitive but limited in functionality.
2. gvSIG uses ECW, DWG, DXF, shapefiles – all file formats I regularly encounter.
3. gvSIG can convert from AGD66 GEO/AMG55 to GDA94 GEO/MGA55 – something I need to do regularly.
4. gvSIG could handle quite a lot of data,files, annotations, etc. The only time I noticed the system slowing down was in producing a map. In this window, gvSIG was slow but it did not crash.
5. gvSIG crashed a few times. These instances appear to be related to small or peculiar bugs not captured by the program. These issues are being addressed by the developers relatively quickly. In comparison with ArcView this is quite good. For some largish projects ArcView would crash 3–4 times a day. It is worth noting here that I was using ArcView 3.1, which is not currently supported and is struggling to keep up with operating system changes (XP service packs, patches, etc).
6. I am keen to eventually migrate from Windows XP to Ubuntu or Debian, so am keen to ensure the system I use is suitable for these operating systems. gvSIG does, so this is great.
7. I still think the map production facility in gvSIG can be improved – especially the output. My needs are primarily generation of a file than can be imported into OpenOffice Writer. I found I got a much better output file for small maps in landscape by capturing the screen and manipulating in GIMP, than using any of the standard output options provided by gvSIG. With larger maps or maps in portrait I have found ImagePrinter to capture printer output works really well. Something worth noting here was the discovery that the graticules in gvSIG are actually dynamic. Once set up you can pan the underlying map and the graticule changes - its like looking through a window. This is a very useful and long awaited functionality I was looking for in a replacement to ArcView.
8. Coupled with Sextante, gvSIG captures most of the tasks that I have done over the last 15 years.
9. I have not been able to find any good tutorials on how to use the command box when editing a shapefile or the JPython Console. These features look very promising but without some sort of tutorial, examples or manuals it is impossible to evaluate these tools. In my mind this is the only area where ArcView 3.1 is still better than any open source alternatives as it has quite a large and easily navigated script library which allows for people to contribute scripts and extensions for manipulation of spatial data that can be downloaded by anyone.

The overall result of this trial is that I found the gvSIG loaded with the Sextante extension was able to complete all the steps in my work flow diagram except *Export map into format that can be imported into Word Processor* but the use of GIMP or ImagePrinter is a quick workaround. This is better than any other open source package I have trialled over the last year. Coupled with the myriad of additional tools bundled in this package and additional extensions that can be downloaded this version of gvSIG has left me smiling. I can do nearly all things that I want and have lots more to explore and evaluate for use in my business activities. I would like to congratulate the developers and the Generalitat Valenciana on a fantastic product. I look forward to being part of this dynamic open source community, and helping further the development of this product.

Simon Cropper
Botanicus Australia Pty Ltd
PO Box 160
Sunshine, Victoria, Australia 3020
scropper@botanicusaustralia.com.au

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