

FRIENDLY TOUR



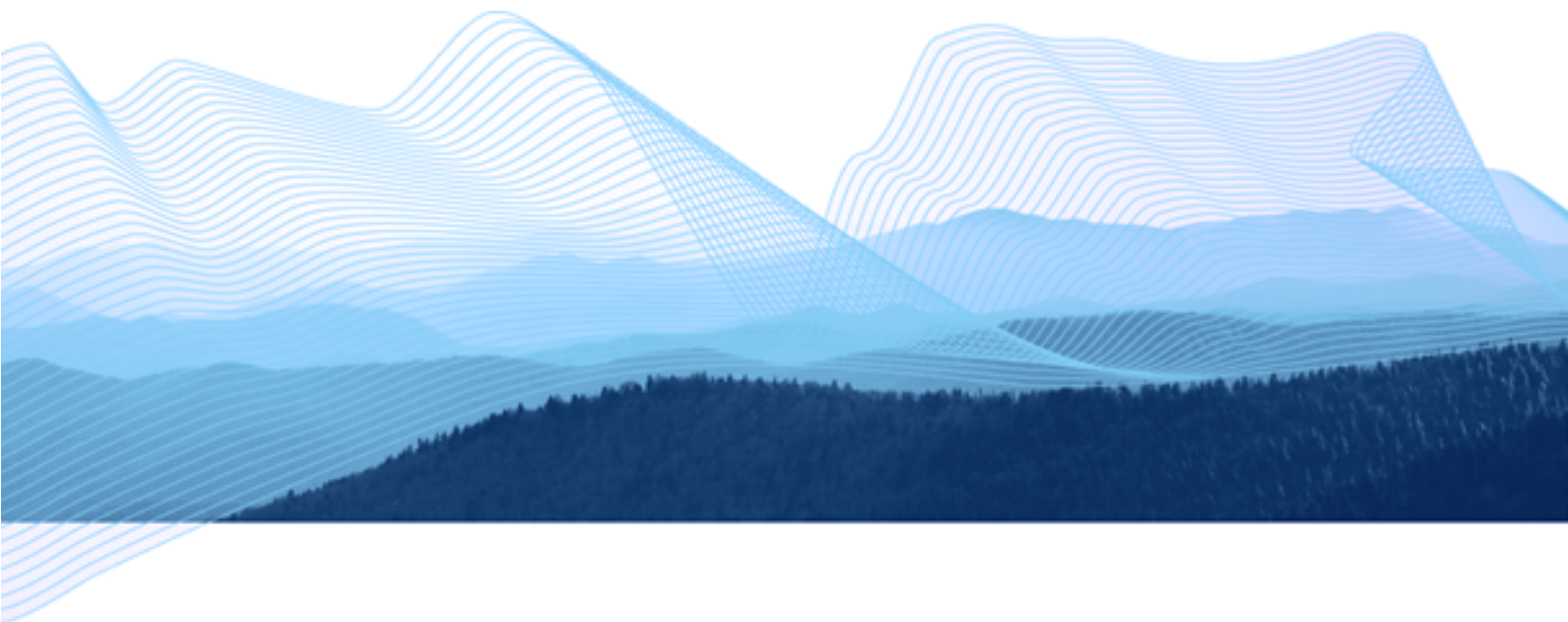
A Friendly Survey of Popular Geospaital Services

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HydroloGIS
Environmental Engineering

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1 WELCOME

Already in this tutorial we have covered several different categories of spatial applications:

- Spatial Database: was represented by PostGIS
- Data Publication: was represented by GeoServer (supporting a couple of OGC Standards)
- Web Mapping: was represented by OpenLayers; you will find open layers used in a range of contexts as a common Javascript library. OpenLayers itself did not make it on the LiveDVD (the samples provided require that you have an internet connection enabled)
- Desktop: was represented by uDig

Programming activities are being left out of this tour.

It is ignored – not forgotten.

We are going to quickly supplement this with the one category we missed - directory service. If you recall we briefly use the search view; it can be hooked up to a web based catalog to discover information.

After that we are going to continue our tour of the LiveDVD covering as many applications as we have time for. One interesting thing to do is see how well these applications work together; and what standards they used to collaborate with each other.

Jody Garnett

Jody is the lead uDig architect and on the steering committee for GeoTools; GeoServer and uDig. Jody Garnett is an employee of LISAssoft with a background in training and mentoring.

Mark Leslie

Mark as broad experience at LISAssoft integrating proprietary and open source solutions. An active PostGIS committer he has developed and extended software across the Open Source Geospatial stack, including UMN MapServer, PostGIS, uDig and GeoTools.

Andrea Antonello

Andrea from HydroloGIS develops geospatial open source solutions for environmental analysis. Andrea is well known as the lead developer of the JGrass project and is part of the uDig project steering committee.

2 ARRAMAGONG

This is the second year of the Arramagong producing a LiveDVD for the FOSS4G conference. The name is the local word for “Wombat” a mid sized head strong creature that could be mistaken for cute. I once new one that head butted through a wall so your milage may vary.

In DVD from the best introduction is:

1. Click on the desktop help icon
2. After a bit firefox will open providing you with some background reading about each of the products here.



3. I have had a bit of trouble with Firefox on the DVD; if you get muddled try turning off the network connection in the top right corner. If you get a chance do not close firefox; it seems that many of the desktop shortcuts have trouble starting it again.

4. To reset firefox – find a terminal under Applications > Accessories

```
ps -ef | grep firefox
```

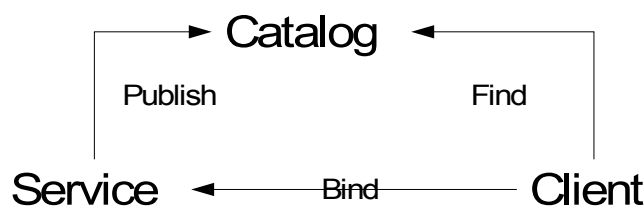
5. Take careful note of the number of the firefox applications; and then

```
kill -9 THENUMBER
```

3 GEONETWORK



GeoNetwork (<http://geonetwork-opensource.org/>) is an implementation of the OGC Catalog Specification. That is a fancy way of saying it is a directory of stuff. Indeed the point here is to support the idea of data custodians publishing information; users finding information; and client applications “binding” to the data



Catalog is interesting in that you focus on sifting through the description (and then a client will come along later and fetch the real data from the service publishing it).

The description you use depends on what your organization has agreed on:

- An ISO 19115/19119 (or an ISO catalog) is what GeoNetwork was first used for. The description is nice for data custodians in that service and data are described separately. It is a bit harder as a client since you need multiple requests to figure out what data you want; and then what services publish it.
- A national or regional standard such as FDGC (<http://www.fgdc.gov/metadata>), or ANZLIC (<http://www.anzlic.org.au/>) refining the international standard for regional concerns.
- Or an industry standard such as ebRIM

6. GeoNetwork is included on the Live DVD; execute the desktop icon to start it up.



Start
GeoNetwork

Normally server applications are installed for the long hall – these start and stop short cuts are just for evaluation.

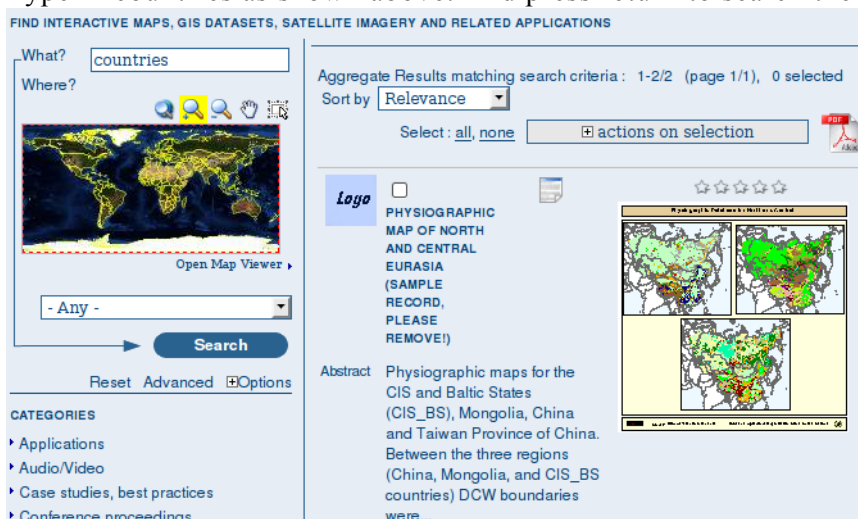
7. Wait a minuet while the application starts (there is no way to tell) – and then click on the “Home” icon for GeoNetwork.



8. This will open up a web page; scroll down and click on the following link:
<http://localhost:8880/geonetwork>



9. Type in countries as shown above. And press return to search the catalog.



10. The sample included on the Live DVD can give you a feel for what kind of information can be recorded in a Catalog.

4 DEEGREE



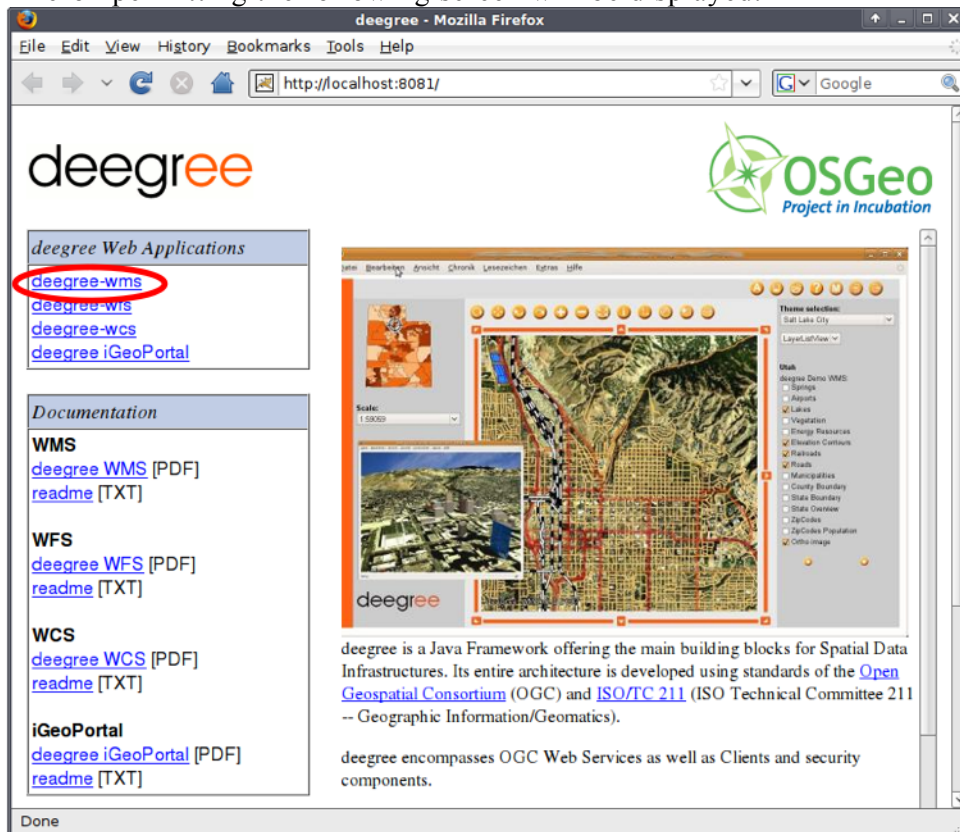
The deegree project has reversed the trend of technologies that are really fond of CAPITAL letters. In addition to this sense of style the deegree project offers an high quality much loved implementation of pretty much everything you would want out of a server. Web Map Server for publication; Web Feature Server for data, Web Coverage Service for publication of raster information and a Catalog Service to describe what is available.

1. To start we will hunt down the deegree icon on the desktop and “Execute”.



start deegree

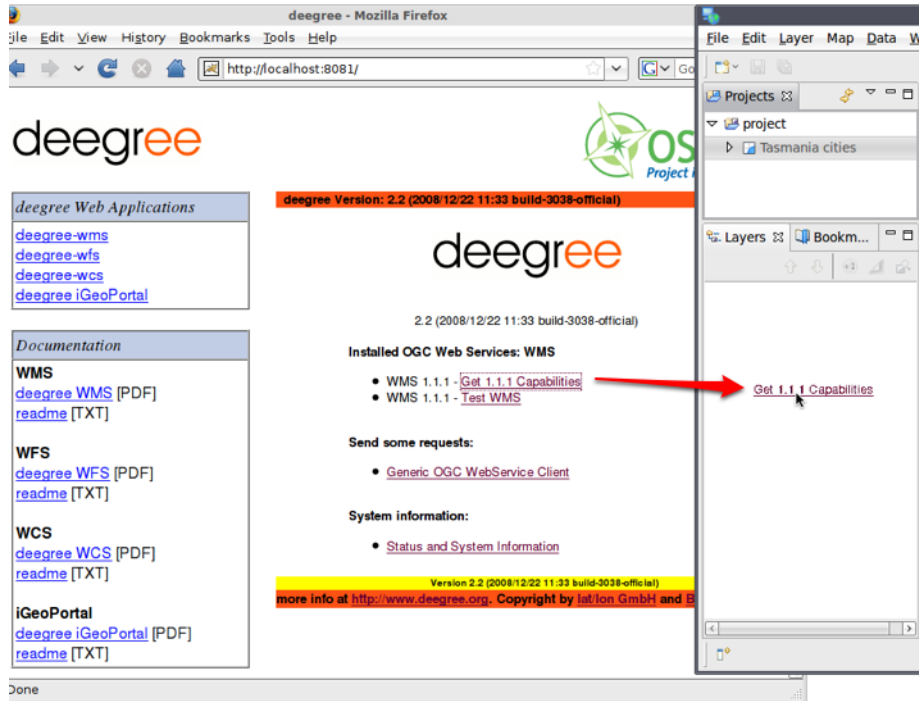
2. Firefox permitting the following screen will be displayed.



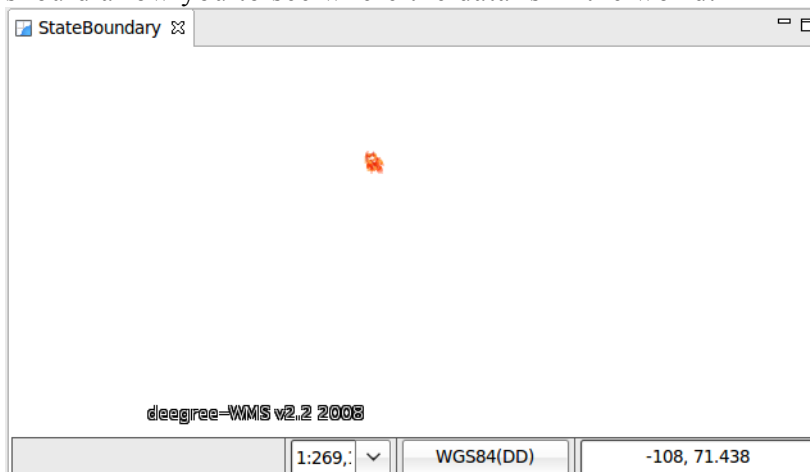
3. There is a little trick to finding the service links to get at the data; you need to click where it says deegree-wms in the top corner to take you to a page describing the Web Map Service published by deegree.

- From the deegree-wms page you can drag and drop the capabilities link into uDig as shown.

You will notice that deegree includes the "cite" dataset used for testing. It is very boring to look at.

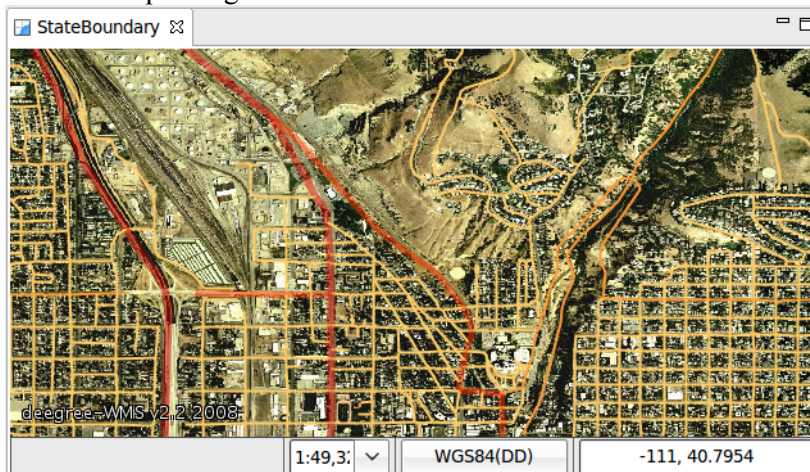


- I had good luck with the Utah dataset; just be sure to include the state border layer. This should allow you to see where the data is in the world.



The capabilities document should describe the valid bounds of the layer to allow uDig to zoom to the correct location.

- A bit of exploring will show some nice data here.



5 MAPSERVER



MapServer is the original heavy hitter in the open source spatial scene. Indeed the FOSS4G conference started out as a Map Servers Users group undertaking.

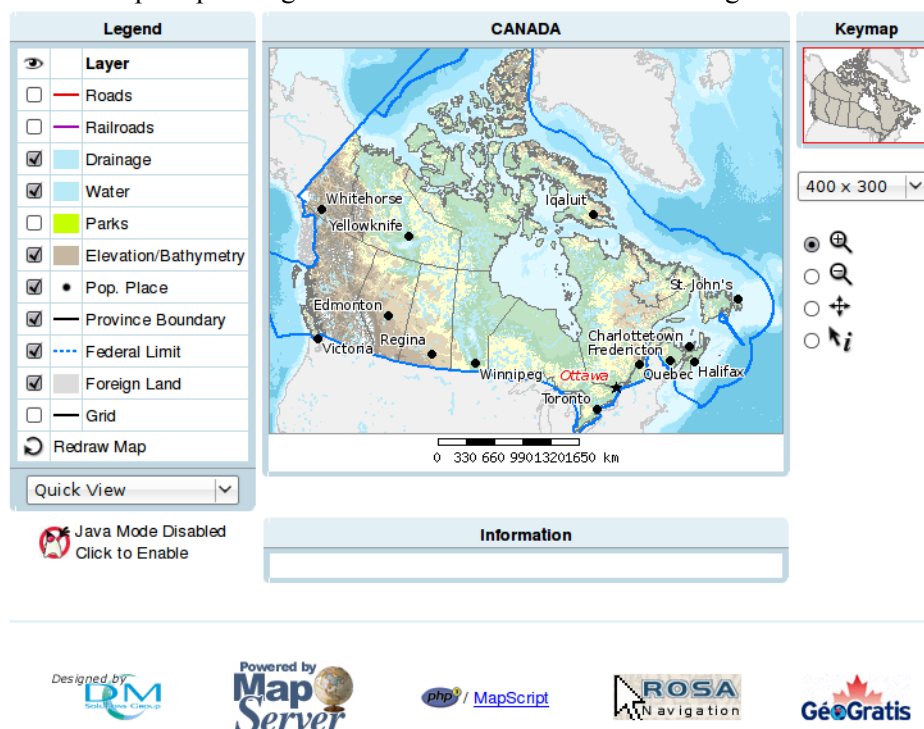
MapServer has provided a couple of canned demos for the LiveDVD; but does not offer a good capabilities link anywhere that I could find.

1. Here are what the two demo links look like.

MapServer Demo

- Itasca
- GMap

2. The examples pull together demos such as the following.



3. The developers did not include a good WMS link on the live DVD for us to use. My best working guess is the following:
<http://localhost/cgi-bin/mapserv54?map=/usr/local/share/mapserver/demos/gmap/htdocs/gmap75.map&Request=GetCapabilities&Service=WMS>

6 GRASS



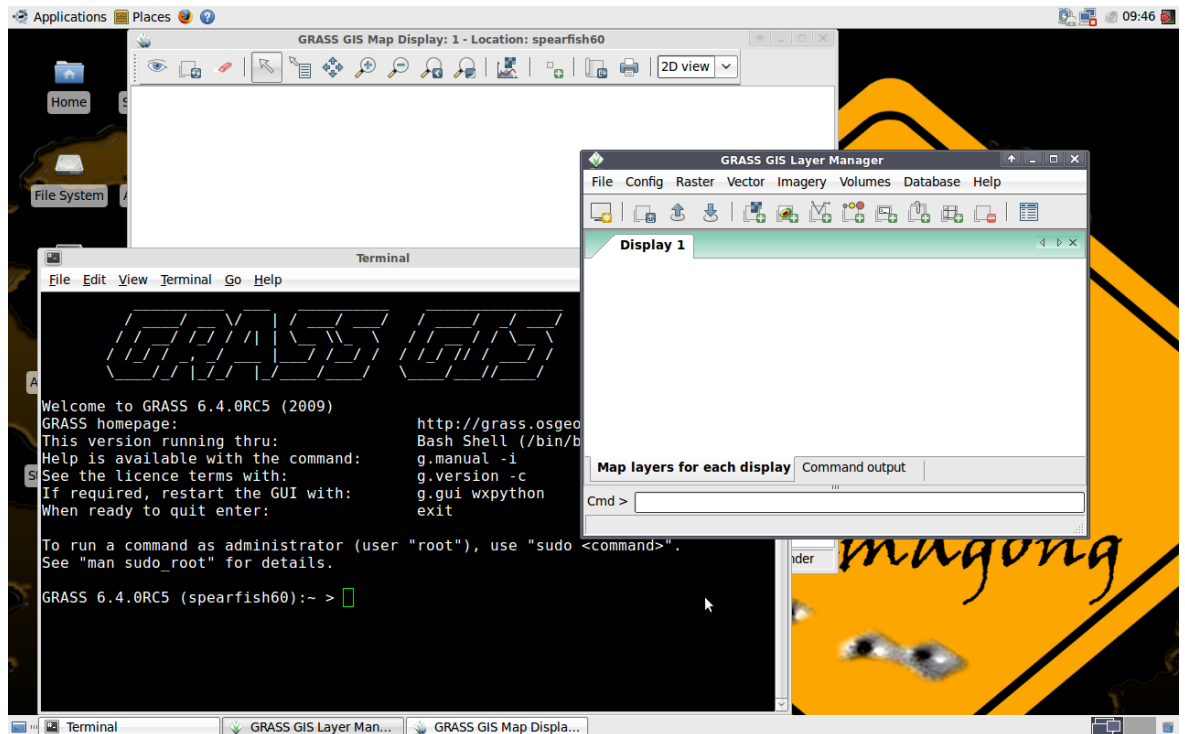
Grass is really really cool. It was an open source project before the Internet with tape drives being passed around. It also forms some of the nicest bodies of prior work if you are worried about patents.

These days GRASS supports a nice user interface; let us give it a go.

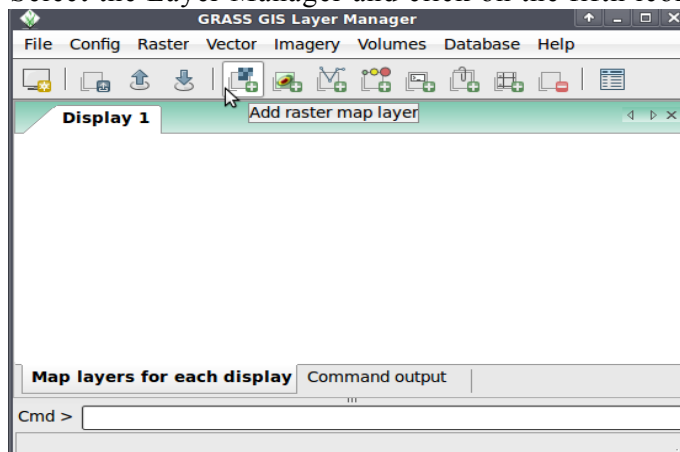
1. Click on the GRASS Icon to start
2. The initial screen introduced the concept of a GIS Data Directory.



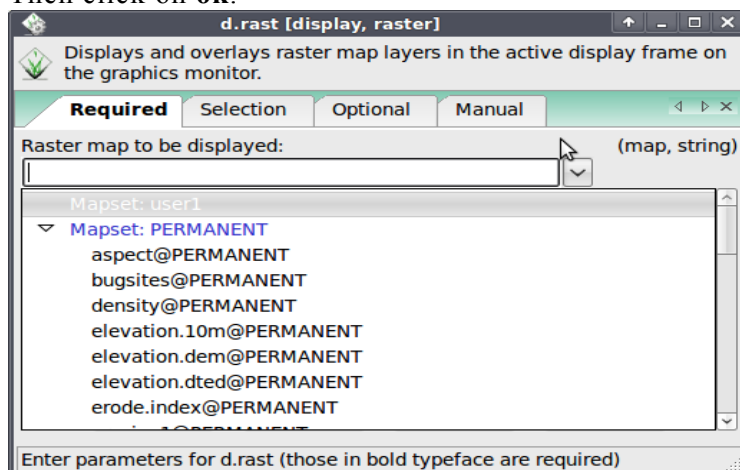
- Press Start GRASS and it will open the Layer Manager, the Display Monitor and a Console.



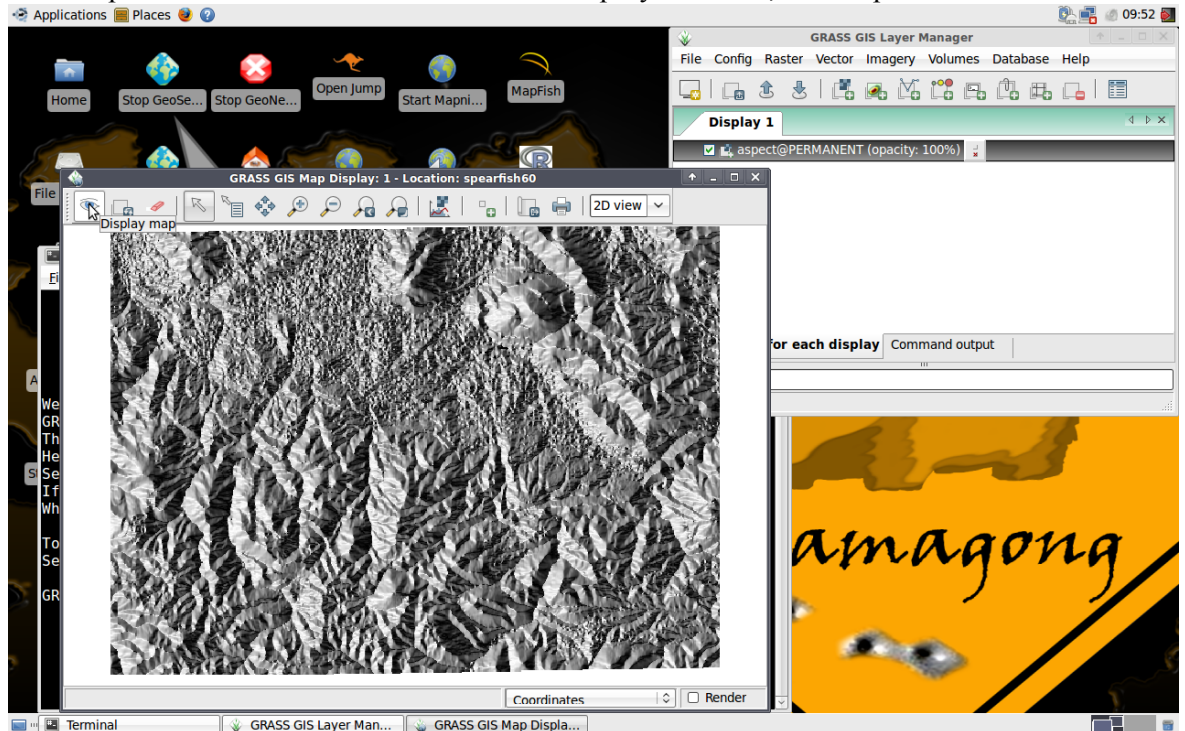
- Select the Layer Manager and click on the fifth icon from left Add Raster Map Layer.



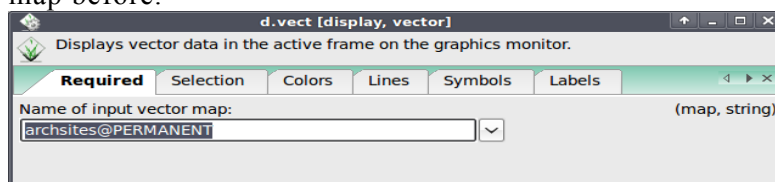
- The **d.rast** dialog opens requesting a raster map to be displayed, push the arrow on the right of the text field and select **aspect@PERMANENT** in the appeared drop down list. Then click on **ok**.



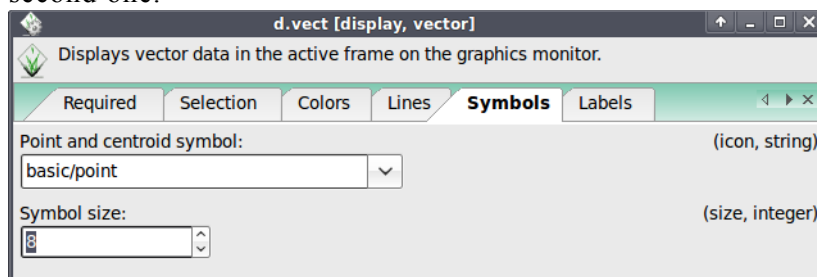
6. At that point click on the first icon in the Display Monitor, the map is then visualized.



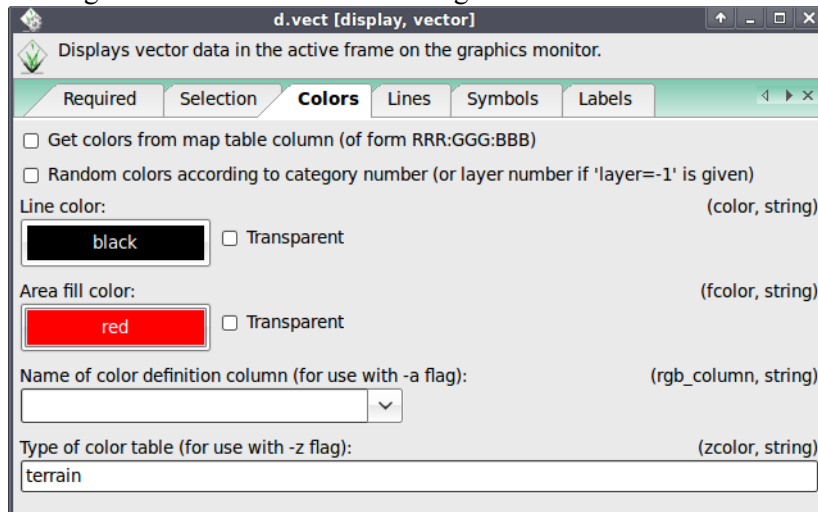
7. Select the seventh icon from left (Add Vector Map Layer) of the Layer Manager. In the appearing **d.vect** dialog select the **archsites@PERMANENT** as you did for the raster map before.



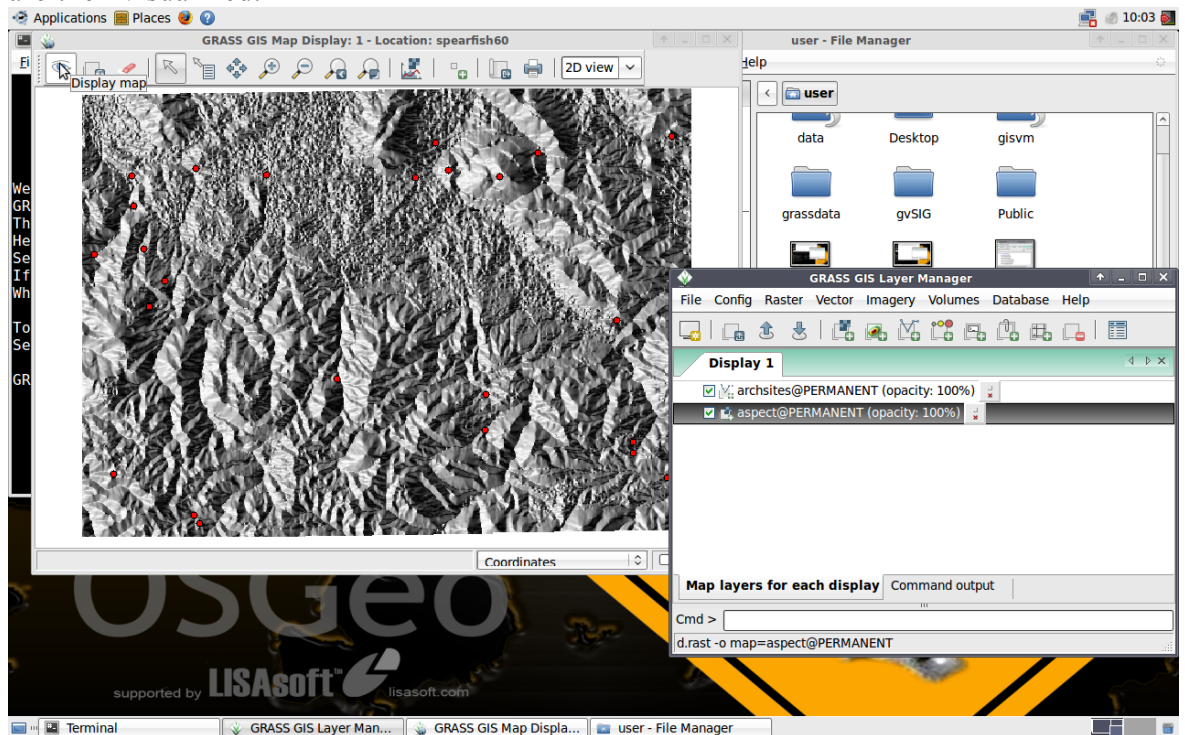
8. In the Symbol tab select the mark you prefer in the first combo box and the Size in the second one.



9. Then go in the Color tab and change the **Area fill color** to red, then click the **ok** button.



10. At that point click on the first icon in the Display Monitor, the raster and vector maps are then visualized.



7 JUMP FAMILY

The first really popular Java GIS implementation was the JUMP Unified Mapping Project (JUMP) put together by Vivid Solutions. We often talk about a project offering an open development model as a positive; the “JUMP Family” serves as an example of what happens when a product has a closed development model.

JUMP was the initial Java front end to the JTS Topology Suite that forms the heart of our industry.

In a word “forks”. A fork is when an original project is taken and extended (usually for customer); and no effort is made to “merge” back with the original. In this case Vivid Solutions was not interested in accepting outside input without being paid for their time to merge in the changes.

Since the organizations we under obligation to publish the source code to their users; we went from a single JUMP application to:

- JUMP – the original
- DeeJUMP made by the same company Lat/Lon that brings you the deegree project.
- Sky JUMP
- Pirol JIMP
- KOSMO developed by the SAIG company and also represented on the the live DVD
- Bizz JUMP
- Ecos JUMP
- Adb Toolbox

JUMPs simple plugin model fostered an amazing diverse set of tools. My favorite is the JCS Conflation Suite ([JCS](#)).

All of these have different strengths and weaknesses; however there is some sign of hope. In FOSS4G 2006 the OpenJUMP project was announced with the mandate to bring together the different variations. Vivid Solutions staff have supported this transition.

Both KOSMO and OpenJUMP are included here; follow the instructions for one of them to get a feel for the capabilities of the JUMP family.

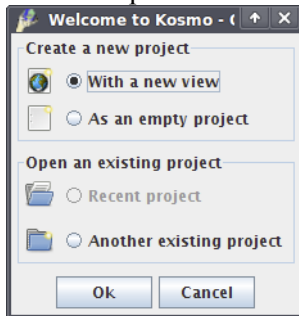
7.1 KOSMO

1. Find KOSMO on the desktop and double click (or right click and execute) to launch.

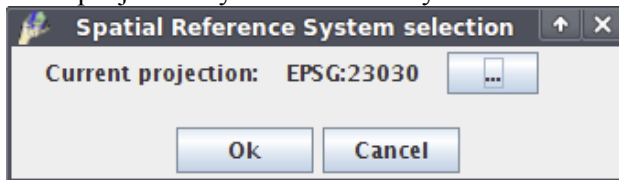


Kosmo_1.2.1

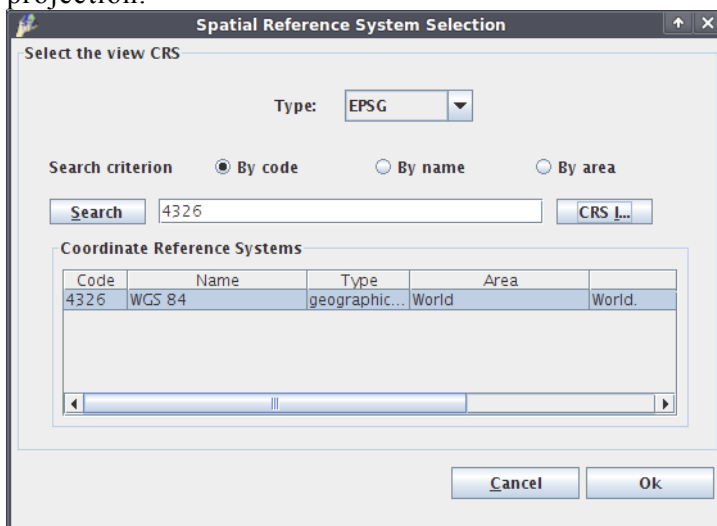
2. KOSMO provides a full screen multi document interface; starting with this dialog.



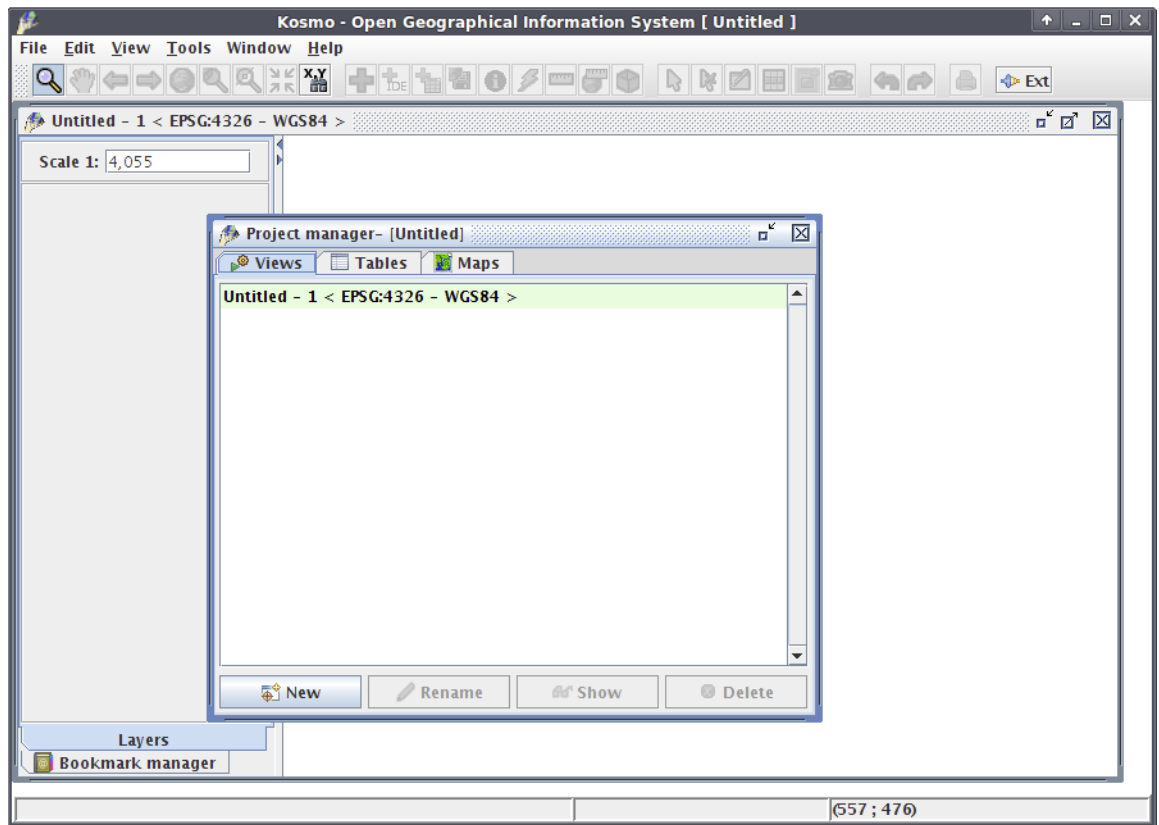
3. Press OK and an empty Project manager will be created; and a dialog will pop up asking what projection you would like your view created in.



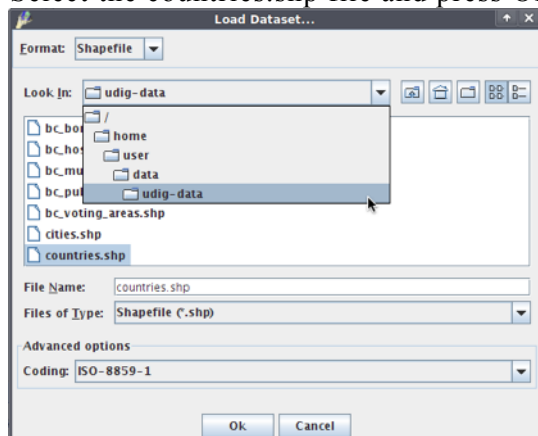
4. Press the “...” button to bring up the Spatial Reference System Selection dialog.
5. Change the Type to “EPSG” and type 4326 into the field to locate our usual WGS 84 projection.



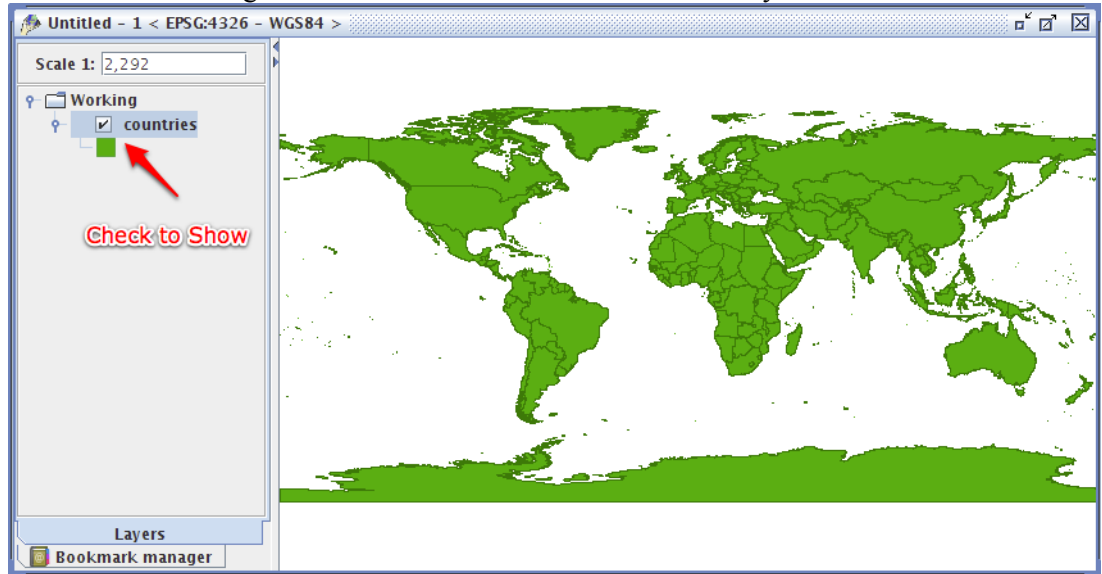
6. We are now presented with the Kosmos workspace showing two internal windows – “Project manager” window; and if you move that out of the way you can see the second “Untitled – 1” window.



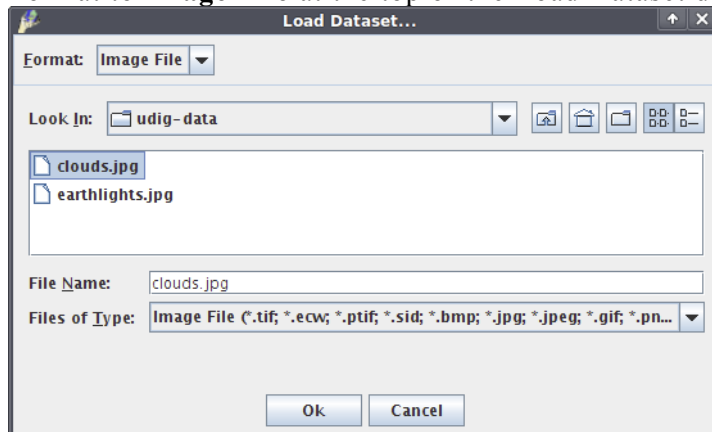
7. Minimize the Project manager so we can focus on our View.
8. Click on the big “+” shape in the toolbar to “Load Dataset...”
9. Ensure that the **Format** is set to Shapefile and then navigate to :
home/user/data/udig-dat
10. Select the countries.shp file and press OK.



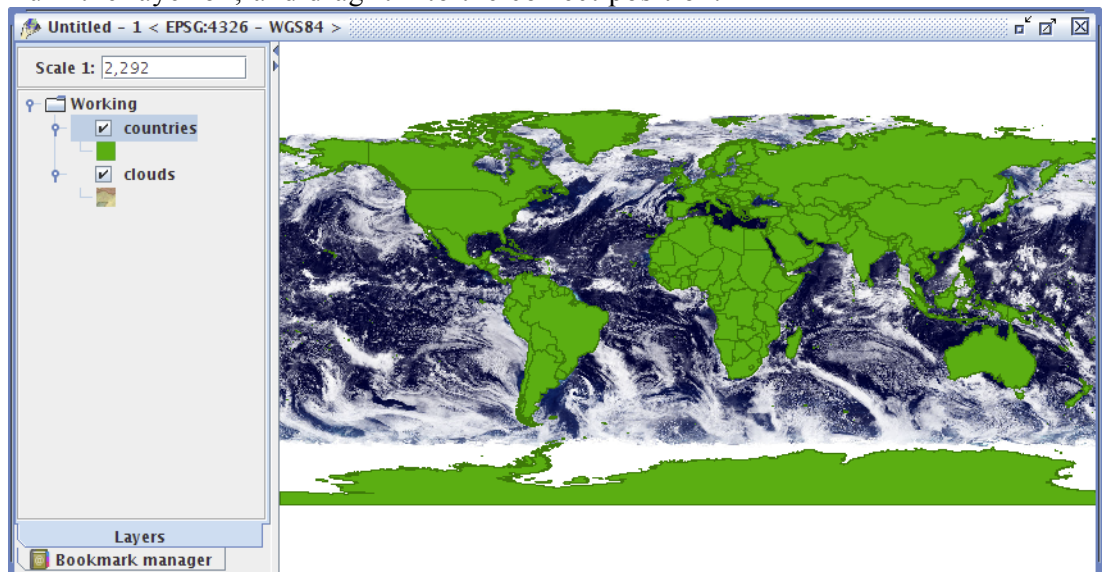
11. Layers are not shown by default; you will need to place a small You will need to tick the checkbox to the right of the word countries to show the layer.



12. We can repeat this process to add out clouds.jpg; this time being sure to change the Format to **Image File** at the top of the Load Dataset dialog.



13. Turn the layer on; and drag it into the correct position.



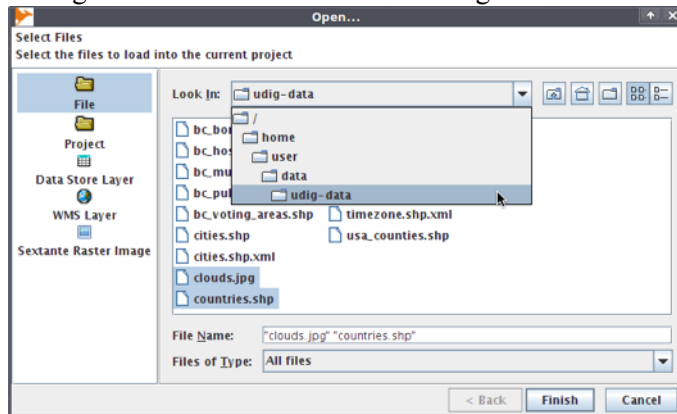
14. Congratulations Kosmo is now your friend. Feel free to explore some of the other options; you can ask Kosmo to show a WebMapServer basemap which is a nice touch.

7.2 OPEN JUMP

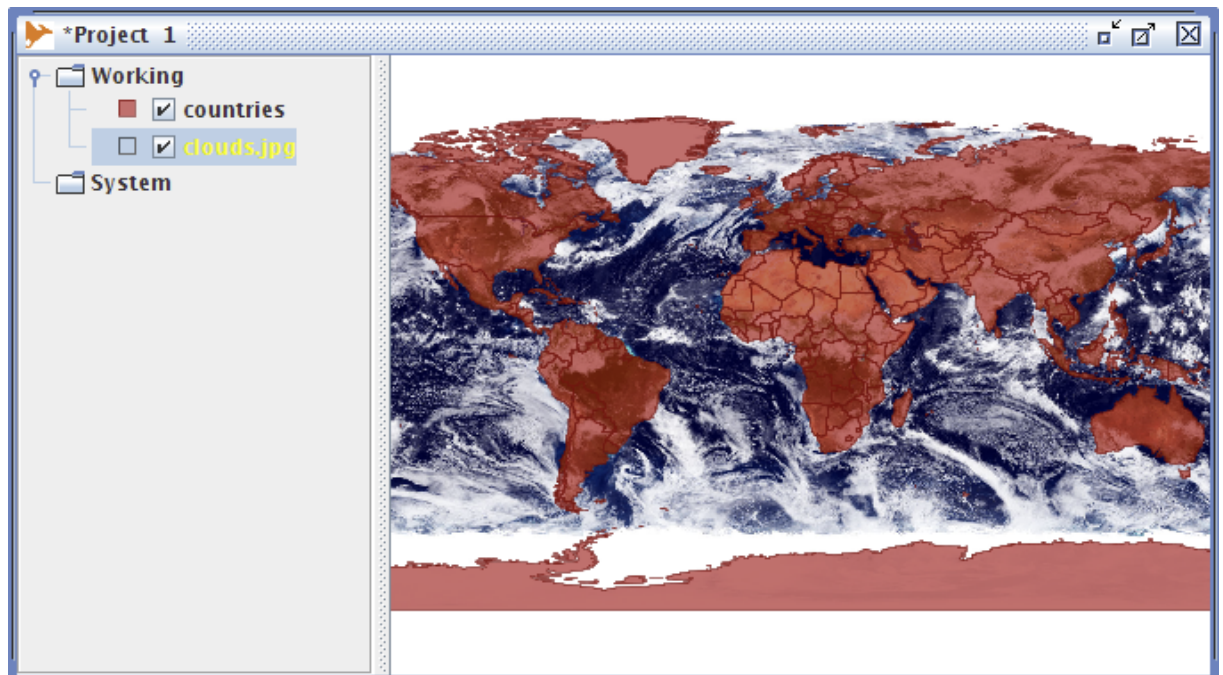
1. I am a great fan of the JUMP logo; and it is very topical for FOSS4G 2009.



2. OpenJUMP starts up with an empty project; our first step is to use File > Open in the menu bar to bring up the Open dialog.
3. Navigate to the /home/user/data/udig-data folder.



4. Hold down the shift key to select both clouds.jpg and countries.shp.
5. After a bit of work creating the layers you will be presented with the map.



6. It really shows that the Open Jump team has gone through the steps to work with data.

8 GVSIG

We return with gvSIG to a more traditional Desktop GIS application. gvSIG is the product of a very strong Spanish open source community and is modeled closely on ArcView to reduce training costs.

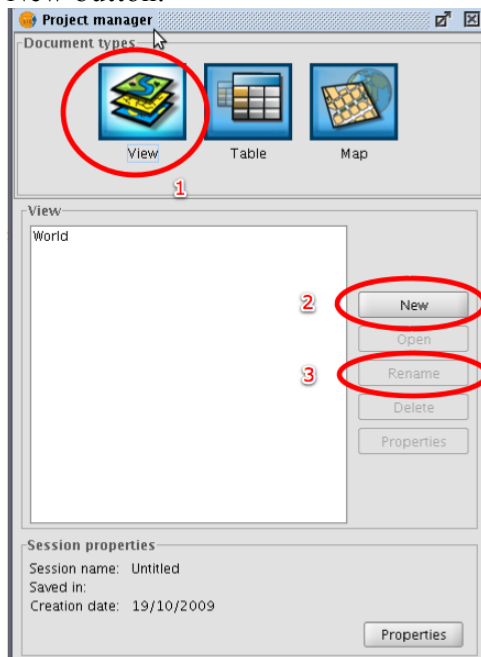
1. Start up gvSIG from the desktop icon.



2. Click through the initial warning about this being a development version.

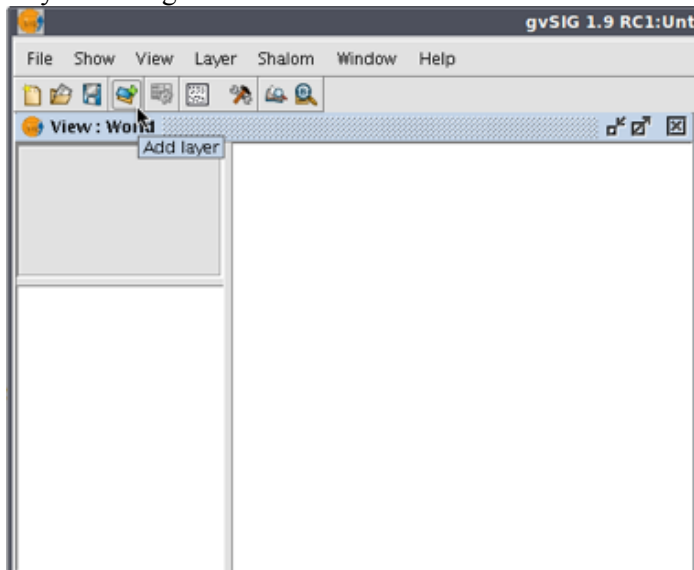


3. From the initial Project manager; choose "View" as the Document type. And press the New button.

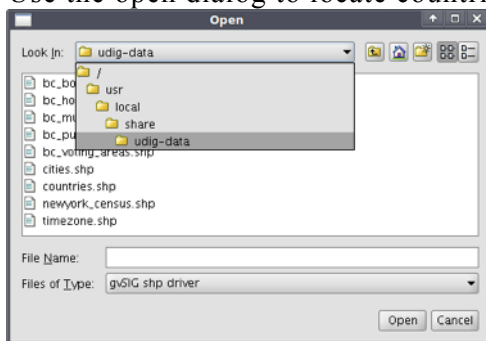


4. Use the Rename button to call your Map "World" and press Open.

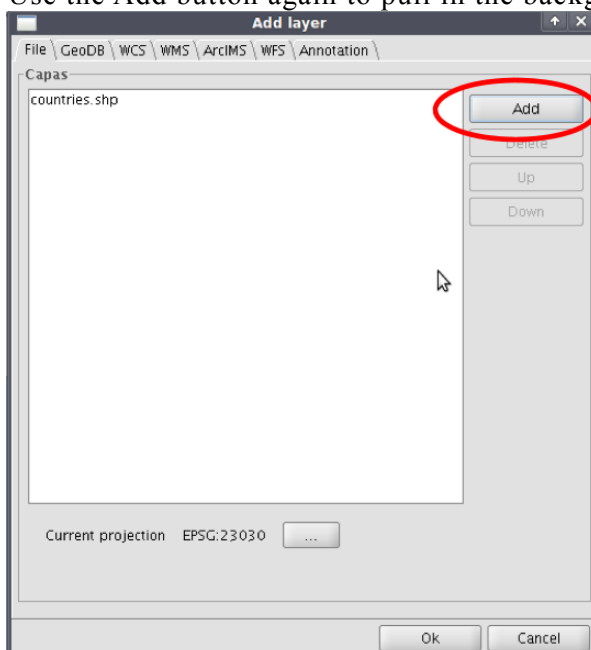
- From here we are going to use the “Add Layer” button in the toolbar to open the Add Layer Dialog.



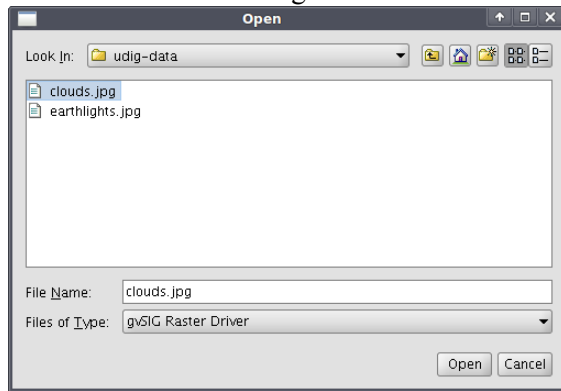
6. The first Tab is devoted to loading files; press the Add button.
7. Use the open dialog to locate `countries.shp` in the `udig` data directory.



8. Use the Add button again to pull in the background image.

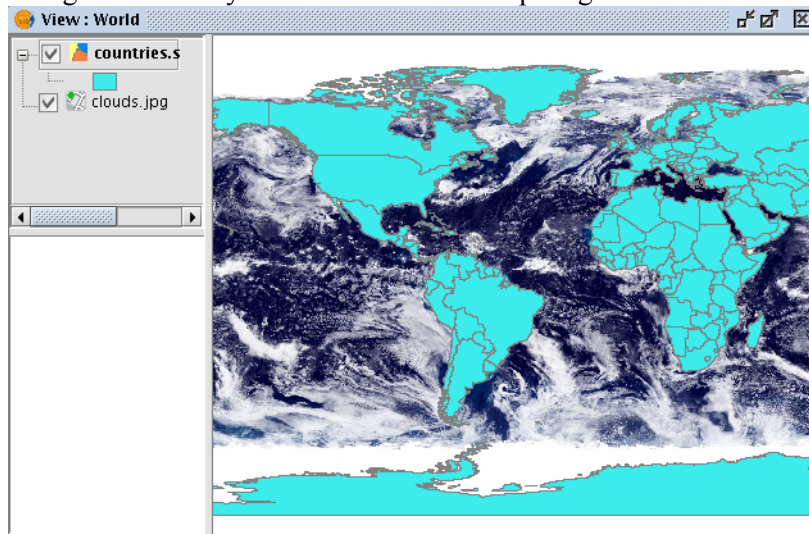


9. This time we need to go down to Files of Type and change it to “gvSIG Raster Driver”.



10. And then we can choose clouds.jpg.

11. Congratulations you have created a Map in gvSIG.



9 QUANTUM GIS



Quantum GIS is a thriving, productive desktop application. The community has a strong dedicated team of developers. Very impressive.

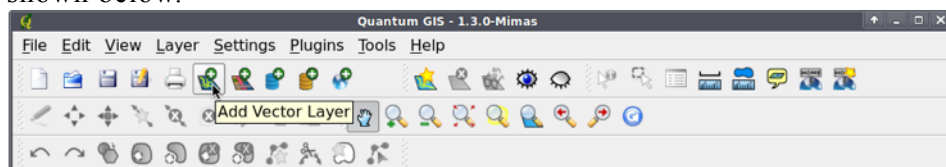
Quantum GIS started out as a front end for PostGIS; and has really hit its stride as an environment to run python scripts.

1. Launch QGIS from the desktop.

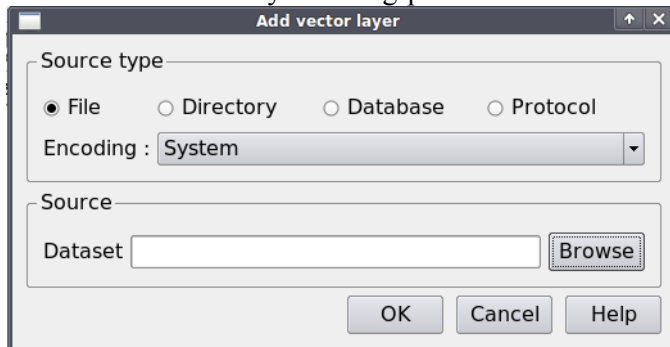


Quantum GIS

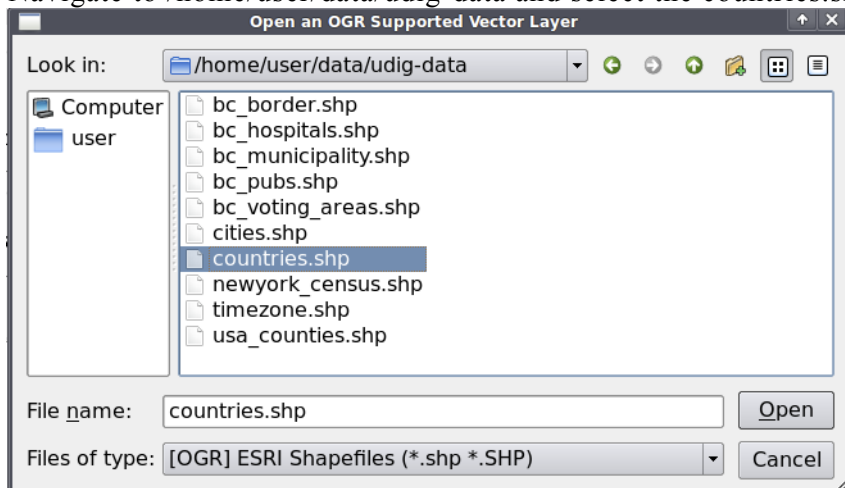
2. Quantum GIS starts up with a bit of a wall of a toolbar; but at least the buttons are nice and readable. We need you to find the first “+” icon with some line work under it as shown below.



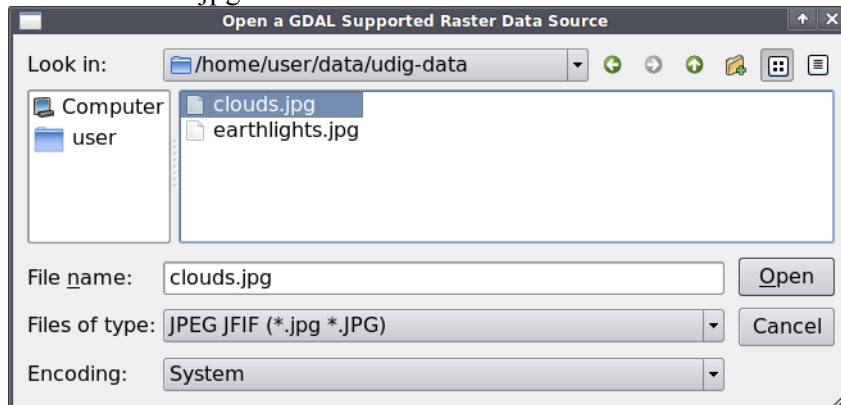
3. In the Add vector layer dialog press Browse to select the source dataset.



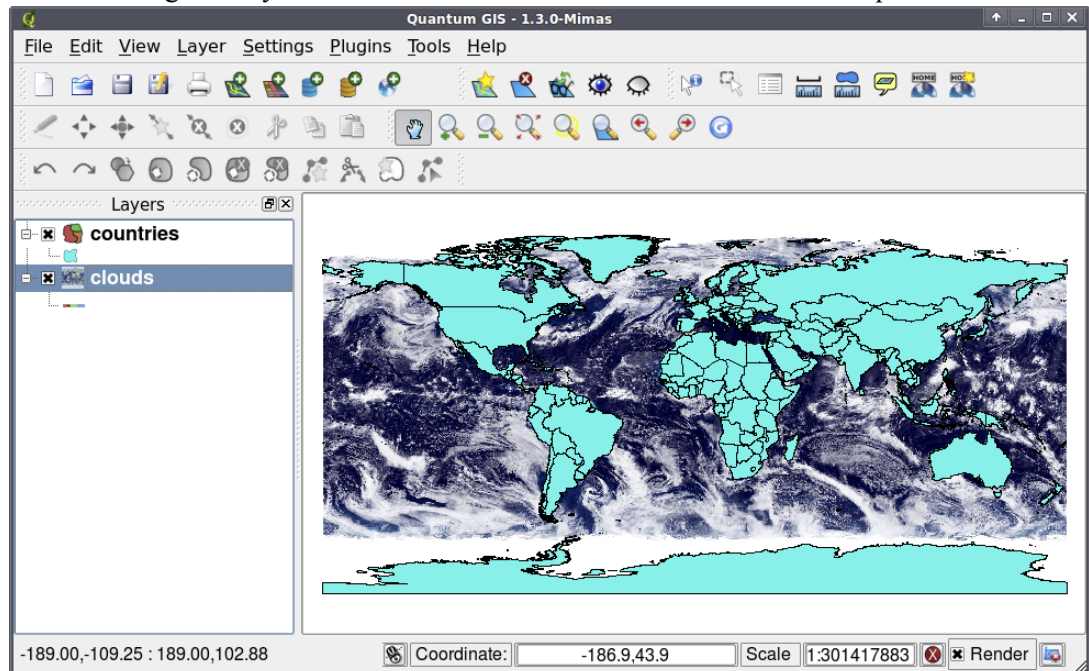
4. Navigate to /home/user/data/udig-data and select the countries.shp file.



5. Press OK to accept the Add vector layer dialog; and display the Map.
6. Click on the Add Raster Layer toolbar button (the next “+” symbol over).
7. This time you will need to change the Files of type setting to be “JPEG” before you can see the clouds.jpg to load.



8. You can drag the layers into the correct order to show the final map.

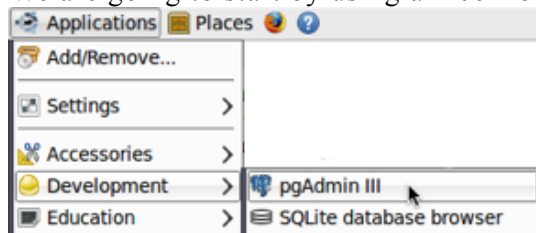


10 POSTGIS

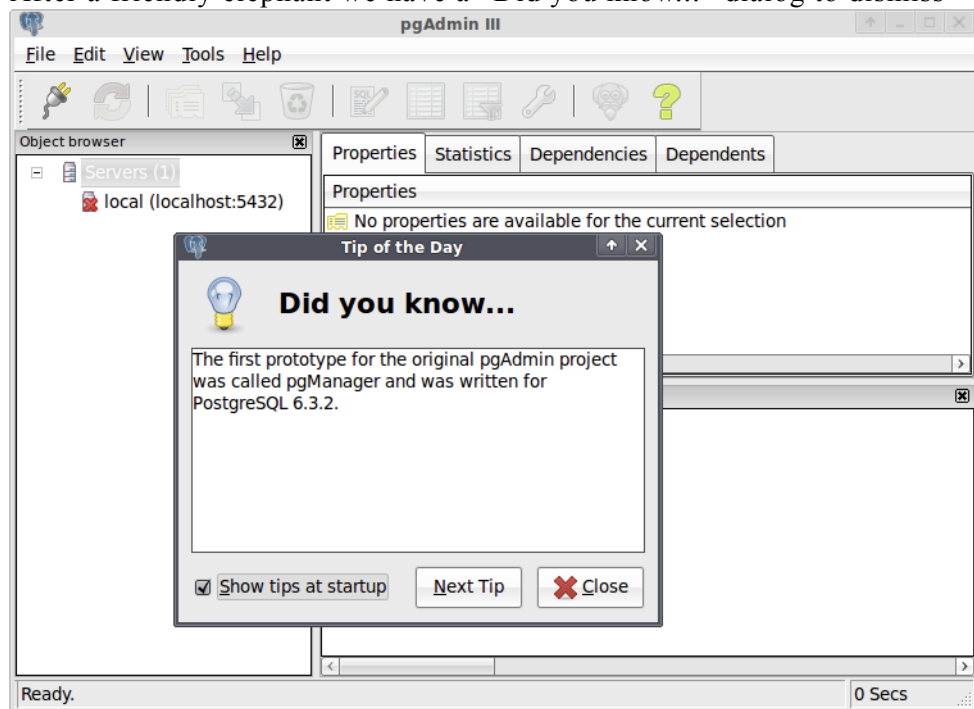


PostGIS is a spatial extension to the PostgreSQL database produced by Refractions Research. We are pleased that PostGIS has submitted for the OSGeo incubation process this year.

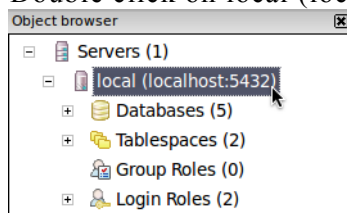
1. We are going to start by using a nice front end called “PGAdmin”.



2. After a friendly elephant we have a “Did you know...” dialog to dismiss

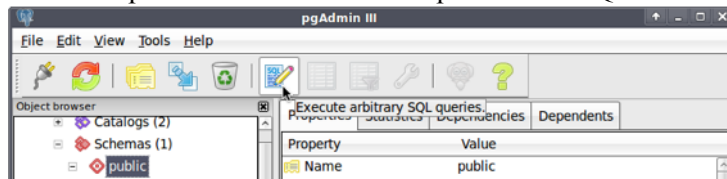


3. Double click on local (localhost:5432) to connect.



4. Open up the medford database and select into the public schema, you can open it up to look at some of the tables if you like.

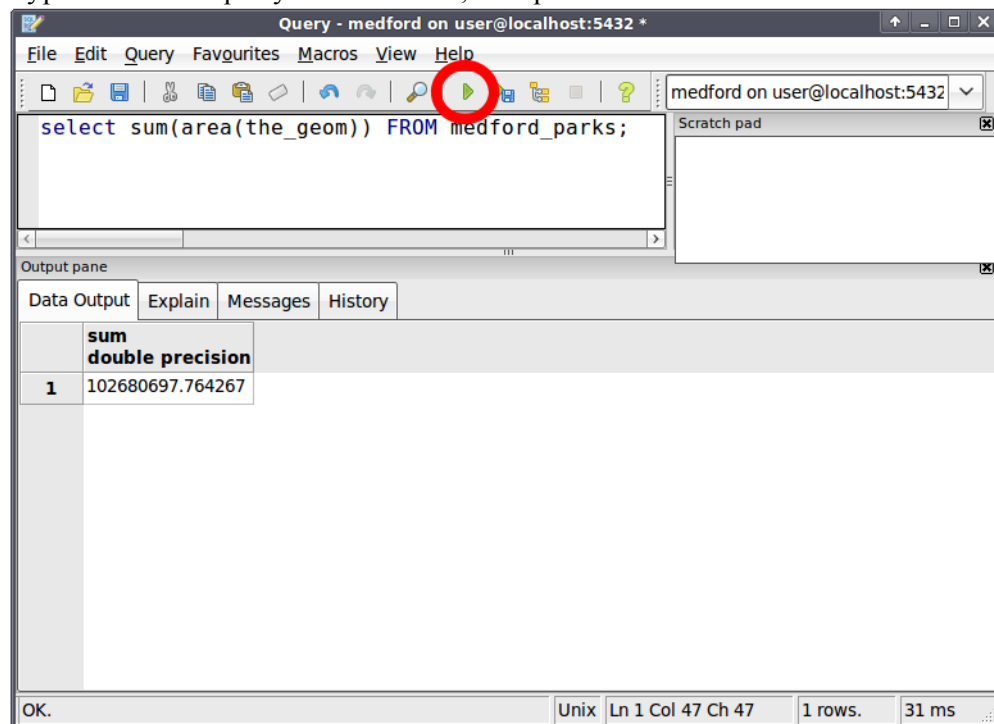
With the public schema selected press the “SQL” button in the toolbar.



5. We are just going to use a simple query as an example.

```
select sum(area(the_geom)) FROM medford_parks;
```

6. Type the above query into the area; and press the execute button to run the query.



11 WHAT TO DO NEXT

Where to go from here? Try out the following:

*The official
Walkthrough 2
will go through
many of these
concepts.*

- It is very tricky to evaluate any sort of product procurement; and the open source applications covered today are easier in some respects (you can try them out) and harder in others (license is a decision you make; you may find it difficult to know what criteria to evaluate open source projects on, etc....).
- Make sure to visit the team members and supporting organizations of the products that interest you today.
- If you are interested in how the OGC standards slot together visit the CCIP booth and talk to the group there about what they have done.
- We took some trouble to make the same map in a range of desktop applications; one of the sample shapefiles (timezones.shp) includes an “sld” style. What other applications are willing to work with “sld” files on the Live DVD? How close do the maps produced by the different application look?
- Performance is one of the key evaluation criteria (since it has a large impact on usability and hardware costs). The Web Map Server shoot out is taking place at the close of the conference.
- One aspect you can look into is the organizations backing a particular open source project. You can see that many of the projects mentioned here have an OSGeo logo associated with their name (either a recognized project or in “incubation”).

Personally I tend to look for a business friendly license; has a range of contributors from academic, public and private sectors. I also check how the project is run – to see if the project offers open transparent development.

These guidelines are by no means required; one of the most important projects JTS Topology Suite is run by a single individual.

- One of the best ways to evaluate is to go and attend the presentation on case studies; have a look at how others are being successful in order to gather ideas.
- The LiveDVD is a good way to get a taste of what is available; there is also a demonstration theatre running during the breaks so you can grab a cup and see what is available.