

# GeoRaptor For Oracle SQL Developer *(A Muggle's Tale)*



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Holder of "2011 Oracle Spatial Excellence Award  
for Education and Research."

# But what is GeoRaptor?

- FOSS “Spatial” Extension for Oracle's free (not OSS) SQL Developer (SQLD)
  - SQLD is “graphical tool for database development”
- Allows database users/developers/DBAs to:
  - Administer
  - Visualise (map)
  - Manage Metadata
  - Import/Export
  - Configure
  - Develop.....
- .... SQL based solutions for Oracle's spatial data type SDO\_GEOMETRY.
- Open Source Alternatives to SQL Developer
  - SQuirreL, SQLWorkbench etc

**IT IS NOT A GIS!**

# GeoRaptor Screen shots...

The screenshot displays the Oracle SQL Developer environment with the GeoRaptor extension installed. The main window is titled "Spatial View" and shows a map of a green field with numerous black crosshair markers representing spatial data points. A scale bar at the bottom left of the map indicates a distance of 904.340 meters.

The "View" menu is open, showing various toolbars and views. The "GeoRaptor" option is highlighted, and its sub-menu is visible, containing:

- Spatial View
- Load Shapefile
- About GeoRaptor

The "Messages - Log" window is also visible, showing a list of messages. The "Worksheet" window displays the following SQL code:

```
1 INSERT INTO
2 SELECT ro
3 CH
4 RO
5 mo
6
7
8
9
10
11
12
13 FROM DUA
14 CONNECT BY
15 COMMIT;
16 SELECT 'Ins
17
18 select * fr
19
20
21
```

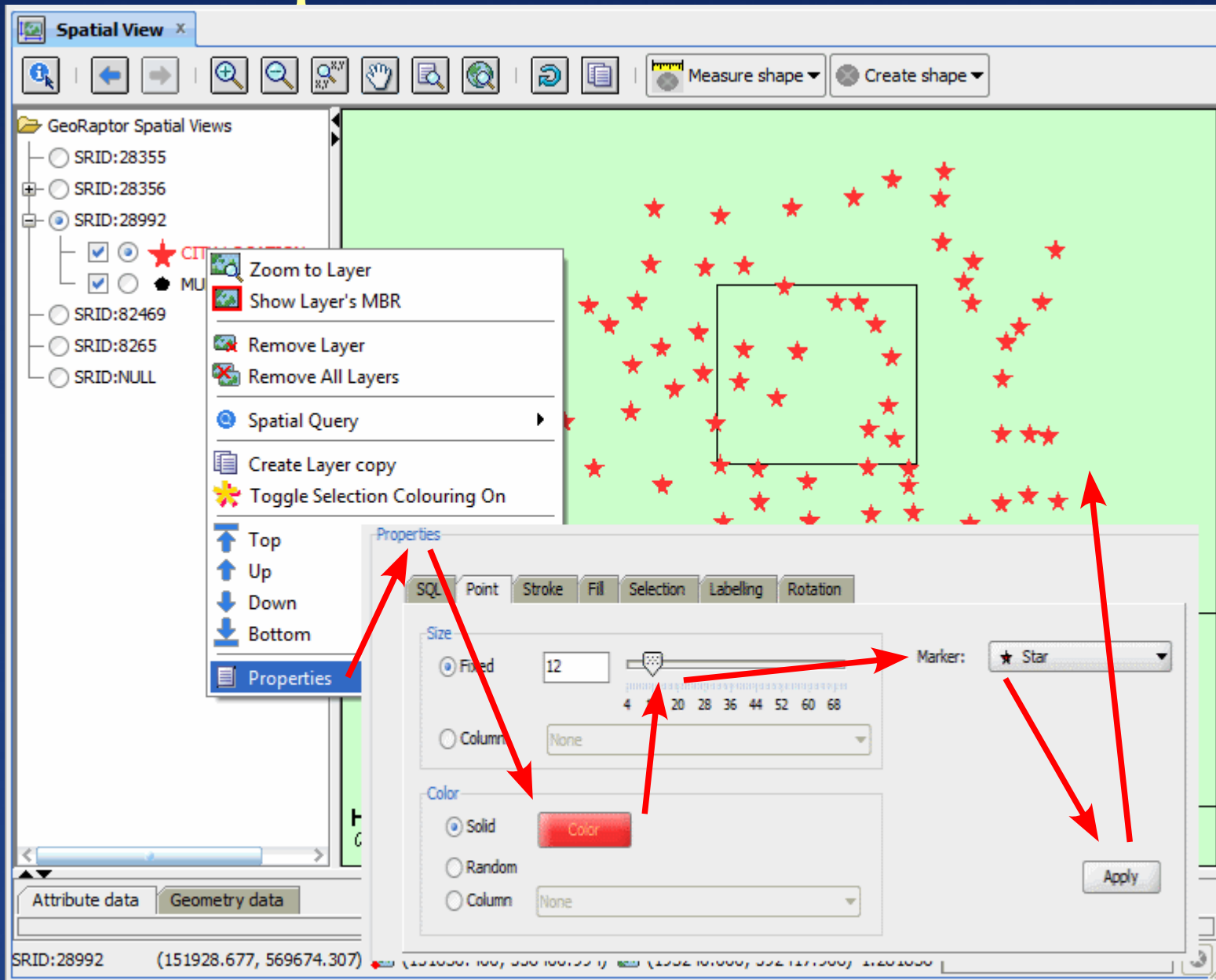


# GeoRaptor Screen Shots ...

The screenshot displays the Oracle SQL Developer interface with the following components:

- Connections Panel:** Shows a tree view of database connections under 'GIS11G', including 'CITY'.
- Table Structure:** A table named 'CITY' is shown with columns: NAME (VARCHAR2(64 BYTE)), SIZE\_ (NUMBER), and LOCATION (SDO\_GEOMETRY).
- Spatial View Configuration:** A 'Spatial View' dialog is open, showing a tree of spatial views. 'CITY.LOCATION' is selected and highlighted with a red arrow. A context menu is open over it with options: 'Add column to spatial view', 'Create spatial index', 'Drop spatial index', 'Manage Column Metadata', and 'Validate Geometry'. Another red arrow points to the 'CITY.LOCATION' entry in the tree.
- Map View:** A map titled 'GeoRaptor Spatial Views' displays a light green background with numerous red star-shaped markers. A black rectangular box highlights a cluster of stars. A scale bar at the bottom indicates 0 to 7.159 km.
- Worksheet:** A SQL query is partially visible: 'select' on line 1 and 'from' on line 11.
- Status Bar:** Shows coordinates for SRID:28992: (153494.629, 574745.011) and (151630.400, 556400.994), along with a bounding box (193240.000, 592417.906) and a scale of 1:281836.

# GeoRaptor Screen Shots...



# GeoRaptor Screen Shots...

AggregateSimplify.sql x codesys@gisdb x codesys@GIS11R2 x GIS@GIS11R2 x Test.sqls.sql x aggr\_set\_union.sql x Test\_All.sql x

Worksheet Query Builder

```
1 SELECT T1.NAME as City,  
2 T2.NAME as Municipality,  
3 t1.location  
4 FROM CITY T1  
5 LEFT OUTER JOIN  
6 MUNICIPALITY T2  
7 ON (SDO_ANYINTERACT(T2.COVERAGE, T1.LOCATION) = 'TRUE');
```

**Ad-Hoc Queries**

Query Result x

SQL | Fetched 50 rows in 0.139 seconds

CITY	MUNICIPALITY	LOCATION
1 Achlum	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
2 Aegum	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
3 Baard	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
4 Baijum	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
5 Beers	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
6 Beetgum	Littenseradiel	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
7 Beetgumermolen	Littenseradiel	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
8 Berlikum	Littenseradiel	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
9 Blessum	Littenseradiel	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
10 Boer	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
11 Boksum	Littenseradiel	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
12 Bozum	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
13 Britsum	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
14 Britswerd	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
15 Burgwerd	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS...
16 Cornjum	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS.SDO_POINT_TYPE(181181.2, 584260.2, 0.0), NULL, NULL)
17 Cornwerd	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS.SDO_POINT_TYPE(155115.2, 566558.6, 0.0), NULL, NULL)
18 Deersum	(null)	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS.SDO_POINT_TYPE(177616.0, 566858.9, 0.0), NULL, NULL)
19 Deinum	Littenseradiel	MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS.SDO_POINT_TYPE(177584.7, 570379.7, 0.0), NULL, NULL)
20		MDSYS.SDO_GEOMETRY(2001, 28992, MDSYS.SDO_POINT_TYPE(166456.4, 566300.0, 0.0), NULL, NULL)

GeoRaptor Spatial Views

- SRID:28355
- SRID:28356
- SRID:28992
  - LOCATION: full Rec
  - CITY.LOCATION
  - MUNICIPALITY.COV
- SRID:82469
- SRID:8265
- SRID:NULL

Zoom to in Spatial View  
Render in Spatial View  
Copy to clipboard  
Export  
Visual

Attribute data Geometry data

SRID:28992 (151750.586, 575314.948) (151630.400, 562935.788) (185162.300, 591960.712) 1:227123

**Type Colouring**

# GeoRaptor Screen Shots...

The screenshot displays the GeoRaptor application interface. At the top, several browser tabs are open, including 'AggregateSimplify.sql', 'codesys@gisdb', 'codesys@GIS11R2', 'GIS@GIS11R2', 'Test.sqls.sql', 'aggr\_set\_union.sql', and 'Test\_All.sql'. The main window is divided into several panels:

- Query Builder:** Contains the SQL query: `SELECT objectid, length_m, geom FROM QGC_ROAD;`
- Query Result:** Displays a table with 58 rows of data. The columns are OBJECTID, LENGTH\_M, and GEOM. The first few rows are:

OBJECTID	LENGTH_M	GEOM
1	36	40.6557185944
2	37	23.1647746756
3	38	569.002150916
4	39	39.0108464826
5	40	65.112895053
6	41	1092.53398524
7	42	264.894713202
8	43	139.891962328
9	44	52.7262887081
10	45	97.17581115
11	46	1773.29277044
12	47	70.3263930287
13	48	54.9651673205
14	49	70.2270327169
15	50	90.1776609935
16	51	70.2840312497
17	52	70.00674101
18	53	70.07357514
19	54	92.1377607486
20	55	1839.55387509
21	56	122.474950937
22	57	64.120908995
23	58	1173.56559969
- Spatial View:** Shows a map of road data. A context menu is open over the map, listing actions such as 'Zoom to in Spatial View', 'Render in Spatial View', 'Copy to clipboard', 'Export', and 'Visual'. The 'Visual' submenu is also open, showing options like 'SDO', 'SDO (Coloured)', 'WKT', 'KML', 'GML', 'Icon', and 'Thumbnail' (which is selected).
- GeoRaptor Spatial Views:** A tree view showing the loaded data layers, including 'SRID:262152' and 'QGC\_ROAD.GEOM'.

At the bottom of the interface, there are tabs for 'Attribute data' and 'Geometry data', and a status bar showing coordinates and scale information: 'SRID:262152 (232569.607, 7028423.389) (223859.855, 7027945.108) (237906.218, 7040103.519) 1:95140'.

# GeoRaptor Screen Shots...

Query Result x

SQL | Fetched 50 rows in 0.007 seconds

OBJECTID	LENGTH_M	GEOM
1	36 40.6557185944	/
2	37 23.1647746756	/
3	38 569.002150916	/
4	39 39.0108464826	/
5	40 65.112895053	/
6	41 1092.53398524	/
7	42 264.894713202	/
8	43 139.891962328	/
9	44 52.7262887081	/
10	45 97.17581115	/
11	46 1773.29277044	/

**Table/ResultSet Context Menu**

- GeoRaptor
  - Zoom to in Spatial View
  - Render in Spatial View
  - Copy to clipboard
  - Export
    - GML
    - KML**
    - SHP
    - TAB
  - Visual
- Save Grid as Report...
- Display geometry shape...
- Identify Geometry Shape in Map View
- Invoke Map View on result set
- Single Record View...
- Count Rows...
- Find/Highlight...
- Publish to APEX...
- Export...

Message

**Export Summary for GEOM**

Successfully wrote 50 (Arc) records in 0:00:0.02 seconds

OK

KML Exporter

Export Options

Entity: GEOM

Filename: C:\Temp\GEOM.kml

Skip NULL Geometry rows?

SRID: 262152

Output Attributes?

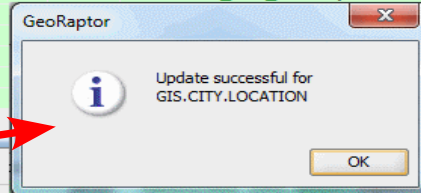
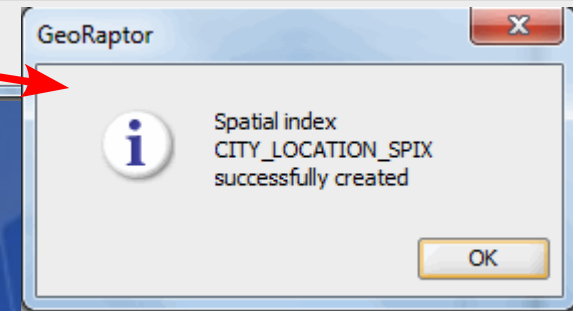
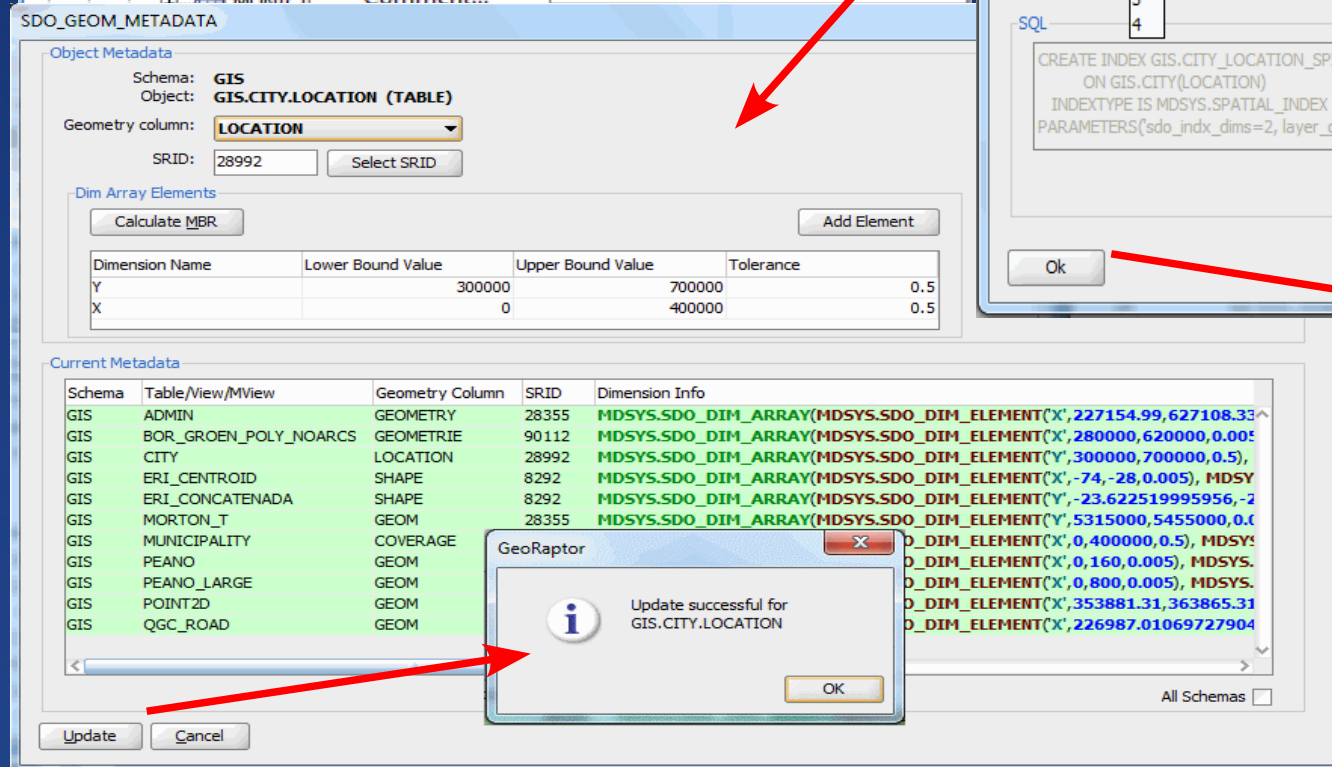
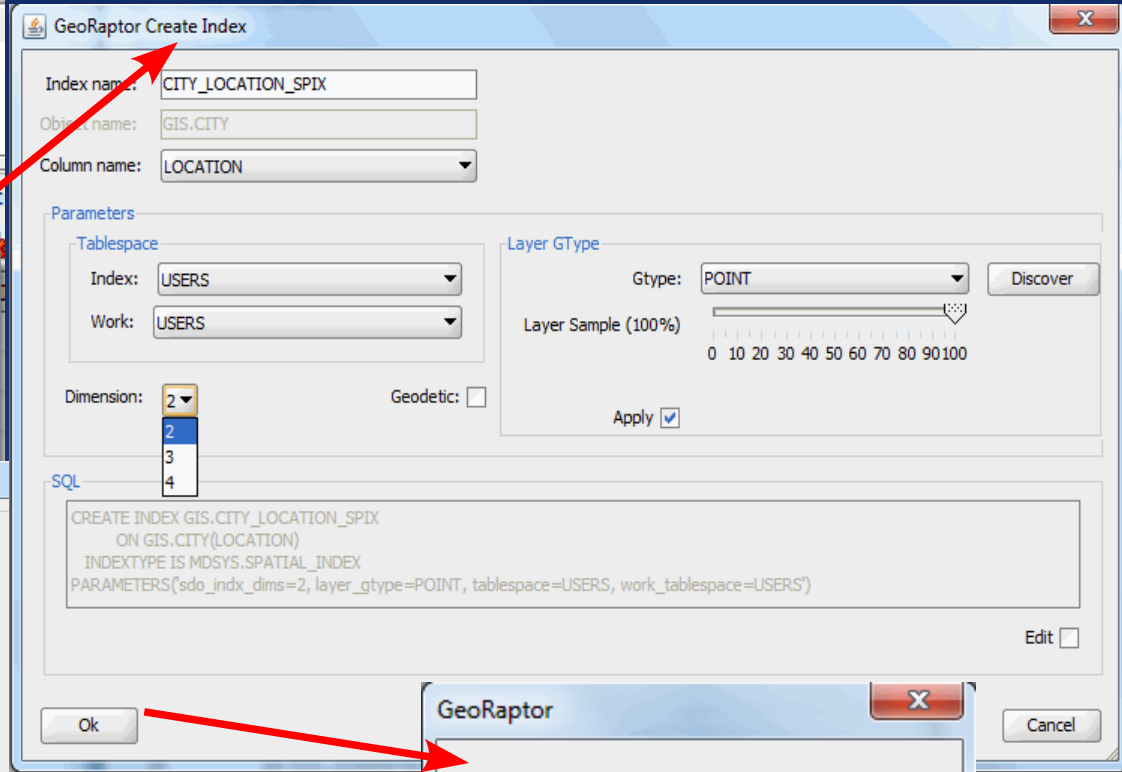
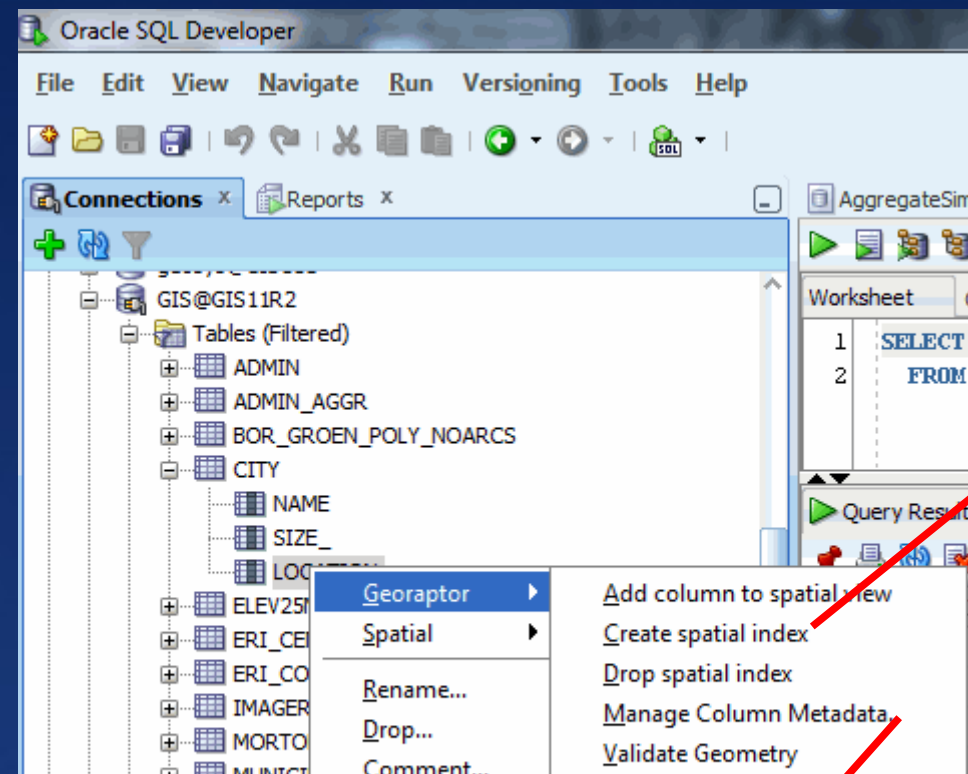
Commit 100

Charset: UTF-8

SRID must be Google Maps compliant GIS 7:17:46 PM KML



# GeoRaptor Screen Shots...



# History...

- Created by Matic Petek around 6 years ago
  - First spatial extension for SQL Developer 1.0
  - SQL Developer 1.0 beta name “Raptor” --> “GeoRaptor”
  - SourceForge Project
- SQL Developer 1.1 Extension API changes (see later) made GeoRaptor fail in some situations.
  - Matic Petek requested to correct the extension
  - Matic has disappeared & cannot be found.
  - Fragility of “Heroic Programming” approach?

# History...

- SQL Developer / Database developers like myself wanted GeoRaptor to succeed.
  - 3+ years access to access SourceForge account!
  - 2 years on & GeoRaptor has undergone enormous change.
  - We are proud of what we have achieved.
- But is it a success?
- Is it sustainable?

# Five aspects of OS project contribute to sustainable success...

- Host Application
- Approach or Philosophy
- Development Environment
- Project Community
- Users



# Host Application

## ■ SQL Developer

- 100% Java based
- Free NOT Open Source Software.
- Supports JDeveloper (and Eclipse)
- Built using JDeveloper Extension SDK
- Third party developer support:
  - User documentation exists but ...
  - No mailing list, forum, IRC etc.
    - e.g., API changes discovered “by accident”
  - No documentation
    - No Javadoc for core SQL Developer API
    - Some “Mickey Mouse” JDev extension samples.

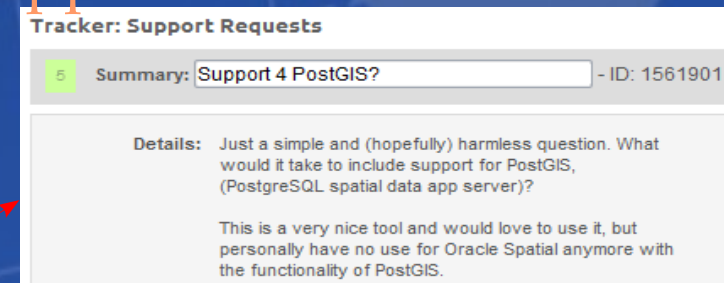
# Host Application...Questions

- Given Oracle's SQL Developer Support Issues:
  - What are the real aims of the Extension API?
  - How can one charge for an Extension when Host is Free (marketing not licensing issue)?
  - Does Oracle see successful Extensions as part of their success through:
    - Increasing sales?
    - Improving user efficiency & effectiveness?
  - Oracle with last SQL Developer released own Spatial extension!
    - Didn't bother to inform us!

# Host Application...Questions

- How does SQL Developer help GeoRaptor's success?
- GeoRaptor's success criteria:
  - *The end user* spatial extension for SQL Developer
    - Competing Oracle extension creates issues and opportunities
  - Productive end users (feedback)?
- Some users want non-Oracle database support
  - However, "SQL Developer supports migrating 3rd party databases to Oracle" ([tinyurl.com/2a2jehd](http://tinyurl.com/2a2jehd))
  - PostgreSQL (hence PostGIS) not supported!
- Some colleagues have asked for us to develop for **TOAD!!!!**

Should be PgAdmin III Plugin



Tracker: Support Requests

5 Summary: Support 4 PostGIS? - ID: 1561901

Details: Just a simple and (hopefully) harmless question. What would it take to include support for PostGIS, (PostgreSQL spatial data app server)?

This is a very nice tool and would love to use it, but personally have no use for Oracle Spatial anymore with the functionality of PostGIS.

# Approach / Philosophy

## ■ Approach:

- To “spatially enable” an existing dedicated Oracle database management tool;
- Not build an extension for an independent GIS
  - GIS & GIS Tools are for a narrow vertical market.
  - Not right tools for data management.
- Oracle SQL Developer chosen by Matic
  - Best tool for Oracle databases
  - Fully supported by GeoRaptor team.
  - With hind-sight, would we make the same choice?



# Approach / Philosophy

## ■ Collaborative:

- To develop a tool that was useful to us (experts) that we felt would be useful to others.
  - With feedback/suggestions from key users.
- Once a base-load of functionality was delivered
  - Respond to end-user needs and requirements;
- Use best OS tools for job not just Oracle's
- Flexible delivery of functionality outside Oracle release cycles;
  - Yet open to working with Oracle Spatial team.
- Emergence of Oracle's own extension...

# Approach / Philosophy

## ■ Oracle's Spatial Extension

- Released with SQL Developer 3.0;
- Functionality limited;
- No end user/GeoRaptor involvement eg surveys
- Stated aim for later versions:
  - To match all that GeoRaptor does.
  - Hinted at making extension open source...

# Approach / Philosophy

- We have approached Oracle Spatial team many times:
  - Comprehensive questions and issues put on the table
  - Outlined a collaboration framework based on their extension.
  - Promised meetings never kept.
  - No feedback from emails received.
- Our Response?
  - Keep talking/hoping?
  - *Embrace and Extend* their extension regardless?
  - Remain completely independent?
  - Give up?
  - Move to another host?

Is this  
Schumpeter's  
"creative  
destruction"?

# Approach / Philosophy

- GeoRaptor team did not set out to be a funded project or make money....
  - ... for Oracle (via sales)
    - Clash with Oracle philosophy?
  - ... for ourselves?
  - “Build it and they will come” naivety?
- Lack of funding challenges GeoRaptor's long term sustainability:
  - Development takes a lot of time and effort.
  - Need to find willing \$ paying sponsors for development.
    - How do this (see later)



# Development Environment

- GeoRaptor written using JDeveloper IDE (Java 1.6+)

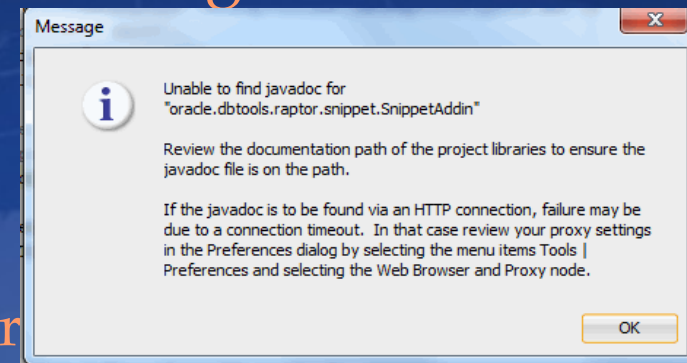
- Core Java API documentation accessible;
- SQL Developer's APIs not documented eg ...

- oracle.sqldeveloper.utils.jar
- oracle.sqldeveloper.jar
- oracle.sqldeveloper.snippet.jar
- oracle.sqldeveloper.worksheet.jar
- etc

- Complex UI mainly done using NetBeans.

- Uses external open source libraries:

- Java Topology Suite (jts-1.11.jar)
- Dbase Java library (xBaseJMicro.jar)
- GeoTools (limited source Java classes)



# Development Environment

- Multiple SQL Developer versions
  - Small but significant unannounced API changes
  - Lack of conditional compilation in Java (pain)
- Multiple Database Versions
  - Multiple database JVM versions (JVM 1.4 – 1.5) not issue as **no** components deployed to DB.
  - Multiple NLS settings
- Source code under Subversion control on SourceForge.
  -

# Project Community...

- A successful project needs:
  - Multilingual Developers with access to multiple NLS databases, clients etc;
  - Testers: Both programmatic/harness and end-user;
  - Release Manager;
  - SourceForge Website Administrator
    - Checking bug and enhancement requests;
    - Managing forums, email lists etc.
  - Multilingual Documentors
  - End User Coordinator
    - Questionnaires, Oracle Spatial Forum presence, Outreach

# Project Community...

The screenshot shows the Oracle SQL Developer interface. On the left is a 'View' menu with options like Breakpoints, Debugger, Log, Run Manager, Team, Connections, Data Modeler, Dbms Output, Files, Find DB Object, History, Migrations, OWA Output, Recent Objects, Reports, Snippets, Task Progress, and Unit Test. The 'GeoRaptor' option is selected, opening a dialog box titled 'About GeoRaptor'. The dialog contains the following text: 'GeoRaptor is an open source project hosted on Sourceforge: http://sourceforge.net/projects/georaptor', 'Please visit the wiki page for more information: http://sourceforge.net/apps/mediawiki/georaptor', 'Developed by Holger Laebe, Matik Petek, Olaf Iseeger, Pieter Minnaar and Simon Greener', 'With special thanks to Simon Greener: http://www.spatialdbadvisor.com', and 'Thanks also to John O'Toole from 1Spatial for testing and valuable suggestions.' To the right of the text is an image of a falcon perched on a globe.

The Sourceforge website header features the 'SOURCEFORGE' logo on the left, followed by a search box containing the text 'Find Open Source Software'. To the right of the search box are navigation links: 'Browse', 'Blog', 'Support', 'Jobs', and 'Newsletter'.

Home / Browse / GIS / Spatial viewer for Oracle SQL Developer

A row of navigation tabs for the project page, including 'Summary', 'Files', 'Reviews', 'Support', 'Develop', 'Hosted Apps', 'Tracker', 'Mailing Lists', and 'Forum'.

The project details section for 'Spatial viewer for Oracle SQL Developer'. It includes a 'Donate' button with a dollar sign icon, the project name, and the authors 'hlaebe, maticpetek, olaf37, pieterminnaar, sgreener'. Below this, it shows '24 Recommendations' and '163 Downloads (This Week)'. A green 'Download' button is present with the file name 'org\_GeoRaptor-install.jar'. At the bottom, there are social sharing buttons for 'Tweet' (0), '+1' (1), and 'Like' (1), along with a 'Browse All Files' link.

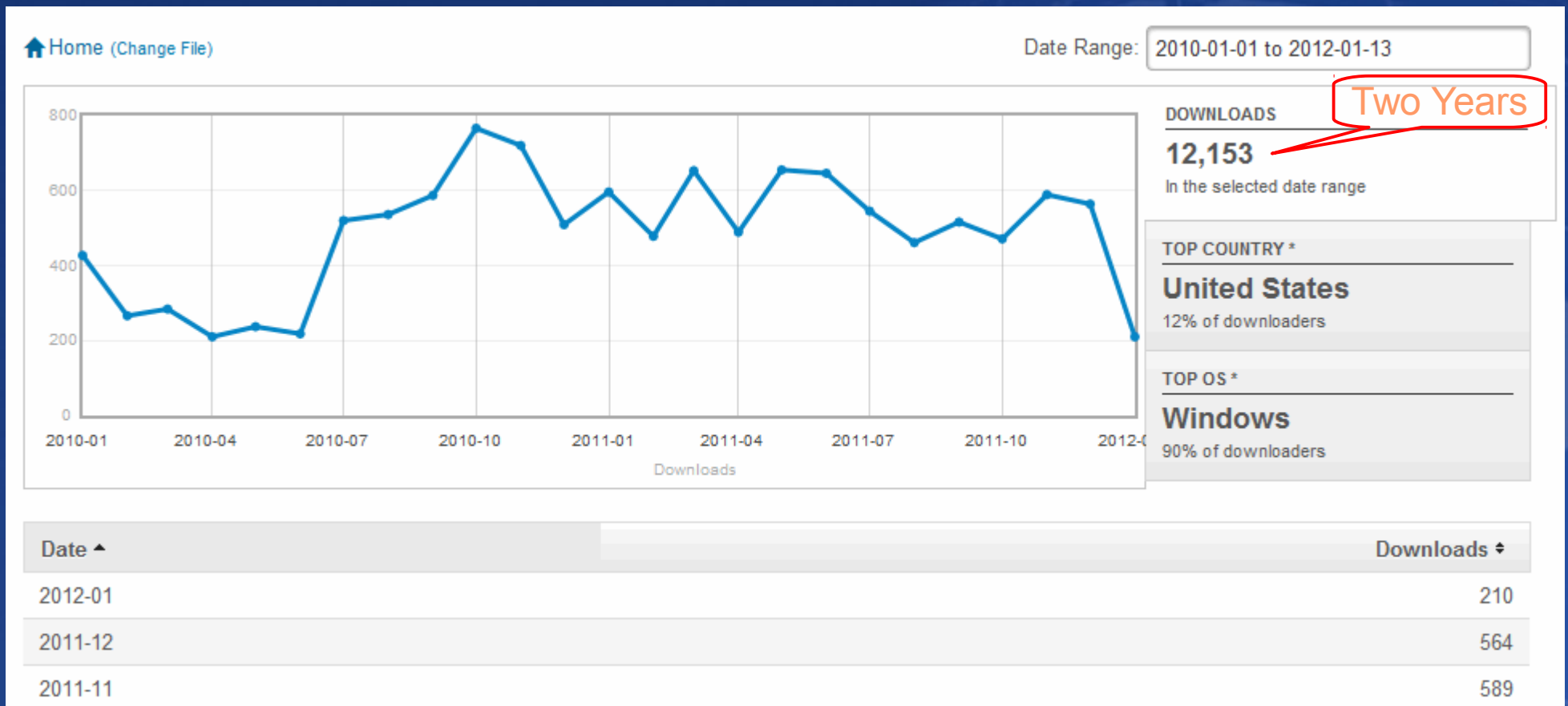
# Project Community ..

- We face normal issues of any project team where no funding is involved or the work is not “core business” .
  - We develop when we can or are allowed.
  - Need more personnel or more funding.
- We are doing too much with too little.
- We need:
  - An additional “full-time” principal developer
  - End user documentation...
  - End user coordinator...



# Users

- 12,153 downloads over 2 years
- But are these regular users?
- How contact them re betas, future, joining team?



# User Contact...

SOURCEFORGE

Find Open Source Software

Browse

Blog

Support

Home / Browse / Spatial viewer for Oracle SQL Developer / Forums / Open Discussion

ORACLE

Forum Home » Database » Spatial

## Forum: Spatial

Discussions related to Oracle Spatial, Locator, GeoRaster, Topology, Network Data Model, GeoCoder, Router, Spatial Web Services and 3D Data Model. Recommended reading: Pro Oracle Spatial

[Post New Thread](#) [Back to Category](#)

Messages: 30,818 Threads: 7,553 Filter:  Pages: 504 [ [Previous](#) | [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) | [Next](#) ]

Thread	Author	Replies	Last Post
<a href="#">Wrong longitude value in reverse operation using albers projection</a>	<a href="#">user12006126</a>	0	Dec 19, 2011 9:29 AM Last Post By: <a href="#">user12006126</a> »
<a href="#">GeoRaptor Future: More Survey Responses needed</a>	<a href="#">sgreener</a>	2	Dec 28, 2011 2:35 AM Last Post By: <a href="#">sgreener</a> »
<a href="#">Tolerance Merge</a>	<a href="#">JB</a>	4	Dec 15, 2011 6:09 PM Last Post By: <a href="#">sgreener</a> »
<a href="#">SURVEY: The future of GeoRaptor</a>	<a href="#">sgreener</a>	1	Dec 14, 2011 5:53 AM Last Post By: <a href="#">Olaf1</a> »
<a href="#">GeoRaptor 3.0 for SQL Developer 3.0 and 2.1 has now been released</a>	<a href="#">sgreener</a>	3	Oct 18, 2011 4:05 AM Last Post By: <a href="#">tomits</a> »

4 Posts in last 12 months!!

Always low replies.

2011-01-14 to 2012-01-13

DOWNLOADS

6,873

In the selected date range

One Year

### Survey Dates

Start

End

### Responses

As at 13th January 2012

Invitations Sent:	0
Invitations Accepted:	0
Untracked Responses:	26
Total Completed Surveys Received:	26
Total Incomplete Surveys Received:	0
Total Responses Received:	26

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## My Surveys

Title	Status	Settings	Edit	Preview	Results	Duplicate	Launch	Export	Delete Survey	Clear Results	Responses
GeoRaptor Survey	Open								<input type="button" value="Delete"/>	<input type="button" value="Clear"/>	26

# Users...

- Most contact is by word of mouth with and through colleagues.
- Of enormous concern that we don't have any useful end user contact or involvement through more anonymous channels.
  - We can't deliver a great tool without their input.
  - Car 54 Where Are You?
    - Are they silent users who just take & don't give?
    - No one ever respected what they got for nothing?
  - Or are we doing a brilliant job with no issues?
    - As if!
- Suggestions for improvement by attendees welcomed!

# Summary

- Even without Oracle competition we are at crossroads.
- Success will be determined by our “competitive advantage” but ...
  - This requires substantive and meaningful engagement with users.
  - *Chicken or Egg* e.g., documentation is key to successful use but have no-one to do writing!
- If can improve engagement then:
  - Funds may flow.
  - GeoRaptor will have a future....