



May 2013
Oracle Spatial and Graph
User Conference

A horizontal rectangular banner with a red background. The background features a faint, stylized map of Washington, D.C., with labels for "Rosslyn", "Radnor Heights", "Washington", and "National Mall".

Oracle Spatial and Graph User Conference

May 22, 2013

Ronald Reagan Building and International Trade Center
Washington, DC USA

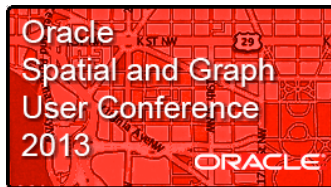


Sarel Coetzer

Oracle Spatial Developer,
Gijima



South Africa integrated eCadaastre



Gijima South African eCadastral System



OVERVIEW

- Centrally managed, authoritative database
- Incorporates 8 Provincial cadastral datasets
- Integrate NGMS and Title Deeds office system, spatial and non-spatial
- Supports title deed transactions and maintenance of new eCadastral
- Incorporating 300mil title deeds documents in TIFF format, scanned.
- Maintain and process 20mill exponential growing land parcels
- Provide platform to securely transact and audit properties

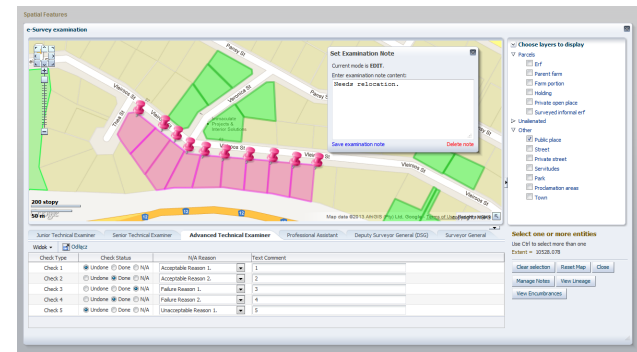
CHALLENGES / OPPORTUNITIES

- Need to sustain 100 thousand possible daily property transactions
- Sustain over 20 million public users
- Need to facilitate all NGMS offices spatial operations real time
- Need to provide spatial data to public, land surveyors, city planners
- Provide an Open Spatial Data platform for other departments and municipalities

SOLUTIONS

- Oracle Database 11g Release 2, Oracle Spatial and Graph, Partitioning, RAC, WMS, WFS
- Oracle Identity Management
- Oracle Universal Content Management, URM, IBR, SES, ODC
- Oracle Fusion Middleware, MapViewer, Weblogic
- Oracle Business Intelligence Enterprise Edition

5



RESULTS

- Consolidated national Cadastre
- SA government has single spatial repository to perform spatial queries and get monthly feedback
- Standardized all addresses and coordinates in a consistent format and datum
- Nationwide association of title deeds documents to land parcels
- Improved precision thereby making system more useful to the public and business
- Manage SA Cadastre from a centralized managed platform
- Improve local economy



Program Agenda

- About Gijima
- Introduction
- NGMS and Deeds business
- Solution eCadaastre
- Oracle technology in eCadaastre
- Challenges
- Future
- Conclusion
- Q&A



Gijima

www.gijima.com

- South African Information Technology company listed on the JSE.
- Complete IT partner with Oracle
- Client base of large technology users in both the public and private sectors
 - Financial services, retail market, manufacturing, mining, telecommunications as well as National and Provincial Government departments and State-owned enterprises.
- Core Ideology
 - **Vision Statement**
 - *To be widely recognized as the South African black owned company that transformed into a global technology solutions leader*
 - **Core Purpose**
 - *To design technology solutions, which enable enterprises to achieve great goals*
 - **Core Values**
 - In everything we do: *Integrity, Care, Transparency and Respect*



Introduction

The Department of Rural Development and Land Reform (DRDLR)

Vision:

Revolutionize the South African Cadastre to an integrated automated eCadastre by integrating

- National Geomatics Management Services (NGMS)
- Deeds Registration (DR)

Main Drivers:

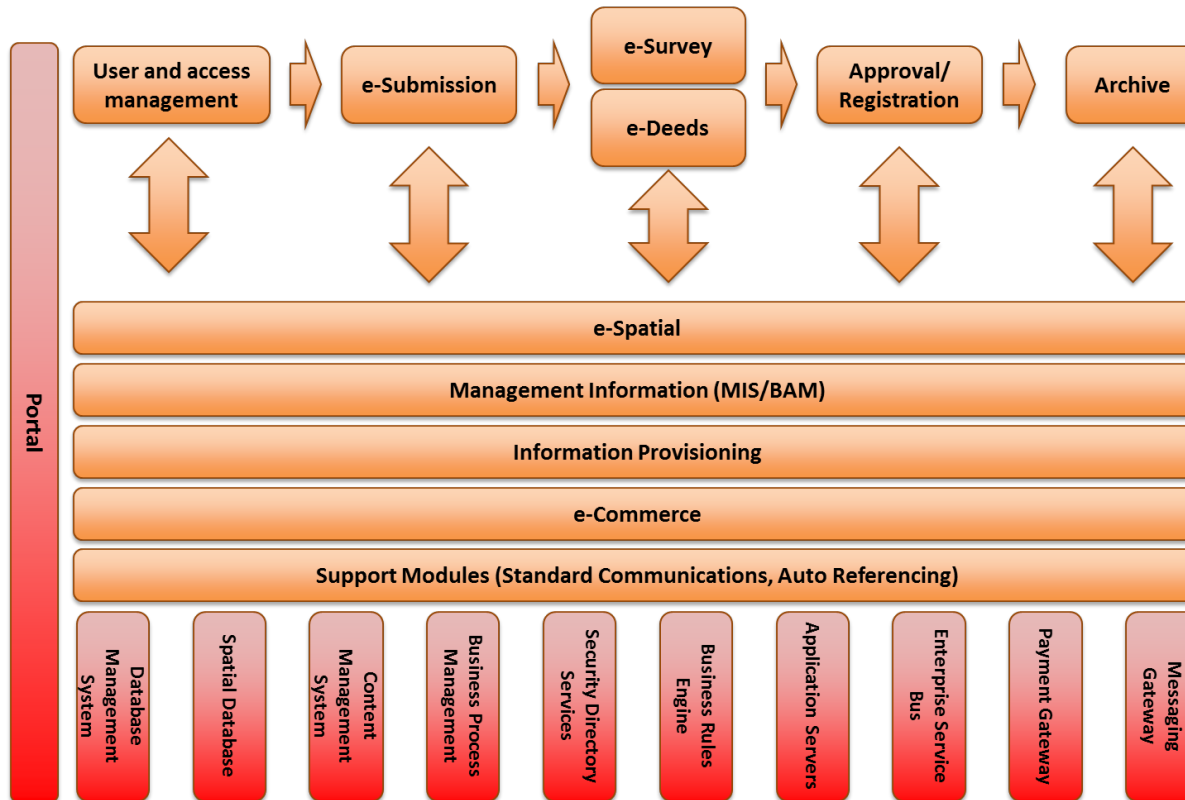
- | | | | |
|--------------------------|---------------------|------------------------|-----------------------|
| - Standardization | - Paperless | - Completeness | - Accuracy |
| - Automation | - Optimizing | - Integration | - Secure |
| - Agile | - Managed | - Accreditation | - Self funding |



NGMS and Deeds business

- National Geomatic Management Services (NGMS)
 - Examine and approve all cadastral surveys
 - Update South African Cadastre
 - Maintain spatial boundary and legal surveyed documents
- Deeds
 - Title deed registration
 - Management and maintenance of the property registry
 - Register parcel to legal owner

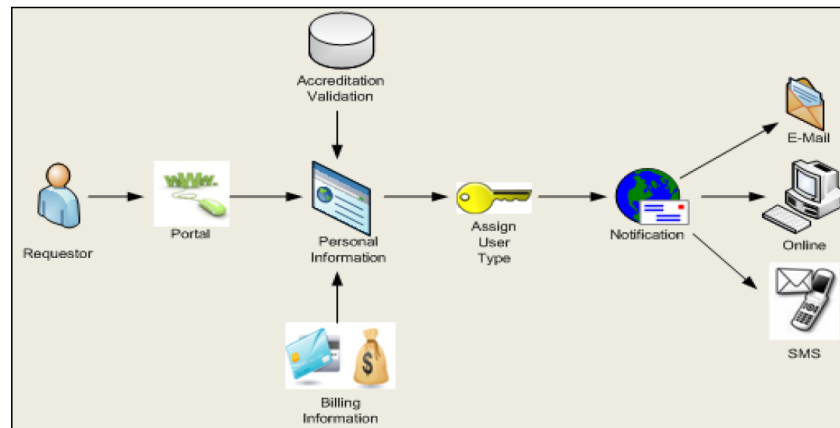
eCadaastre Solution



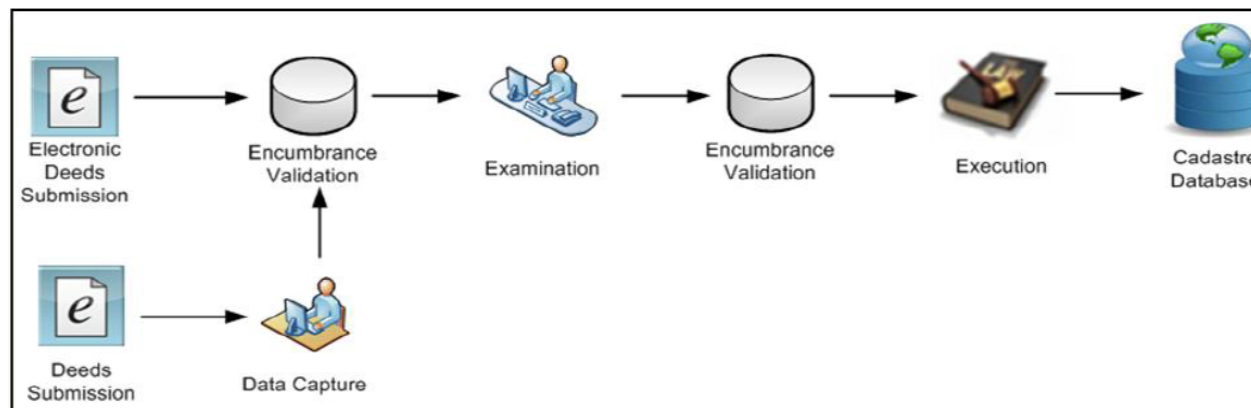
Solution eCadaastre

Business Processes

- User Registration



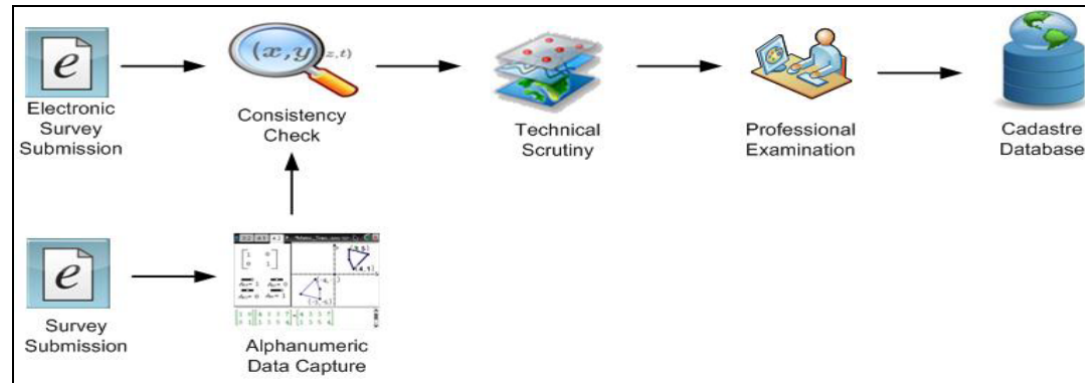
- Deeds Approval



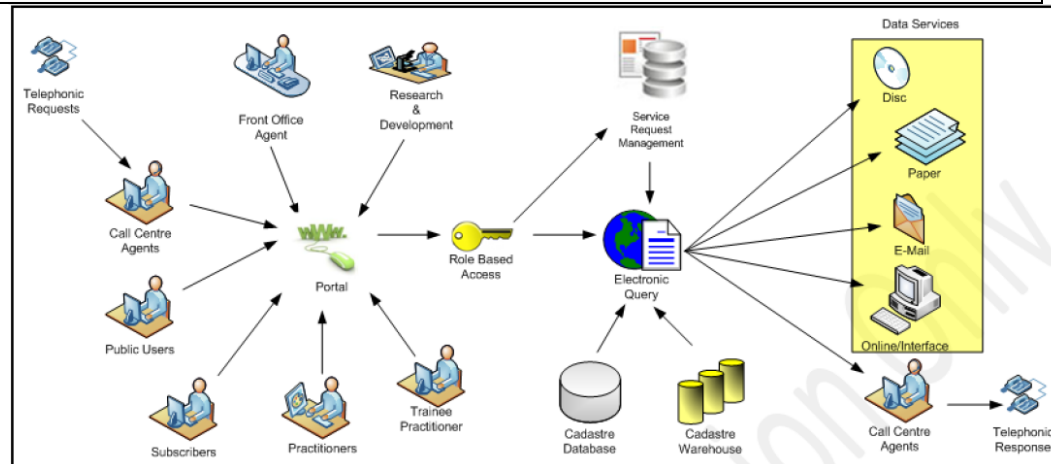
Solution eCadaastre

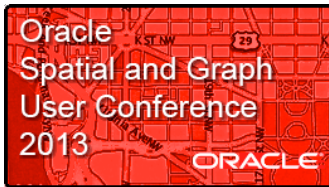
Business Processes

- Survey Approval



- Information Provisioning



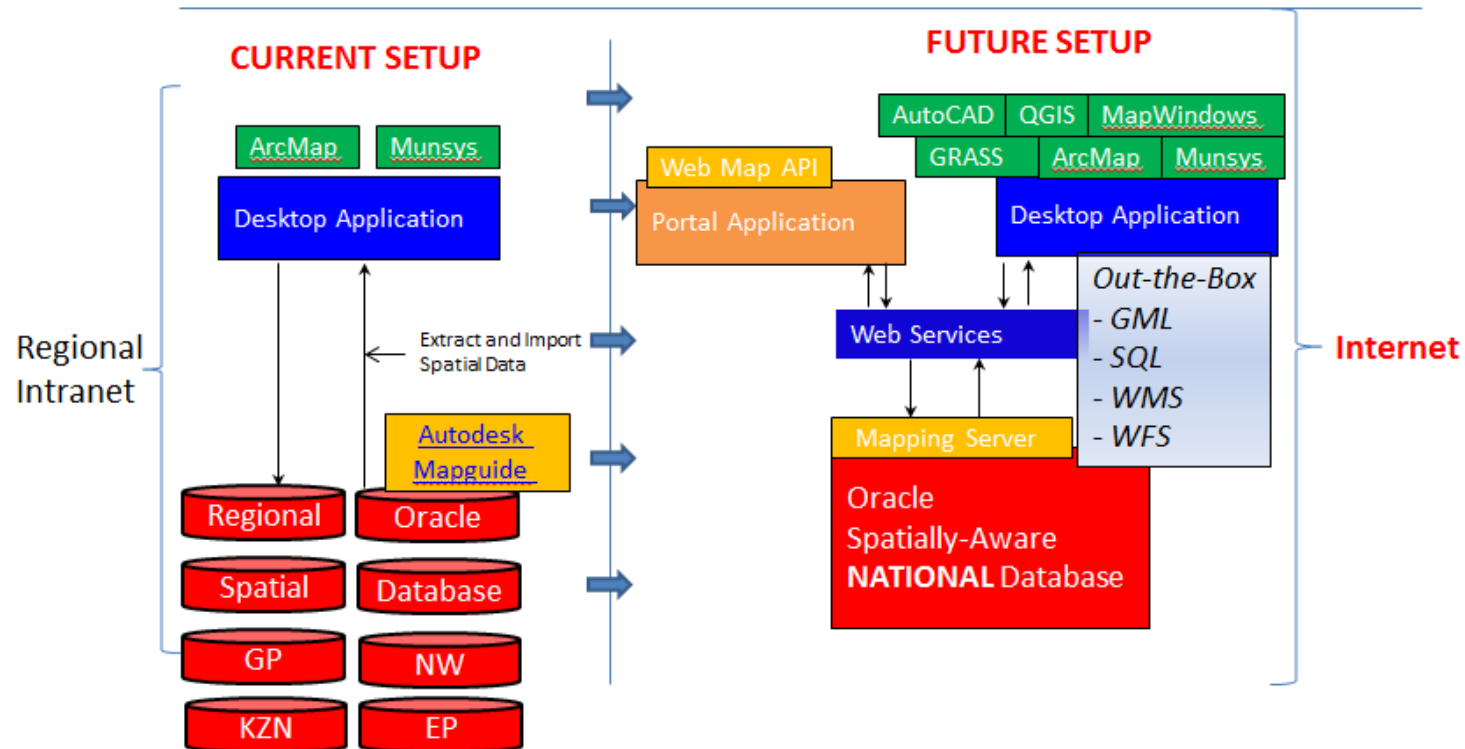


Solution eCadaastre

Spatial Component

Yesterday

Today





Solution eCadaastre

eSpatial Dissection

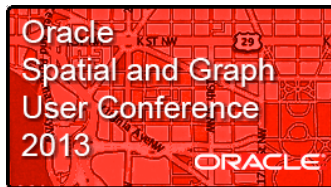
- Portal
 - Frontend for various components
 - Application Access, Users login, Daily stats
- Oracle Database 11g Release 2 with Oracle Spatial and Graph Option
 - 3D ready / Partitioned
 - WMS/WFS
 - GeoServer
- Oracle Fusion Middleware MapViewer API
 - Client-side interaction vital in web portal
- Google Maps API
 - Provide Geocode
 - Backdrop Data



Solution eCadaastre

eSpatial Development

- Oracle JDeveloper (ADF) IDE
- MapViewer API
- ADF Mapviewer API not sufficient
- Google Maps API
- CHALLENGE
- Interaction between Google API and MapViewer API
 - Address Search (Geocoding)
 - Accessing Google libraries
 - Loading Google Map via MapViewer
 - Can't access Google API



Solution eCadaastre

eSpatial - Select Area of Interest

- Transaction is reserved
- Property selected
- 5 Search Engines/Filters
- View parcel attribute data
- View title deed
- View SG diagram
- Add additional layers

Search Area of Interest

Parcel data
Displaying data for selected parcel

Archived: F
L-Status: 610
W-Status: 710
LIN: 3614260
Land type: 501
Code: 4047
Key (21 byte): TOTQ06210000404700000

Selected areas

LIN Number	L-Status	W-Status	Parcel type	Code	Key (21byte)
3790535	Registered	Current	Erf	4060	TOTQ06210000406000000
3618061	Registered	Current	Erf	4061	TOTQ06210000406100000
3644769	Registered	Current	Erf	4057	TOTQ06210000405700000
3618058	Registered	Current	Erf	4055	TOTQ06210000405500000
3614260	Registered	Current	Erf	4047	TOTQ06210000404700000

Admin boundary filter

Zapisane wyszukiwanie: MBRForWardVOCriteria

Uzgodnij: ☒ Wszystkie ☐ Ktorekolwiek

IdProvince: Gauteng

IdDistrict: City of Johannesburg Metropolitan Municipality

IdMunicipality: City of Johannesburg

IdWard: 79800013

Zaawansowane | Szukaj | Resetuj | Zapisz...

Town filter

LIN number filter

Search by address

Transaction ID filter

Company registration ID filter

Select visible layers

Select one or more entities

Use Ctrl to select more than one
Extent = 1657.804

Clear selection | Reset Map | Cancel | Save and exit



Solution eCadastre

eSpatial – Survey Examination

- Survey submitted
- Multiple examiners notes
- Spatial notes
- View property attributes
- Add layers
- Servitudes
- Roads
- Beacons
- Property validated

The screenshot displays the eCadastre software interface. At the top, a map shows a street layout with several pink beacons placed along a road. A dialog box titled 'Set Examination Note' is open, showing 'Current mode is EDIT.' and 'Enter examination note content: Needs relocation.' with buttons for 'Save examination note' and 'Delete note'. On the right, a 'Choose layers to display' panel lists various map layers like 'Erf', 'Parent farm', 'Farm portion', etc. At the bottom, a table shows the status of five examination checks.

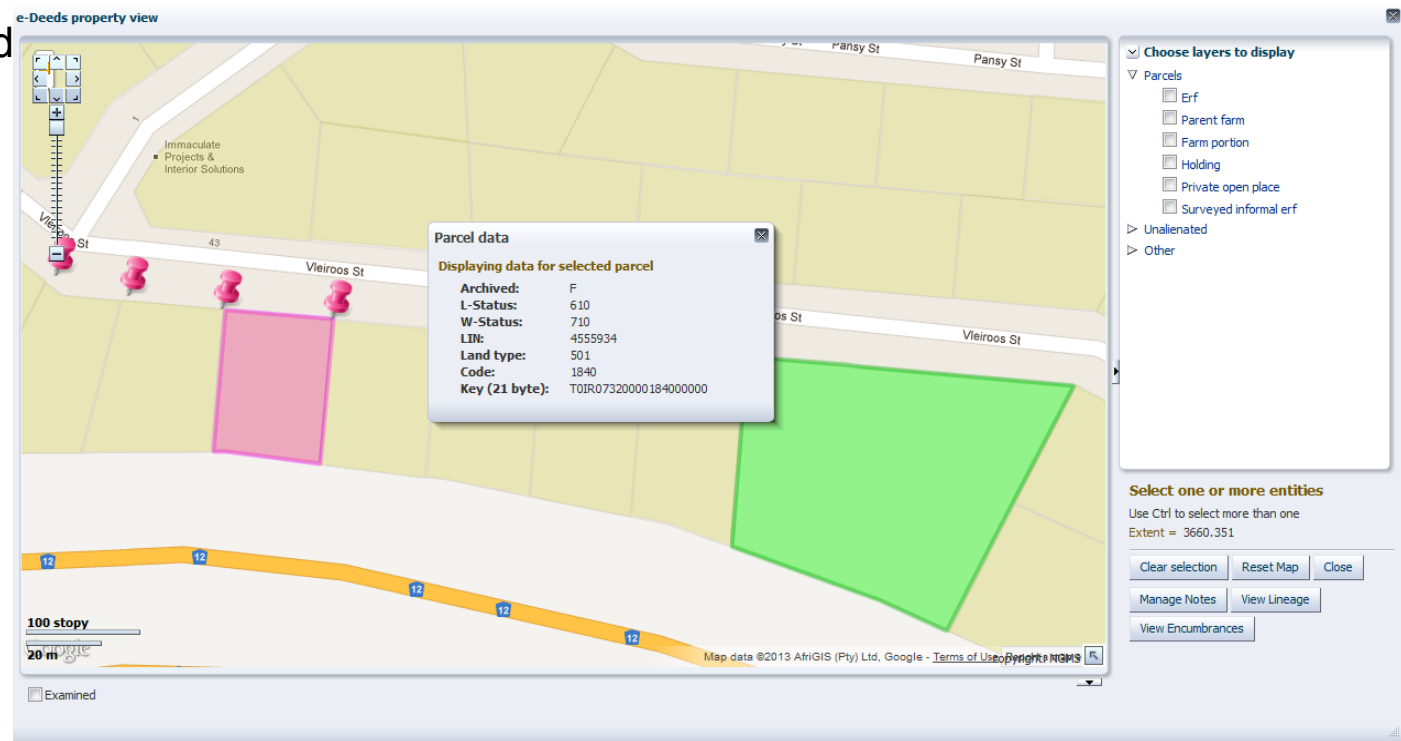
Check Type	Check Status	N/A Reason	Text Comment
Check 1	Undone Done N/A	Acceptable Reason 1.	1
Check 2	Undone Done N/A	Acceptable Reason 2.	2
Check 3	Undone Done N/A	Failure Reason 1.	3
Check 4	Undone Done N/A	Failure Reason 2.	4
Check 5	Undone Done N/A	Unacceptable Reason 1.	5



Solution eCadaastre

eSpatial - Exam Property Transaction

- Transactions are viewed
- Spatial notes are read
- Transaction types are noted
- Add layers
 - Servitude
 - Beacons
 - Roads
- Parcel attributes
- SG diagram
- Title deeds

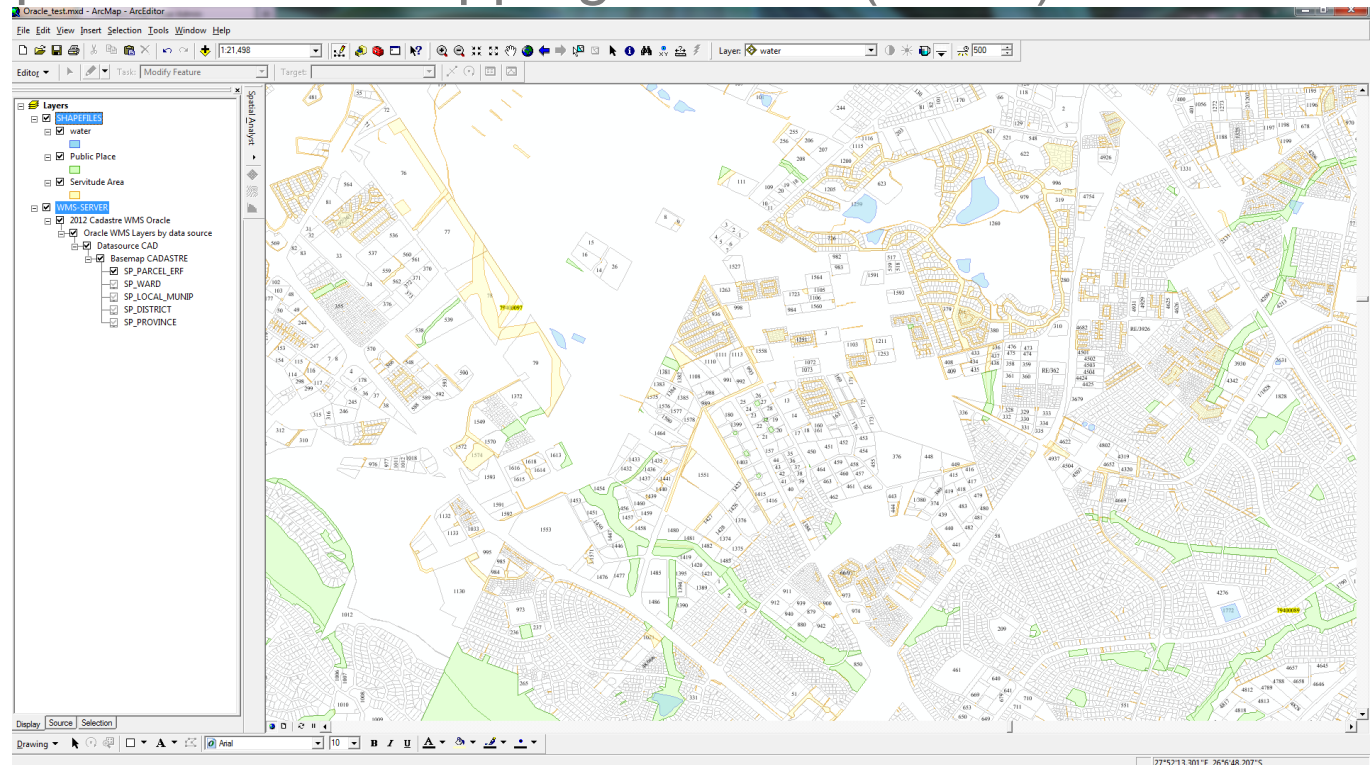




Solution eCadaastre

eSpatial - Web Mapping Service (WMS)

- Enable WMS
- Load WMS in GIS
- Add local layers
- Construct maps
- Public use
- Any GIS application
- ESRI ArcMap

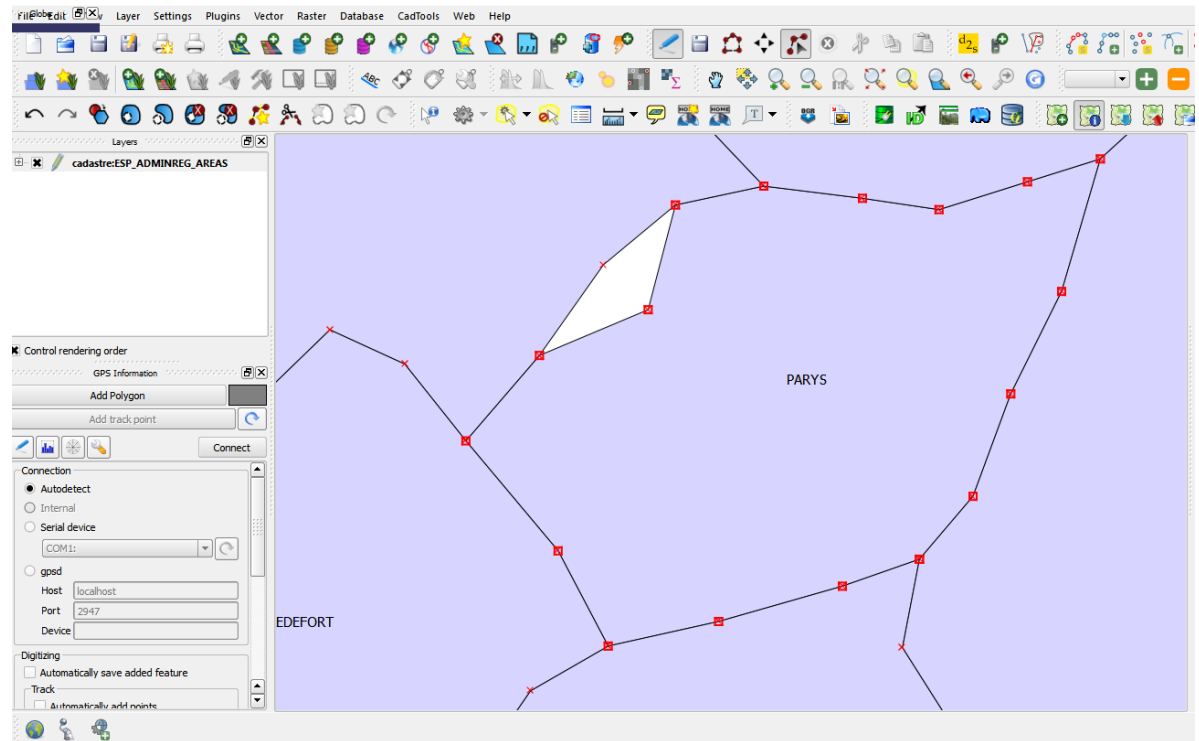




Solution eCadaastre

eSpatial - Web Feature Service (WFS)

- Enable WFS
- Load feature layer
- Feature manipulation
- Read/Write geometry
- Spatial analysis
- Maintain topology
- Read/Write attributes
- Add layers
- Produce analytical maps
- Public use
- Secure use
- Any₂₀ GIS application - Q-GIS

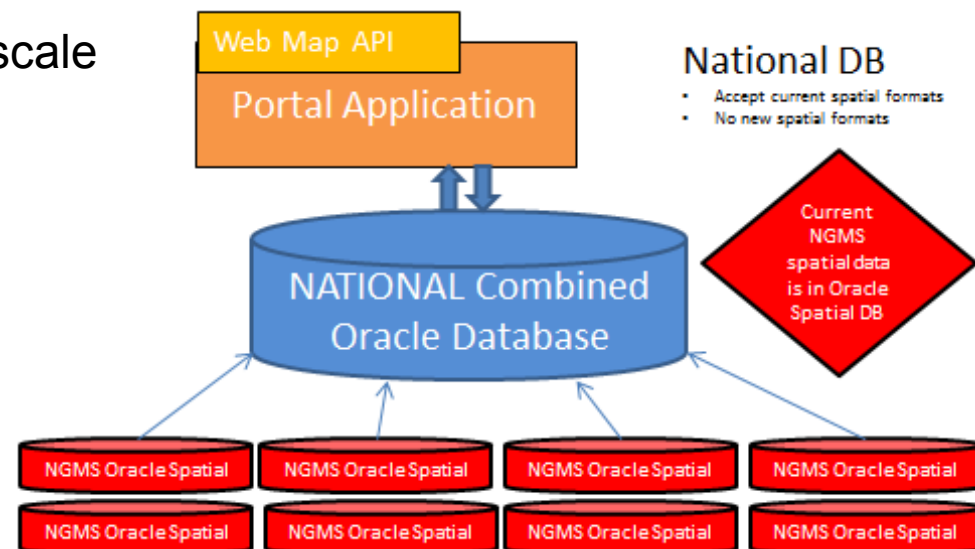




Solution eCadaastre

Final Solution

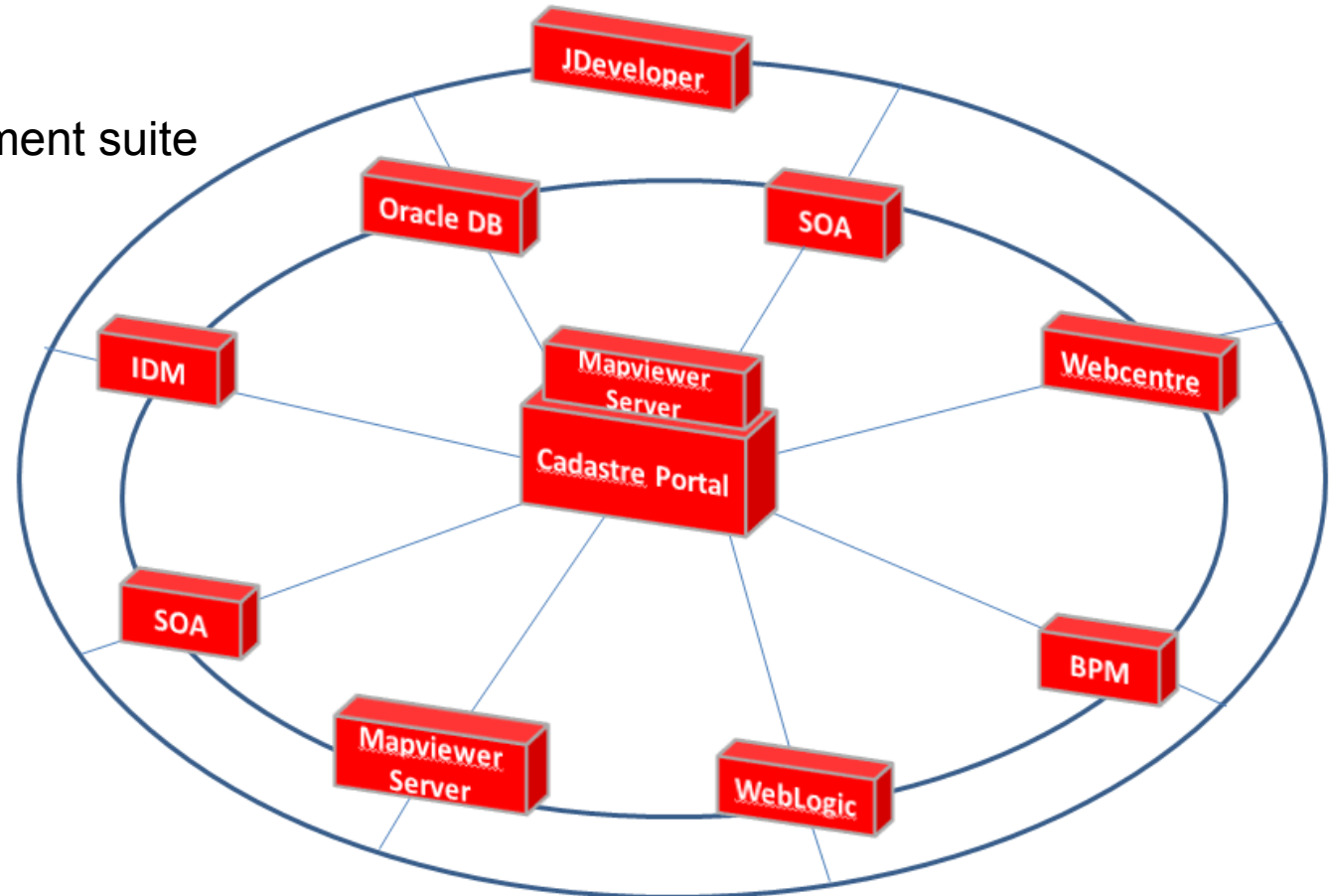
- Africa and South Africa 1st eCadaastre
- Centralized state
- Spatial analysis on National scale
- Land distribution improved
- Improve development





Oracle Technologies

- Gijima development suite





Challenges

- Using various API's
 - Google Map API for Geolocation
 - MapViewer API (outside JDEV)
- Application Integration
 - Various API's into JDEV
- Prepare system for 3D
- Keep Reporting and Analysis in mind
 - Endless possibilities with spatial analysis
 - National Scale
- Planning land use and land distribution



Future

- Improve Cadastre accuracy
- Improve data quality and service delivery
- Investigate 3D capabilities
- Interact with Open platform products
- Acquire more stakeholders
- Broadened use of Oracle and Oracle Fusion Middleware MapViewer
- Mobile-Cadastre



Sarel Coetzer

Oracle Spatial Developer

D E M O N S T R A T I O N

Gijima eSpatial

Q&A