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Spatial  
Solutions

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# *Tapping into Open Source*

*Laurette Coetzee  
Account Manager*

# Agenda

- Background
- Scope
- Solution
- Current system
- Issues
- Conclusion



# Background

- Focus on Open Source GIS application
  - Internet/Intranet
- JW is one of our biggest clients
- Used Autodesk Mapguide 6.5
  - Processor license
  - 10-user license
- Annual license fees exorbitant – better option







# Background (continued)

- Comparative costing
  - Mapguide Commercial license fees vs
  - Mapguide Open Source development costs
  - Result: More cost effective to redevelop in Open Source than continue with annual licensing fees
- At first a bit skeptic and uncertain about viability of redeveloping existing system

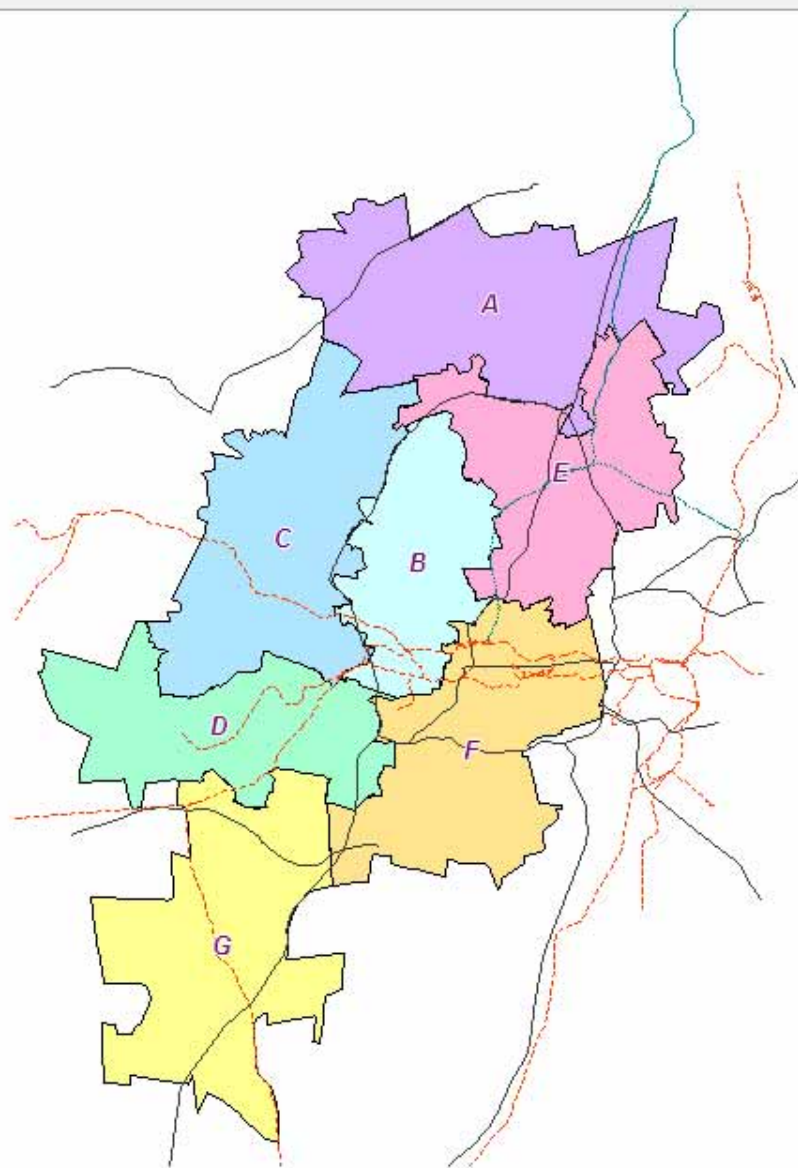
# Scope

- Faithfully replicate existing site as on Mapguide 6.5
  - Down to true color replication – RGB values
- Replicate all Applications developed in-house
- Develop additional applications as identified throughout project





- Layers
- ☐ ERROR\_LOG
  - ☒ JW
  - ☐ TOPOGRAPHICAL DATA
  - ☐ WATER
  - ☐ MISCELLANEOUS
  - ☒ ROADS AND RAILWAYS
  - ☐ SEWER
  - ☒ NSD
  - ☒ CADASTRAL



- Basic Module
- Sewer Module
- Water Module
- Hansen Module
- Edit Module
- Redlining Module
- Supervisor Module



# Solution

- Replication of existing Mapguide 6.5 site
  - Long process
    - Migration tool to migrate from Mapguide 6.5 to OpenSource not very effective
    - Only migrates symbols
    - Had to redevelop all the rest



# Solution (Continued)

- At this stage we feel that Mapguide Studio (cost involved - +/- R3000) is more powerful and comprehensive for setting up the Map Window File
  - Mapguide Author – part of Mapguide suite
  - OpenSource Editor available – not yet sufficient – can do basic authoring













# Solution (Continued)

- Replicate existing applications developed in-house
  - Mapguide 6.5 development was done in ASP and Cold Fusion
    - Cold Fusion had cost implication
  - Mapguide Open Source development done in ASP.NET





# Current system

- The current system contains the following applications:
  - Custom searches 
  - Custom reports 
  - Custom Show Info pages 
  - Link with Hansen – Way leave Management System 
  - Link with Rodding and Jetting – Work scheduling 
  - Redlining 
  - Update attribute data via Mapguide front-end 
  - Security Module 





## Layers

- ☐ ERROR\_LOG
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**Parcel Key Search - Windows Internet Explorer**

Parcel Key:

**Search Results:**

123A000000000100000
123A000000000200000
123A000000000400000
123A000000000500000
123A000000000600000
<b>123A000000000700000</b>
123A000000000800000
123A000000001000000
123A000000001100000
123A000000001200000
123A000000001400000
123A000000001500000
123A000000001600000
123A000000001700000

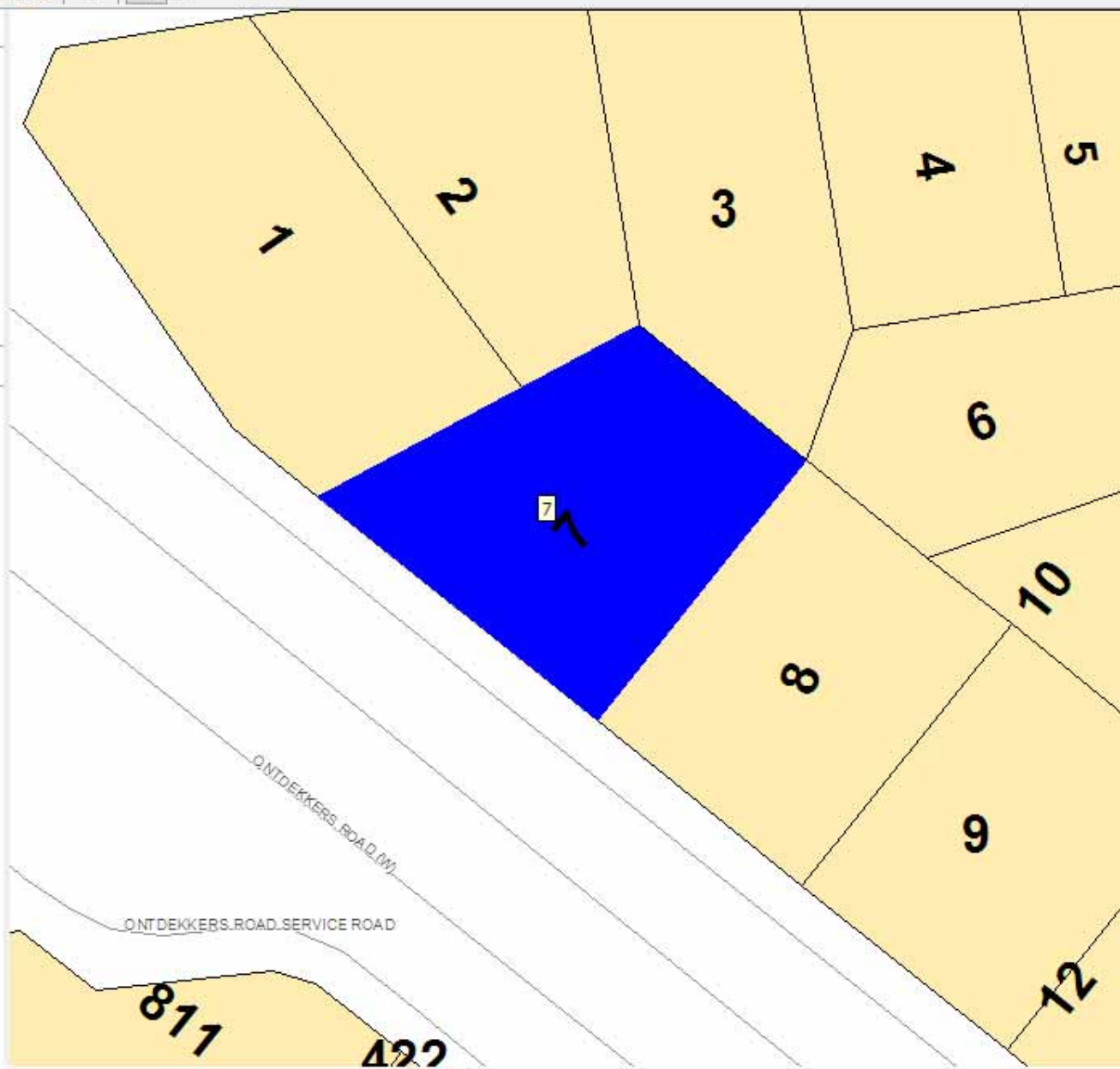
Done Local intranet 100%

- Basic Module
- Sewer
- Water Module
- Hansen Module
- Edit Module
- Redlining Module
- Supervisor Module





- Layers
- ☐ ERROR\_LOG
  - ☐ TOPOGRAPHICAL DATA
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  - ☒ ROADS AND RAILWAYS
  - ☐ SEWER
  - ☒ CATHODIC PROTECTION
  - ☐ STORMWATER



- Basic Module
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- Edit Module
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## Layers

- ☐ ERROR\_LOG
- ☒ JW
- ☐ TOPOGRAPHICAL DATA
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- ☒ ROADS AND RAILWAY
- ☐ SEWER
- ☒ NSD
- ☒ CADASTRAL

## Summary of All Cadastral Objects - Windows Internet Explorer

## Summary of All Cadastral Objects

8-AUG-2008

Object Type	Total Objects
Townships	4851
Parcels	662046
Wards	106
Zoning	0
Densities	0
Land Use	0
Suburbs	653
Streets	21287
Streets	497122
Easements	21528
Easements	0
Block Groups	141
Buildings	0
Information	190
Total	1207924

## File Download

Do you want to open or save this file?



Name: Summary\_of\_All\_Cadastral\_Objects.xls

Type: Microsoft Excel Worksheet, 4.60KB

From: oss\_mapguide2

Open

Save

Cancel



While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. [What's the risk?](#)

## Basic Module

## Newer Module

Reports

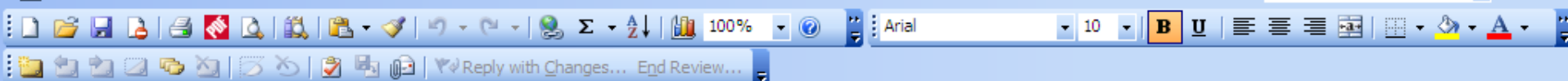
## Water Module

## Ansen Module

## Edit Module

## Modeling Module

## Inspector Module



A12 Suburbs

A

B

C

D

## Summary of All Cadastral Objects

8-AUG-2008

Object Type	Total Objects
Townships	4851
Parcels	662046
Wards	106
Zoning Polygons	0
Density Polygons	
Land Use Polygons	0
Suburbs	653
Street Text	21287
Street Addresses	497122
Easement Lines	21528
Easement Polygons	0
Block Boundaries	141
Buildings	0
Informal Settlements	190
Total in Cadastral	1207924





Layers

- ☐ ERROR\_L
- ☒ JW
- ☐ TOPOGR
- ☐ WATER
- ☐ MISCELL
- ☒ ROADS A
- ☐ SEWER
- ☒ NSD
- ☒ CADASTR

Parcels grouped by Legal/Work Status - Windows Internet Explorer

## Parcels grouped by Legal/Work Status

Legal Status:

- ALL
- Archived
- History (7)
- Marked for Deletion by JW-not displayed
- Proclaimed(6)**
- Proposed (3)
- Registered (1)
- SG Approved(2)

Work Status:

- ALL
- Current
- Multiple (PRCL KEY,LSTATUS)**
- New from CoJ
- Oracle Geometry error (e.g. Dup Point)
- Query - Check Integrity to Current

Select fields to display:

- ☒ Total Parcels
- ☒ Total Area

Select All

Deselect All

Generate Report

Close Window

Basic Module



Sewer Module

Water Module

Hansen Module

Edit Module

Redlining Module

Supervisor Module



Layers

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- ☒ CATHODIC PROTECTION
- ☐ STORMWATER

## Show Info - Windows Internet Explorer

## Parcels Feb08(VW\_PARCEL)

Item	Value
CG X:	-108974.9055558870
CG Y:	-2906133.65606266
JW Comments:	{G=G}{UPD}
JW Area:	261.353668212891
GID:	23119581
CoJ Status:	Registered (R)
CoJ Parcel Type:	Erven
CoJ Legal Area:	261.35316650
JW Legal status:	R
CoJ ObjectID:	13114
JW Parcel Key:	576A901000112000000
Latest Request:	N/A
CoJ SG ID:	T0IQ0576901000011200000000
CoJ Stand Text:	1120
JW Stats Area Code:	576A
Town Code:	576A901
Type Code:	1
JW Work Status:	Q

Close Window

Basic Module



Show Information

Water Module

Hansen Module

Edit Module

Redlining Module

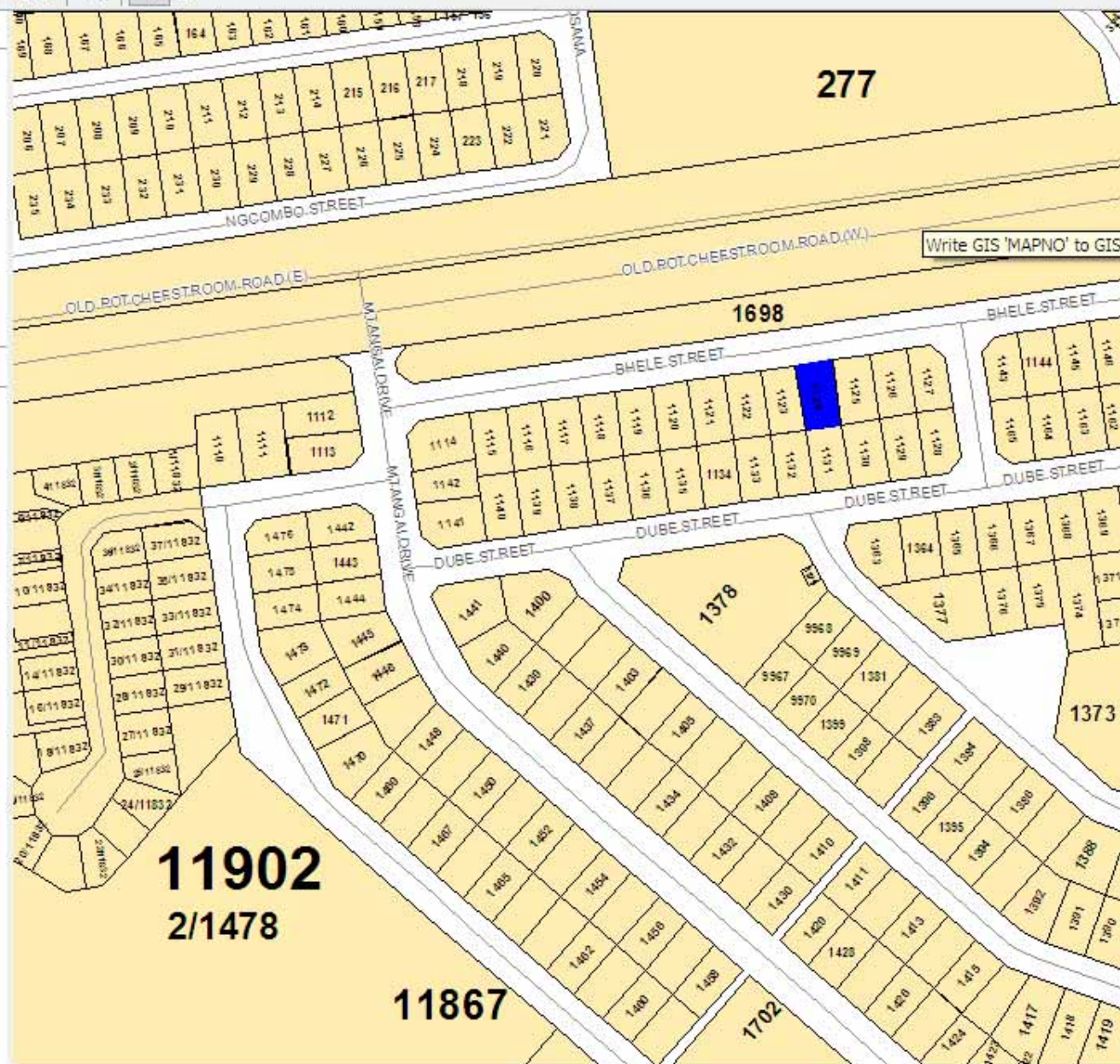
Supervisor Module





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Basic Module

Sewer Module

Water Module

Hansen Module



Edit Module

Write GIS 'MAPNO' to GIS-Hansen Exchange Buffer

Redlining Module

Supervisor Module

X: -108843.101091, Y: -2906109.270138 (Meter)

1 feature selected

1: 2000.00

58.72 x 55.68 (mi)

Powered by

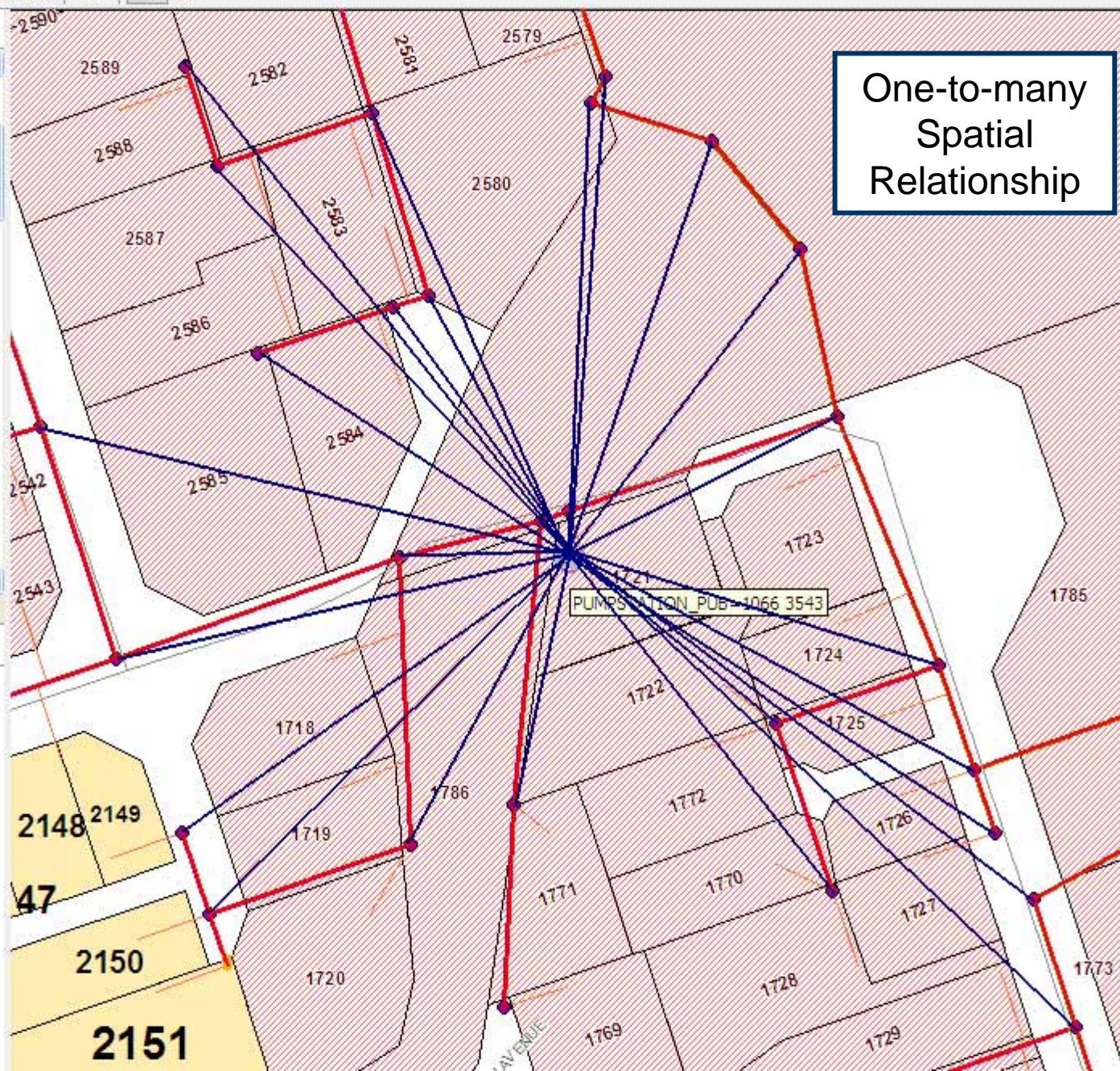
MapGuide





Layers

- ☒ All Gravity Pipes in REC
- ☒ Pump Station
- ☐ Sewer Catchments
- ☐ Notes
- ☐ Dimension Notes
- ☒ Nodes



One-to-many  
Spatial  
Relationship

- Basic Mo
- Sewer M
- Water M
- Hansen M
- Edit Mo
- Redlining M
- Supervisor







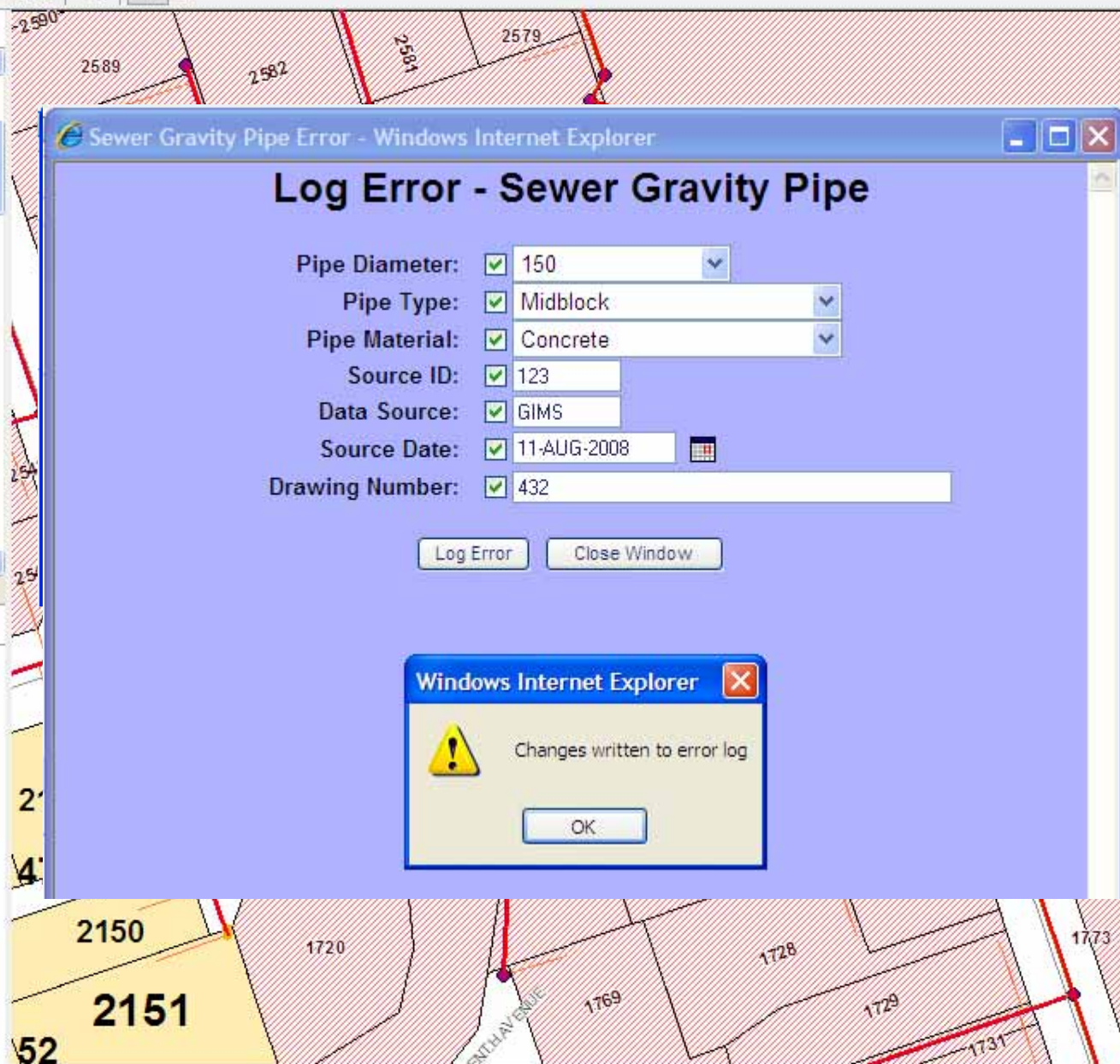
# Redlining

- Logging of Errors – dummy object
  - Technician in field – attends to error
  - Updates error on actual object
  - Post as final error on system
- Proposed lay-outs captured as Redlining
  - As soon as As-Built available capture actual lay-out – move from Redlining to actual
  - Assist in comparing proposed with actual



Layers

- ☒ All Gravity Pipes in REC
- ☒ Pump Station
- ☐ Sewer Catchments
- ☐ Notes
- ☐ Dimension Notes
- ☒ Nodes



Sewer Gravity Pipe Error - Windows Internet Explorer

## Log Error - Sewer Gravity Pipe

Pipe Diameter: ☒ 150  
Pipe Type: ☒ Midblock  
Pipe Material: ☒ Concrete  
Source ID: ☒ 123  
Data Source: ☒ GIMS  
Source Date: ☒ 11-AUG-2008  
Drawing Number: ☒ 432

Log Error

Close Window

Windows Internet Explorer



Changes written to error log

OK

Basic Module

Sewer Module

Water Module

Hansen Module

Edit Module

Redlining Module

Supervisor Log Error



# Update Attributes Data

- Attribute data updated via Mapguide
  - Can update in-house – Intranet
  - Can update external service providers – Internet
- Posted to intermediate table in database
- Supervisor can Quality Assure
- Post to actual table in database as final
- Optimized quality assured





Layers

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**Water Pipe Information - Windows Internet Explorer**

## Water Pipe Information

Hansen "Map No" (GID): 2134512

Pipe ID: 106495

Pipe Diameter: 160

Pipe Type: Local Reticulation

Pipe Material: Poly Vinyl Chloride (PVC)

Start Node: 73173

End Node: 115425

Water Category: Potable Network

Pipe Length: 185.9210

Comments:

Source ID:

Data Source: UNK

Source Date:

Drawing Number:

Basic Module

Sewer Module

Water Module

Hansen Module

Edit Module



Update Water Information

Supervisor Module

X: -89341.425363, Y: -2888606.976070 (Meter)

1 feature selected

1: 800.00

58.72 x 55.68 (mi)

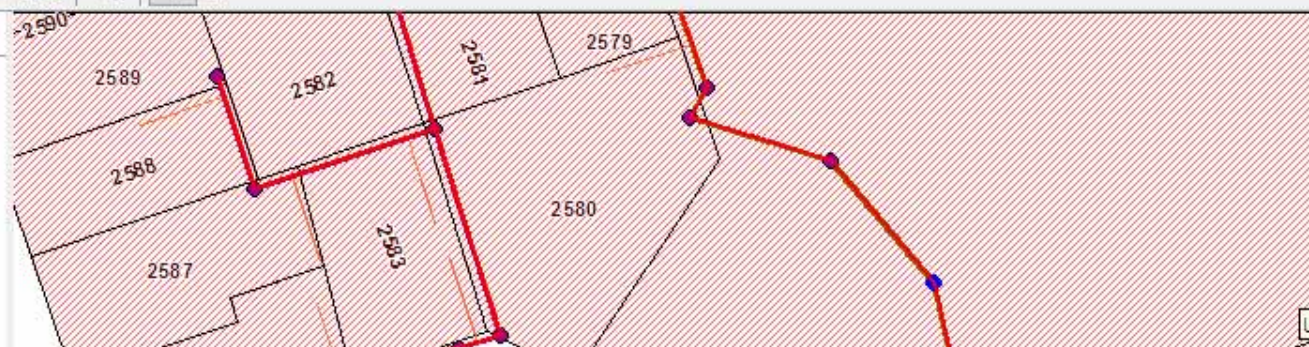
Powered by MapGuide





## Layers

- ☐ ERROR\_LOG
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Basic Module

Sewer Module

Water Module

Hansen Module

Edit Module



Update Sewer Information

Supervisor Module

## Sewer Node Information - Windows Internet Explorer

## Sewer Node Information

Hansen "Map No" (NODE\_REF): 6033543

Node ID: 107687

Node Type: Manhole

Node Depth: 0

Node Ground Level:

Comments:

Data Source: GIMS

Drawing Number:

Update Record

Close Window



X: -89343.965363, Y: -2886600.626070 (Meter)

1 feature selected

1: 800.00

58.72 x 55.68 (mi)

Powered by

MapGuide



# Security Module

- Accessible by Database Administrator – in-house
- Allocate roles to users
  - Username and Password
  - Governs access to functions, levels of applications and data
- Can update and delete users
  - When deleted – flagged as deleted
  - User cannot access system
  - Can draw information on specific user - reports





# Johannesburg Water GIS



Modules  
User Groups  
Users  
Reports  
Return to GIS

## Edit Module Information

### General Information

Module Name:\* Basic Module

Owner:\* OSS

\* indicates a required field

### Applications

Application Name	Procedure Name	Image Name
Show Information	ShowInfo('basicmodule')	Show Info.bmp
Search	Search('basicmodule')	btn_search.gif

### Reports

Report Name	File Name
Summary of All Cadastral Objects	cadastralobjectsselect.aspx
Parcels grouped by Legal/Work Status	parcelstatusselect.aspx
UNICITY Parcel Numbers	parcelnumbersreport.aspx

### Layers

No Layers Defined

[Back to List](#)

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# Johannesburg Water GIS



Modules  
User Groups  
Users  
Reports  
Return to GIS

\* indicates a required field

Users

Logan Munsamy  
1918  
7081  
ADRIAN WYNNE  
AJ Nguse  
ANDRIES NDLOVU  
ANDRIES STRAUSS  
ANTHONY HUMAN  
ANTONIO NHLAPO

## Add New User Group

Link Module to Group - Windows Internet Explorer

Module Information

Select Module:\* Hansen Module

User Group Rights:\*  
☒ Read  
☒ Write  
☒ Delete

\* indicates a required field

Update User Group Form Close

Local intranet 100%

Users Linked to Group:

Modules

Add New Module

Save User Group

Back to List

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# Johannesburg Water GIS



Modules  
User Groups  
Users  
Reports  
Return to GIS

## Edit User Information

### General Information

Full Name:\* Administrator  
User Name:\* ADMIN  
User Group:\* User Group 1  
Administrator: ☒

SAP No: 11111  
Password:\* ADMIN  
Comments: OSS Administrator user  
Account Locked: ☐

\* indicates a required field

### Module Information

Module Name	Read	Write	Delete
<input checked="" type="checkbox"/> Basic Module	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Sewer Module	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Water Module	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Hansen Module	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Edit Module	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Redlining Module	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Supervisor Module	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

[Save User](#)[Clear User Log](#)[Back to List](#)

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Modules

User Groups

Users

Reports

Return to GIS

## User Access Report - Windows Internet Explorer

## User Access Report

15-AUG-2008

No of Logins	Username
1	PMATHIBENG
1	EMOTSIRI
1	PRALEKGOKGO
1	ICOOPER
1	SSHIBA
1	JBOLOGO
1	RTHOMPSON
1	RMYEZA
1	JNGWENYA
1	WJOUBERT
1	LMUGIVHISA
1	MSEBOLA
1	TCHIDI
1	AMASHALABA
1	LRAPODICE
1	ISİYAPHI
1	CDIPHOLLO
1	AMPHEKGOANE
1	DKROATS
1	BMATCHEKE
1	PSELEPE
1	LMTHIMKHULU
1	MVANVUUREN
1	WMASINGA
1	BKHAREJANE
2	LWOOD
2	MMARAKA
2	VMOODLEY
2	SDUBAZANE
2	UAGORS

Done

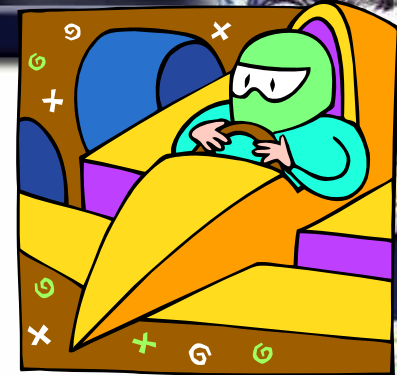
Local intranet

100%

100%

# Issues

- Speed
  - Although not constant problem
  - Compared to Mapguide 6.5 – slower
  - Otherwise not really an issue
- New territory
  - Trial and error – learning curve
  - Very little to refer back to
  - Active Open Source community
    - Assist effectively if possible





# Issues (Continued)

- Installation
  - On Windows 2003 – straight forward
  - On Windows XP – more challenging
    - Possibly because of different IIS set-up



# Conclusion

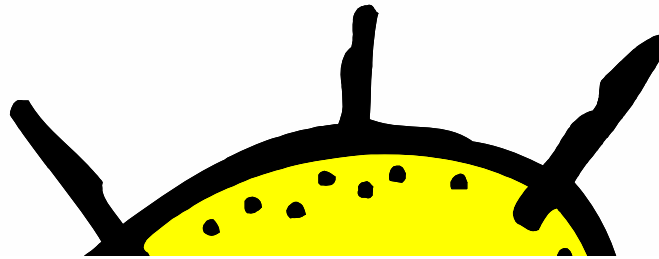
- Present Release
  - 2.0.1
  - Still very young
  - Room for improvement and maturation
  - Very excited
- Very Ambitious project in terms of Open Source, in the GIS community, but it was well worthwhile



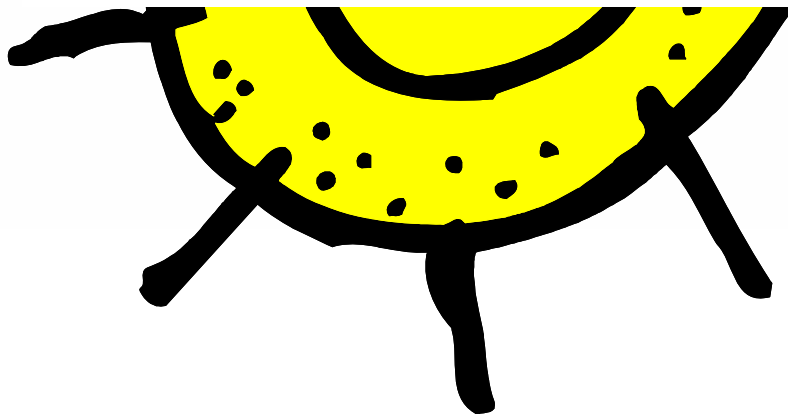


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Thank you!!







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# Questions??