LOXODROME – who we are

Independent consultancy
GIS and Data Management experts
Insight through INTEGRATION
Leverage existing client technology
Utilise Open Source technology
Extensive E&P experience
What do we mean by business insight?

A farm-in opportunity has come in for Licence XYZ, offshore New Zealand. We like the look of it and we need to respond ASAP

What data do we have here?

What interpretations/ studies/ analyses have we done here before?

What other companies are operating in this basin, what do we think they are doing?
Unlocking Corporate Knowledge

“The next wave of competitive advantage will be about using connections to identify and build knowledge”

VISUALISATION / DATA DISCOVERY LAYER

INTEGRATION LAYER

Wells  Seismic  Licences/Assets  Production  Documents  Geospatial  External web services

Graph Database Layer

Spatial Index
What is a Graph Database?

"a database that uses graph structures for semantic queries with nodes, edges and properties to represent and store data"

Source: Prof. Carlos Eduardo Santos Pires, “Sistemas NoSQL”

**Simple, fast retrieval**

**Complex, hierarchical structures**
Why a Graph Database

Model the occasionally complex relationships between the data
Easy to communicate and refine the graph model as requirements change
Works with the data rather than dictating

Flexible
Open Source (Community Edition of Neo4j) – cost effective
Simple query language to learn (Cypher)

( )-[Consist_Of]->( )
Survey

2D Lines

SEGY files from 2D Line

Processing Details
Use Licence Number to drive queries into other systems
Safe FME – Update Geodatabase and SharePoint

Synchronize key attributes between your GIS and document management system.

Bring geospatial data direct into SharePoint.

https://loxodrome.co.uk/posts/fun_with_fme.html
<table>
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<tr>
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<th>BLOCKREF</th>
<th>Location</th>
<th>SubType</th>
<th>Shape</th>
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<td>Extant</td>
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</tbody>
</table>

Updated [Geo-enabled] SharePoint List

- Shape attribute must contain data in ESRI JSON format
- Automatically update key lists
- Could use event trigger to update Term Store attributes

Existing List Attribute

Updated attributes from external source
ArcGIS Maps for SharePoint – *Because nobody likes lists!*

- SharePoint Web Part
- Add data from SharePoint or ArcGIS
- Also works for *geoenabled* Document Libraries
- Publish the map/layer back to AGOL/Portal
- Map view can be configured and then published so all users get the same view.

Pop-ups have links to documents
New Zealand Licence Map

Add data from SharePoint

Enter site URL
https://toxdrome.sites/Subsurface

Choose a sub site (Optional)
SubsurfacePortal https://toxdrome.sites

- New Zealand Petroleum Permits
  - All Items
  - Taranaki Basin Licences
  - Licence Obligations
  - Licence Information Summary
  - Licence Evaluation
- Well Documents
  - All Documents

1 item selected
Add

Geoenabled SharePoint content
1. Data arrives as a zip file and is dropped into a specific directory
2. PowerShell script with a FileSystemWatcher launches the FME when the file is created
3. FME opens the zip file, transforms/loads the data to Enterprise Geodatabase (ArcSDE)
4. Updated spatial data in desktop and web maps
5. FME updates SharePoint list with details of successful load and sends notifications to DM/Users

External Web Services

Update Enterprise Geodatabase

Data available to end users

PowerShell filesystem watcher

FME Workbench

Update SharePoint List

Email notification to users

Push notification
In Conclusion

Integrate – Integrate – Integrate
• Join up the systems you already have
• Expand the user base of tools such as FME beyond the GIS users, and empower users to learn how to use them

Don’t have one database, have them all
• Use the most appropriate database for the type of data – don’t shoe-horn everything into one

Embrace Continuous Development = Continuous Improvement
• Don’t attempt to solve all the problems in one go
• Allow for trial and error and experimentation (no “fear of failure”)

Technology is good – talking is better
• Engage with Information/Document Management, IT, Data Managers
• Understand (and pre-empt) the needs of the business
Bringing GIS to the Masses

31 October 2018
ESRI European Petroleum User Group
Loxodrome Ltd