DEVEX 2018
Big and Unstructured Data: What is it and How to use it?

Schlumberger

Vicky Stanley – Data, Cloud & Analytics Business Owner EUROPE

DEVEX 2018 – 8th & 9th May, AECC, Aberdeen

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Intelligent Repository

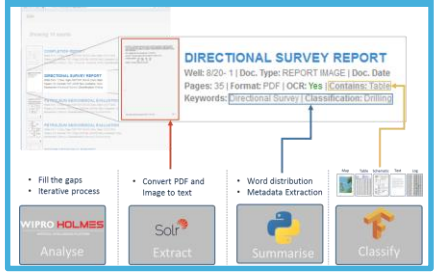
Extracting Value

Schlumberger-Private

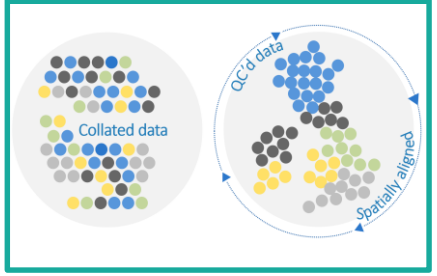
CDA Data Challenge

Workflow and outputs

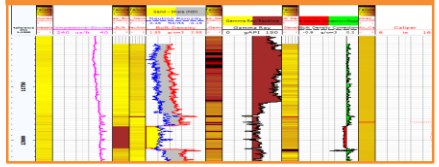
Searchable keyword database



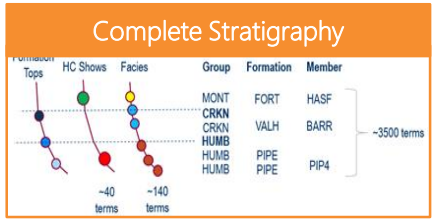
Corrected and spatially aligned



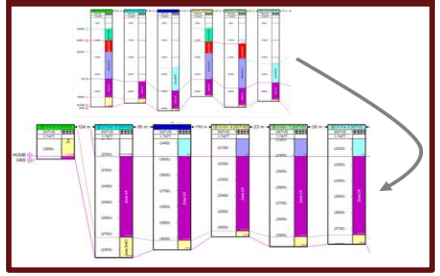
Composited LQC dataset



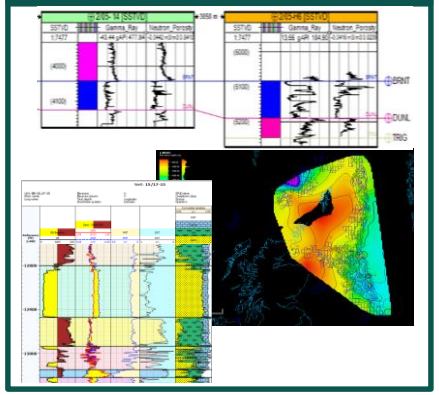
Complete Stratigraphy



Auto-interpreted logs



Optimised consumption



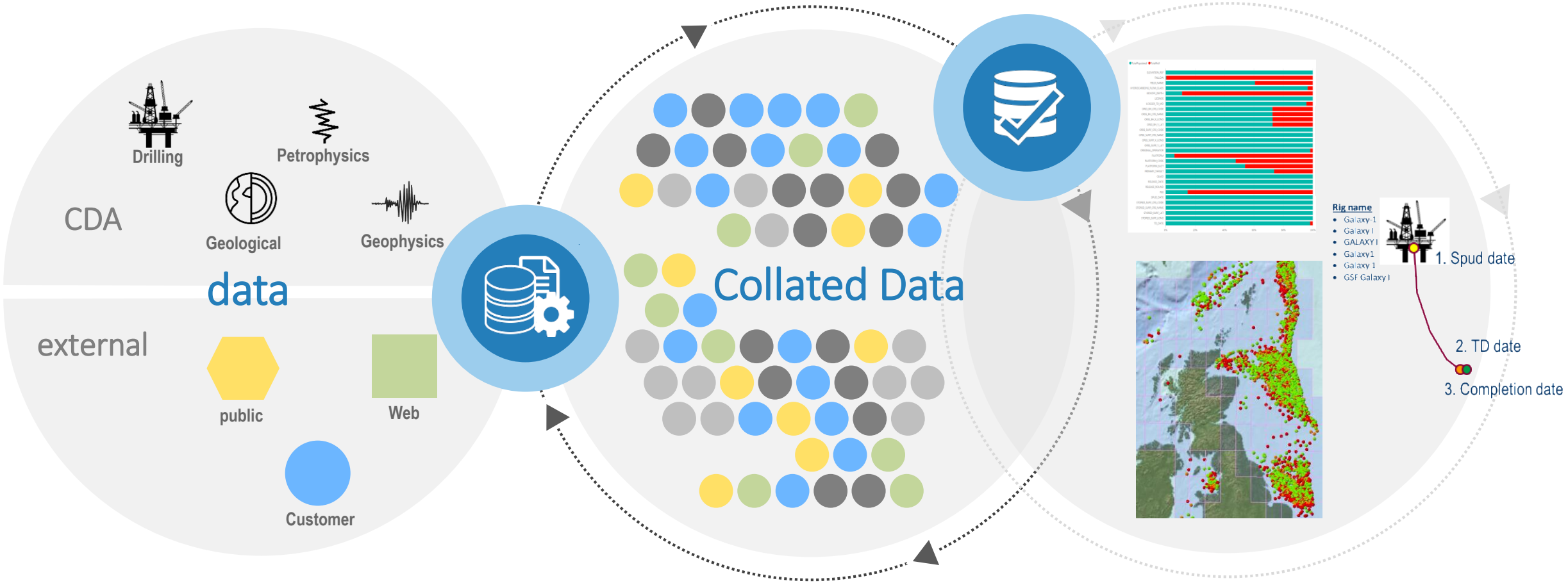
Collect	Harmonize	Optimise	Interpret	Consume
• Extract meaningful information	• Spatially related	• Composited Well Log dataset	• All geological data mapped in TVD	• Optimised logs in spatial, and stratigraphic context
• Group results in logical manner	• Co-relate all data	• True depth, true deviation, true location	• Understand how the local correlate. Fill in the gaps of what happens in between	• Detailed knowledge of the reservoir characteristics at and between the wells
• Identify data gaps	• Harmonised dictionaries	• Data in stratigraphic context	• Apply machine learning to auto-interpret log sets	• Fine scale reservoir variations
• Presented as a searchable index	• Parsed, QC'ed & corrected	• Cross check results against extracted information	• Basic interpretations completed	• Automated field level studies
• Improved classification and contextual information	• Apply Machine Learning			• Generate "missing" data
	• Write back to original source			

CDA Source data

DLIS LIS LAS DOC ASCII XLS PDF JPG TIFF

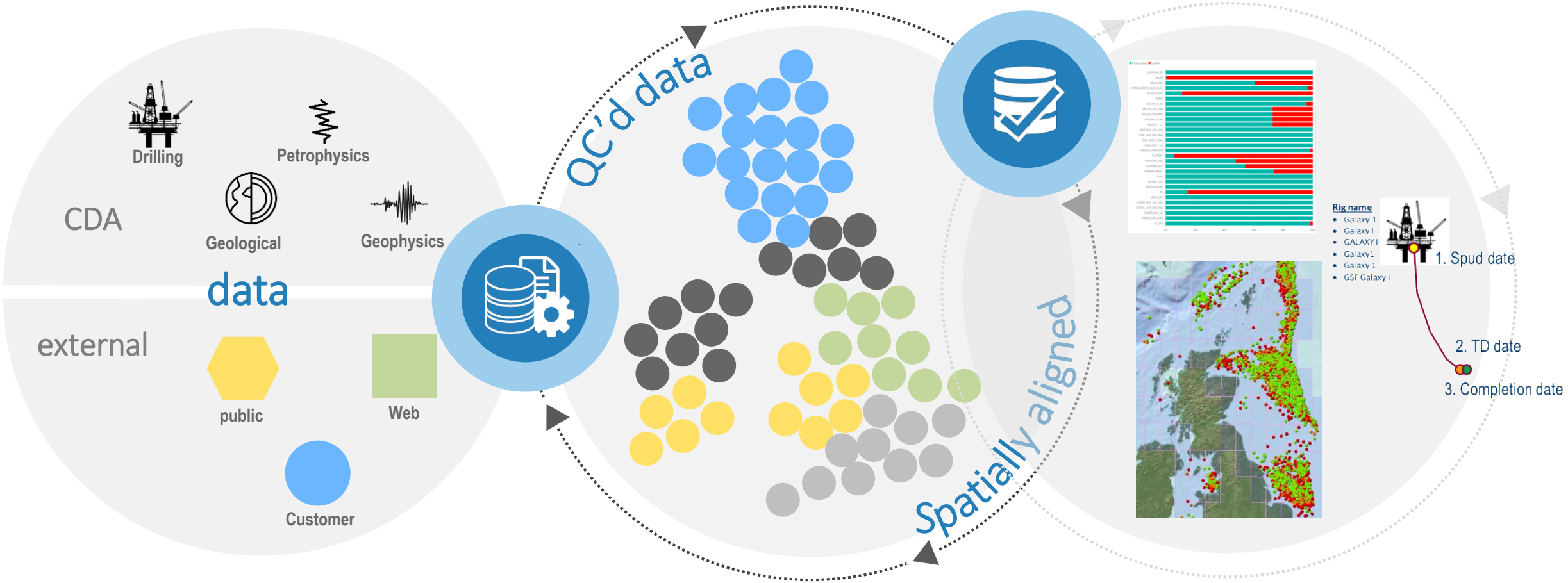
Data to decisions

Collect & Harmonise



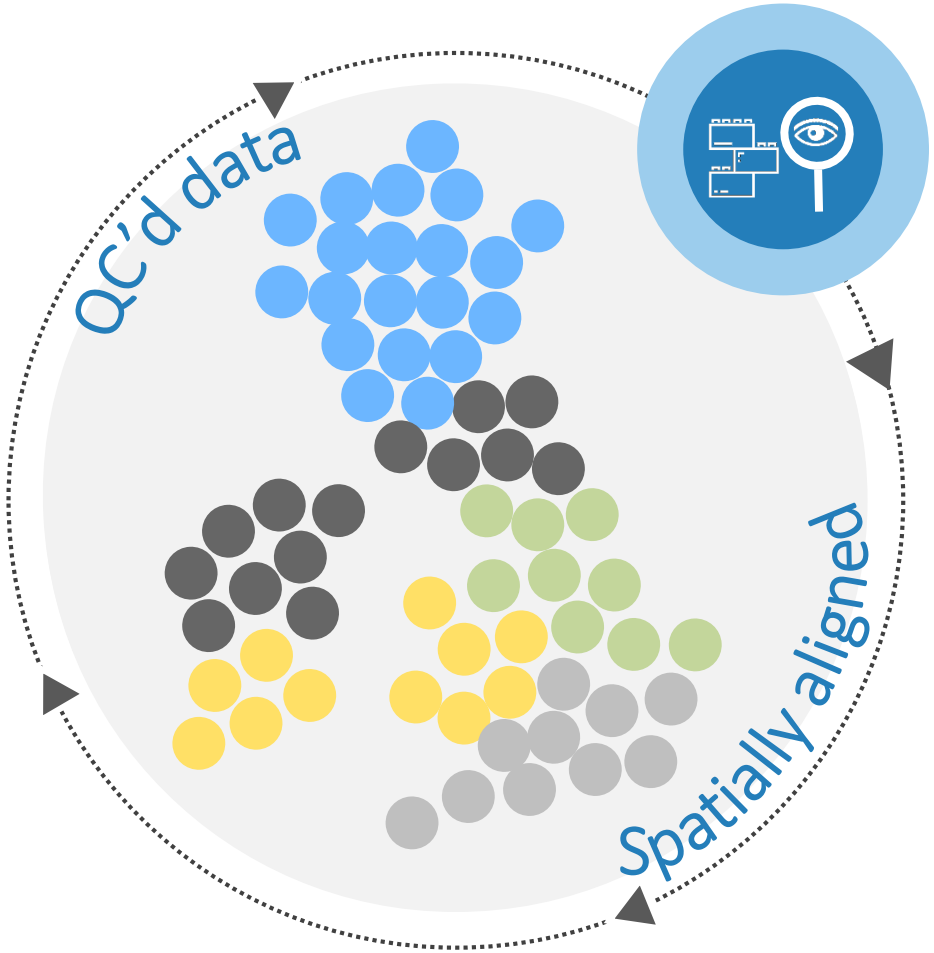
Data to decisions

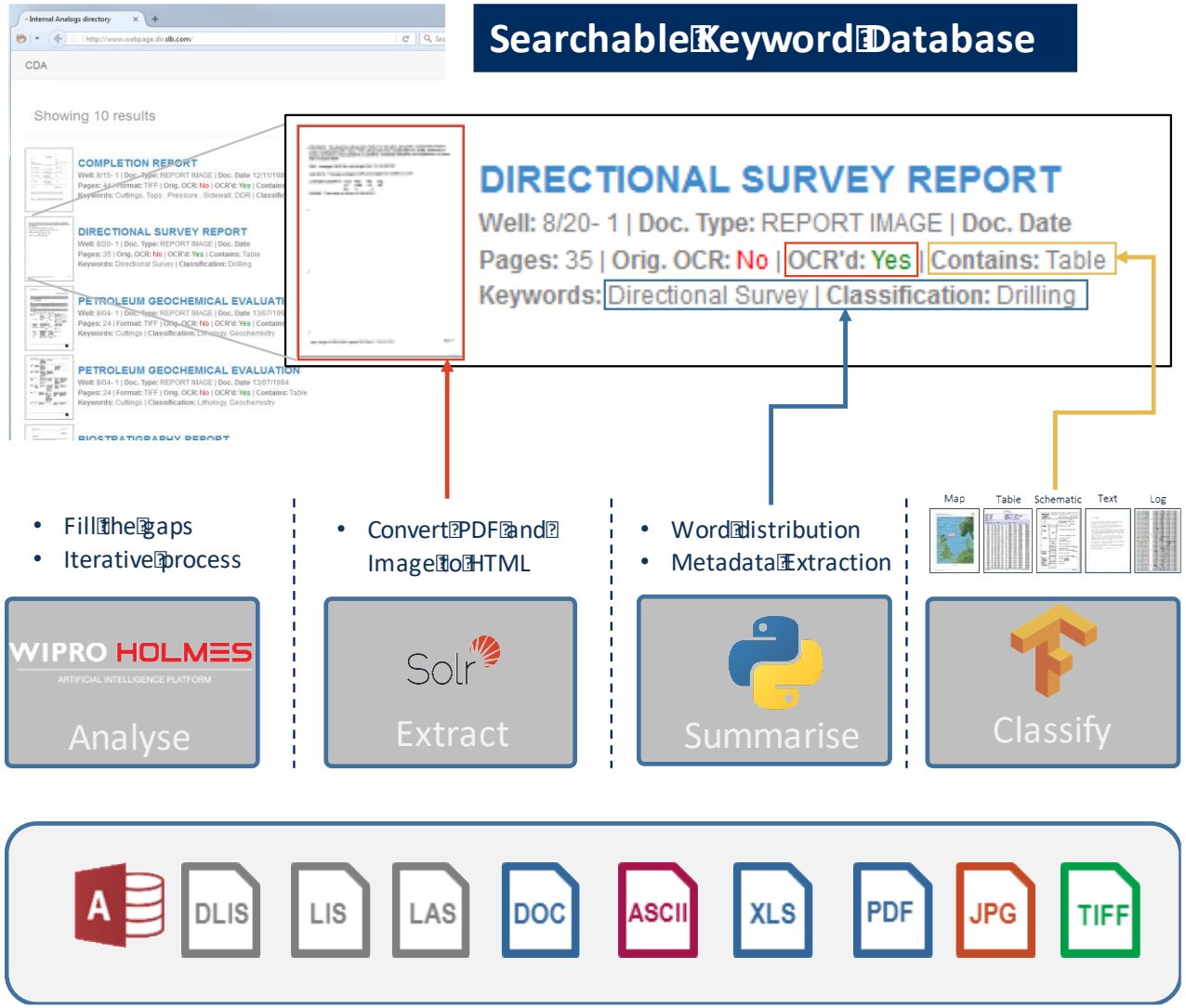
Collect & Harmonise



Data to decisions

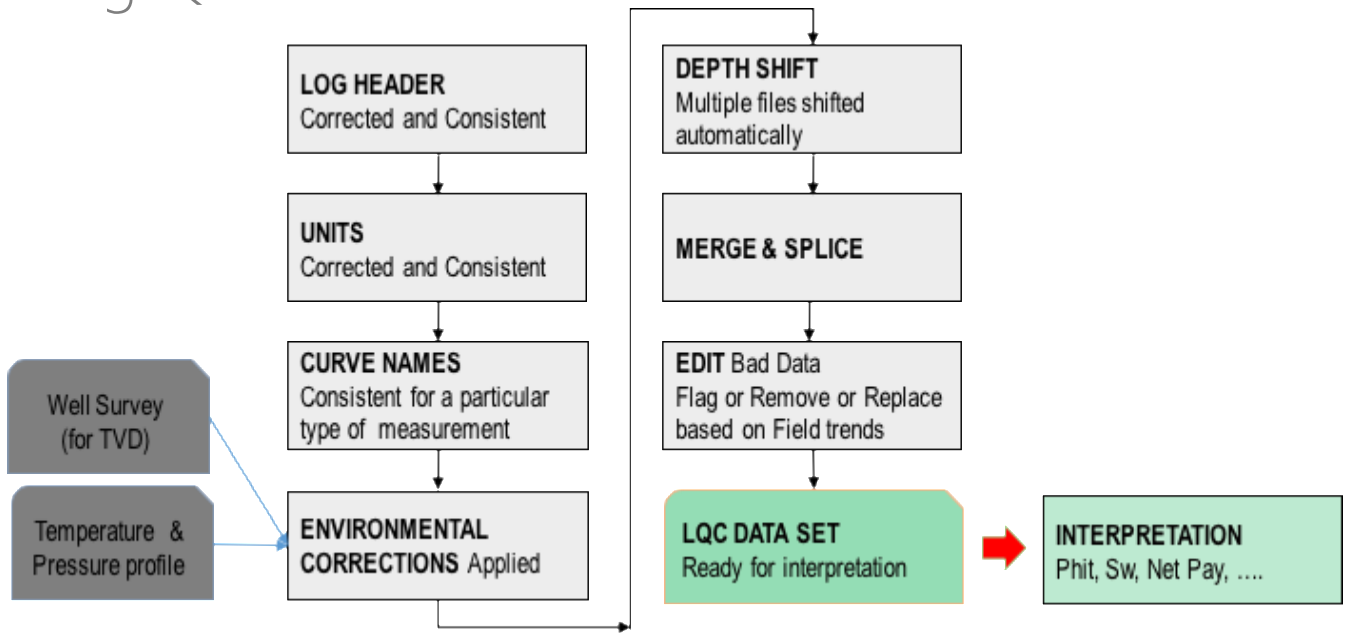
Unlocking Value

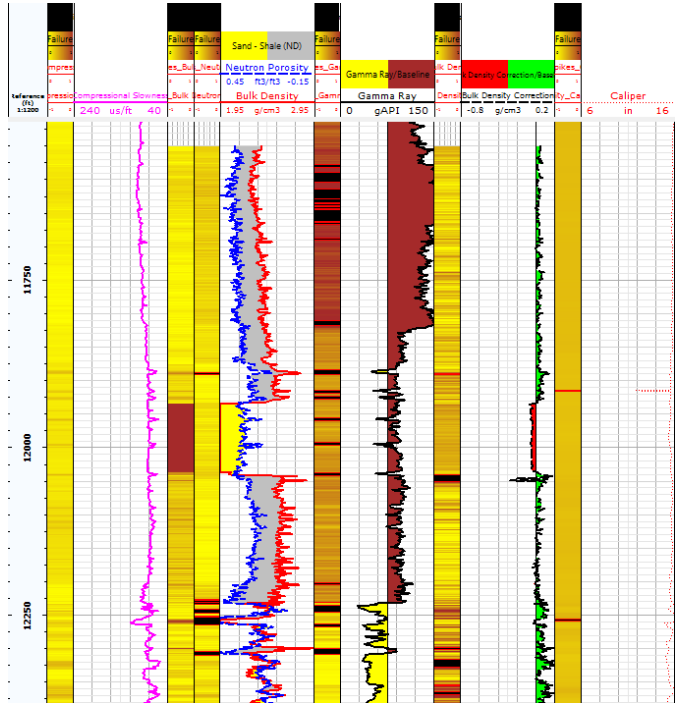




Automation

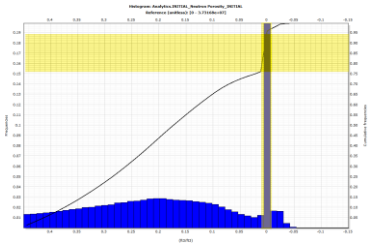
Log QC Workflow





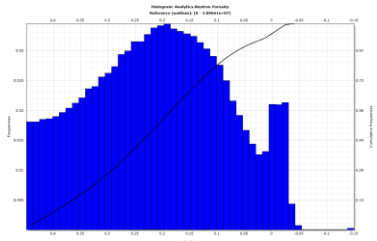
Harmonised and optimised LQC Dataset
Auto-correction applied for >2000 Wells

BEFORE
30% of the WL data had units that were either statistically inconsistent or unrecognized



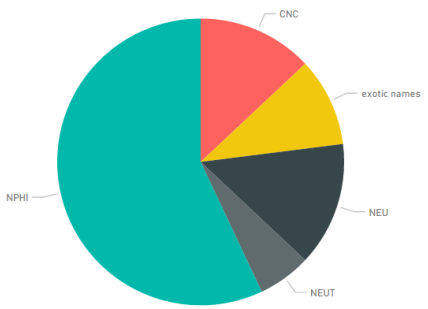
Distribution of all the WL Neutron Porosity values: Unexpected spike between 0 and 0.01 corresponds to data where the unit was mislabeled as %

AFTER
Only 1.5% of the WL data required manual intervention after the automated process was run



Neutron Porosity distribution for WL data after applying machine-learning based unit correction. Spike at 0.03% corresponds to Halite (Salt) formations

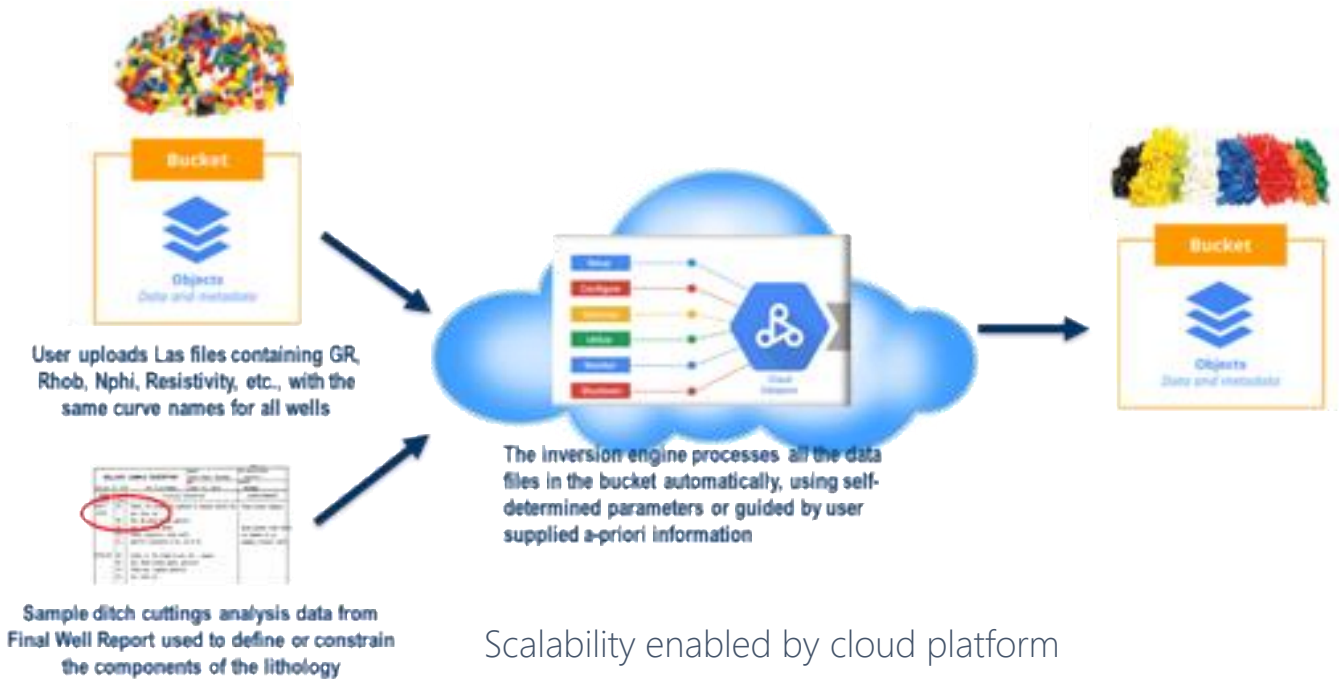
Neutron Porosity Units



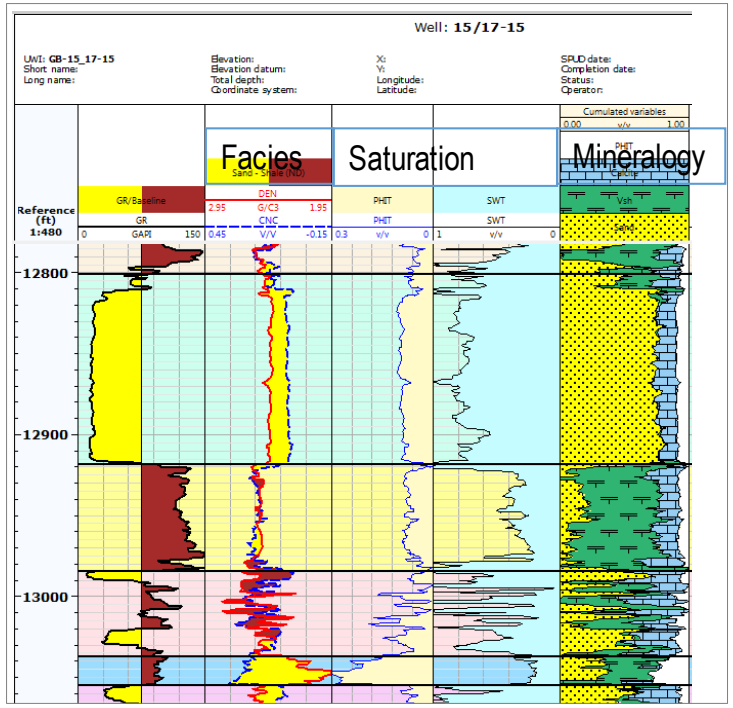
Neutron Porosity Curve Names

Automation

Petrophysical Analysis



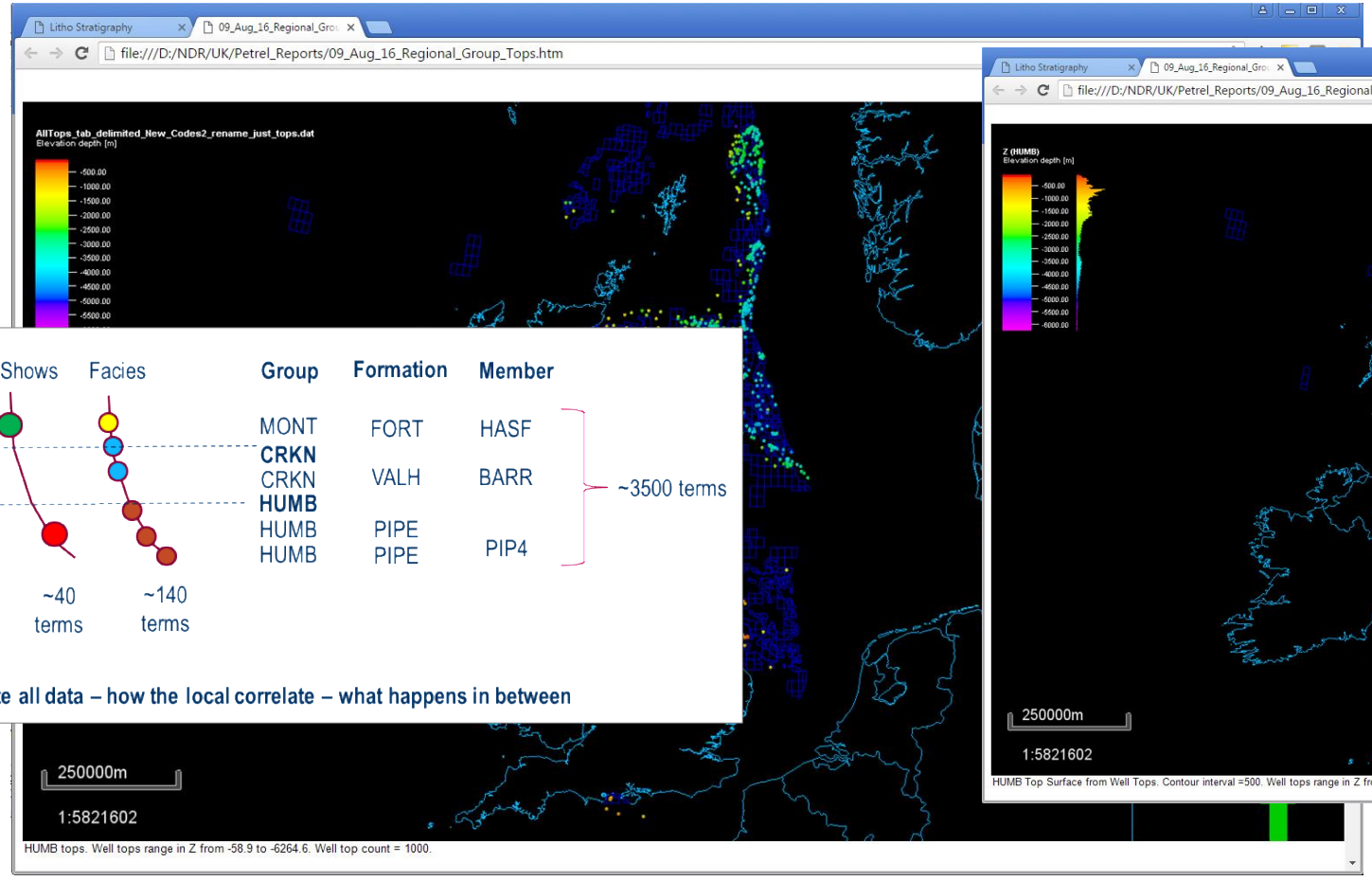
Scalability enabled by cloud platform

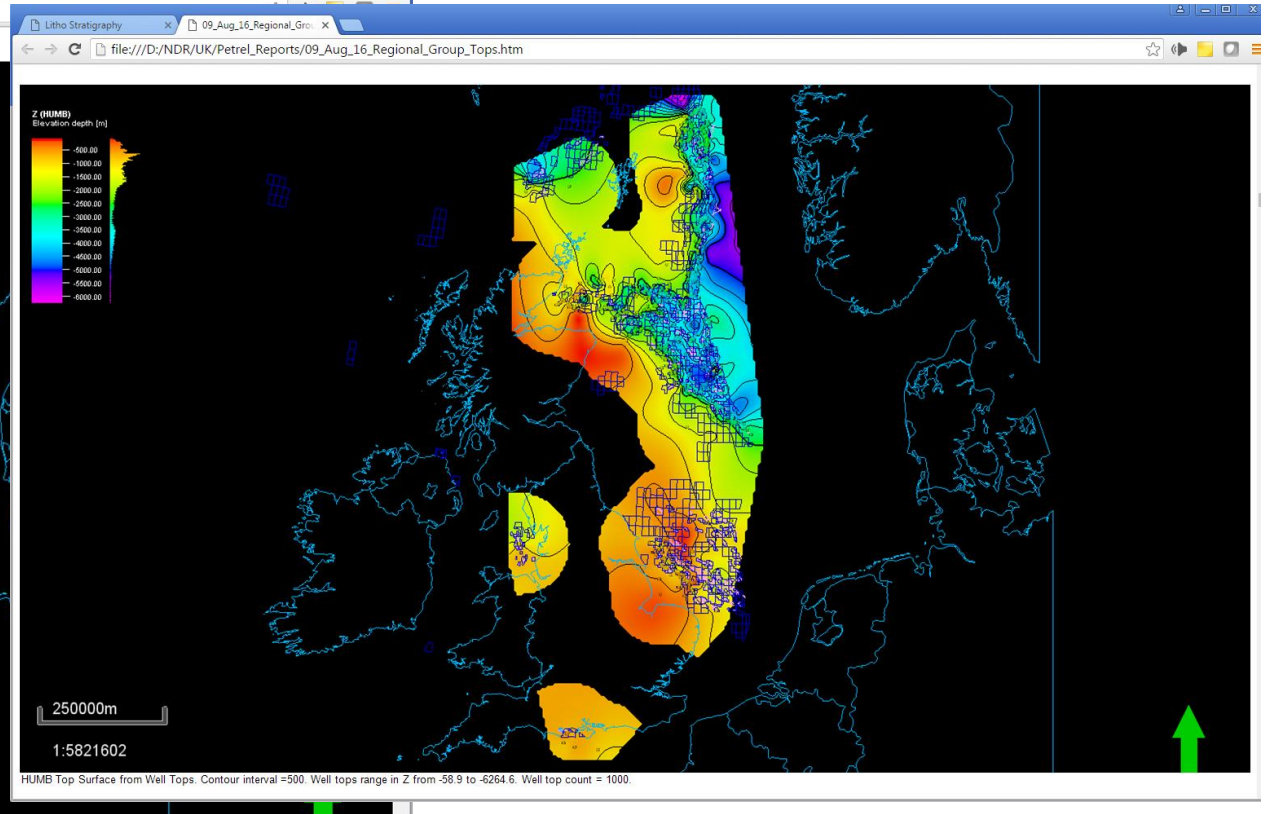


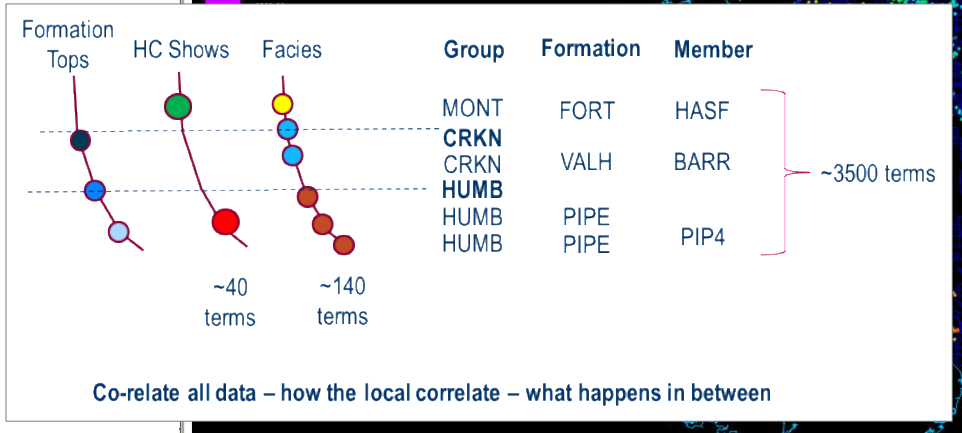
Detailed Petrophysical analysis – 46 wells across Piper field

Understanding

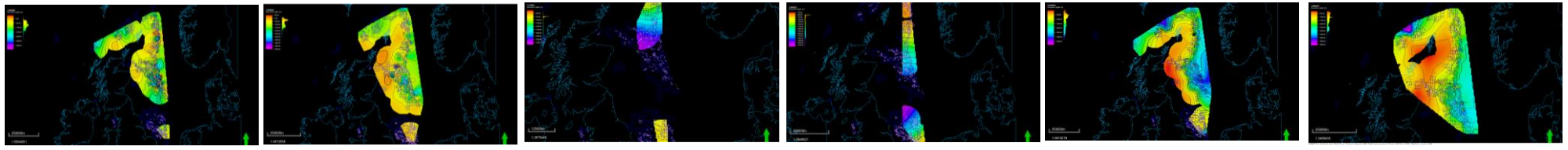
Automated mapping across the UKCS





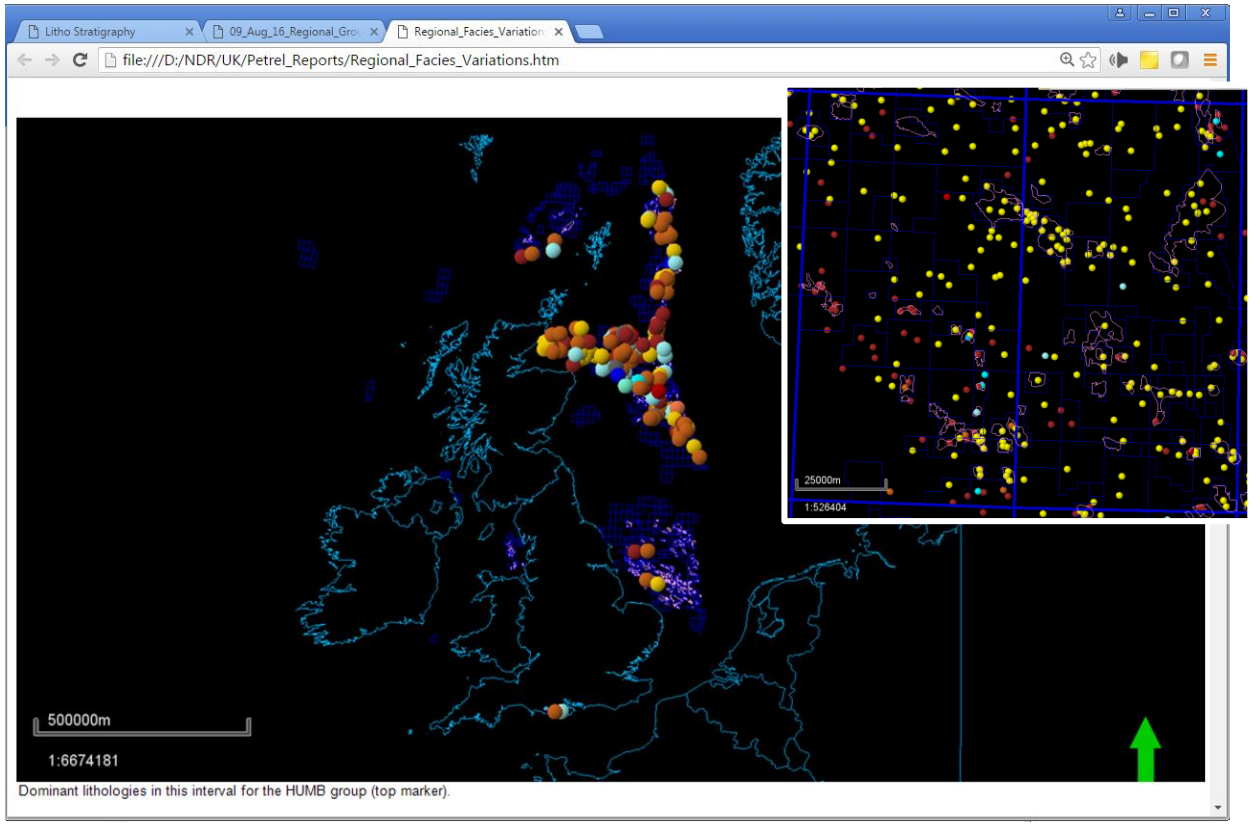


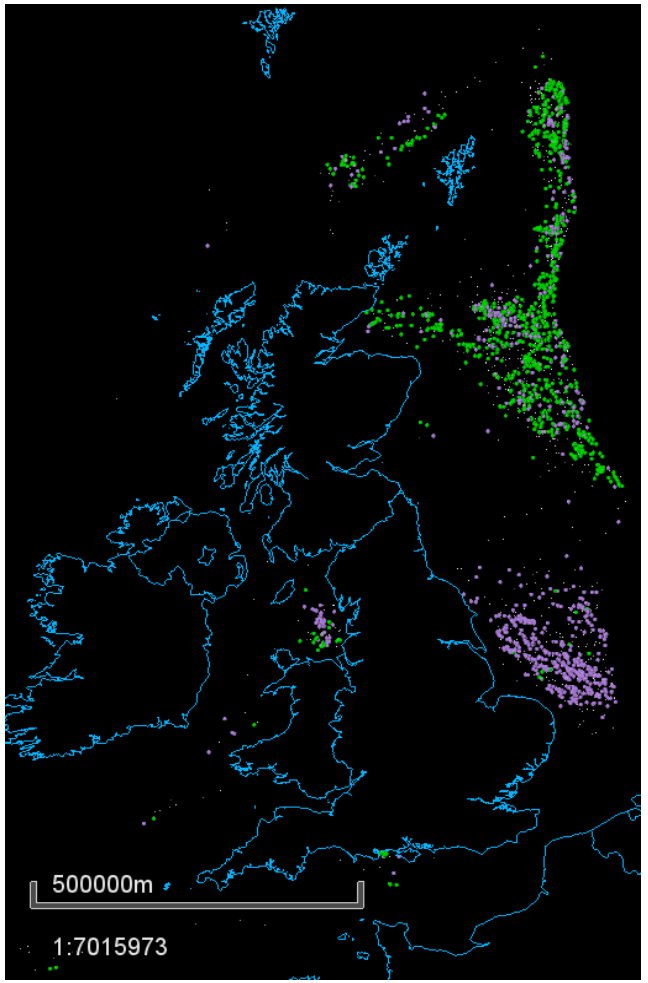
Youngest units

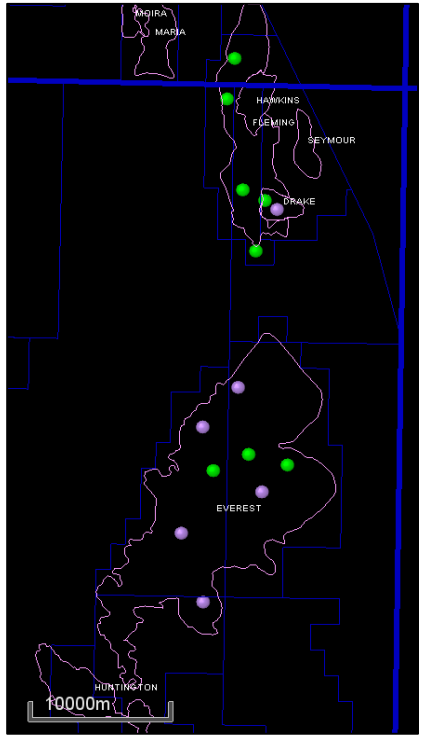


Understanding

Hydrocarbon System and Business Opportunities







Filtered by group and block

CDA Data Challenge

Workflow and Outputs

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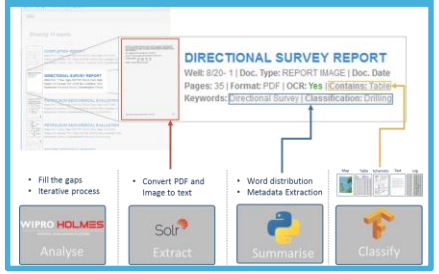

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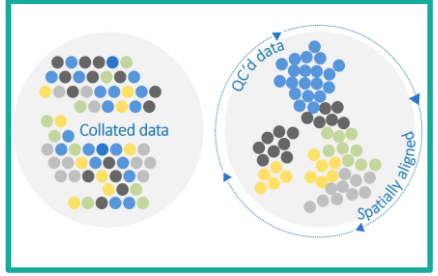

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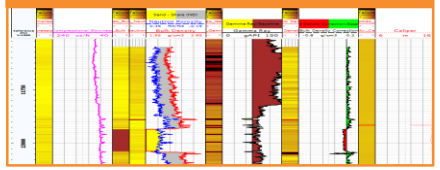

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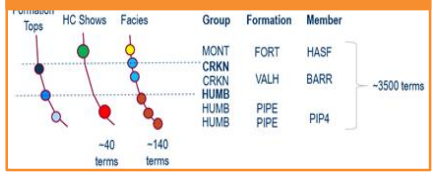

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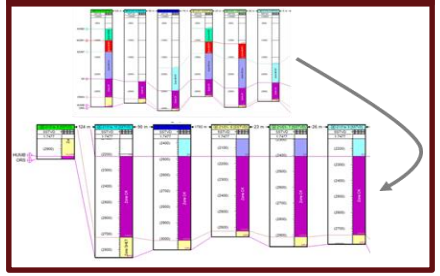
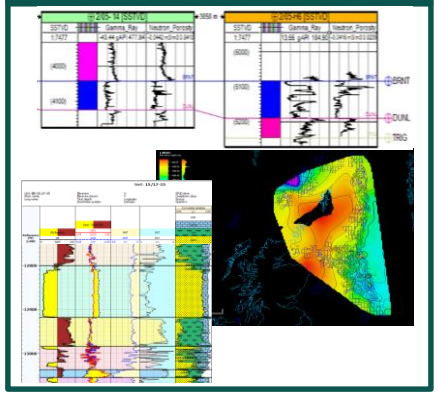


Optimised consumption



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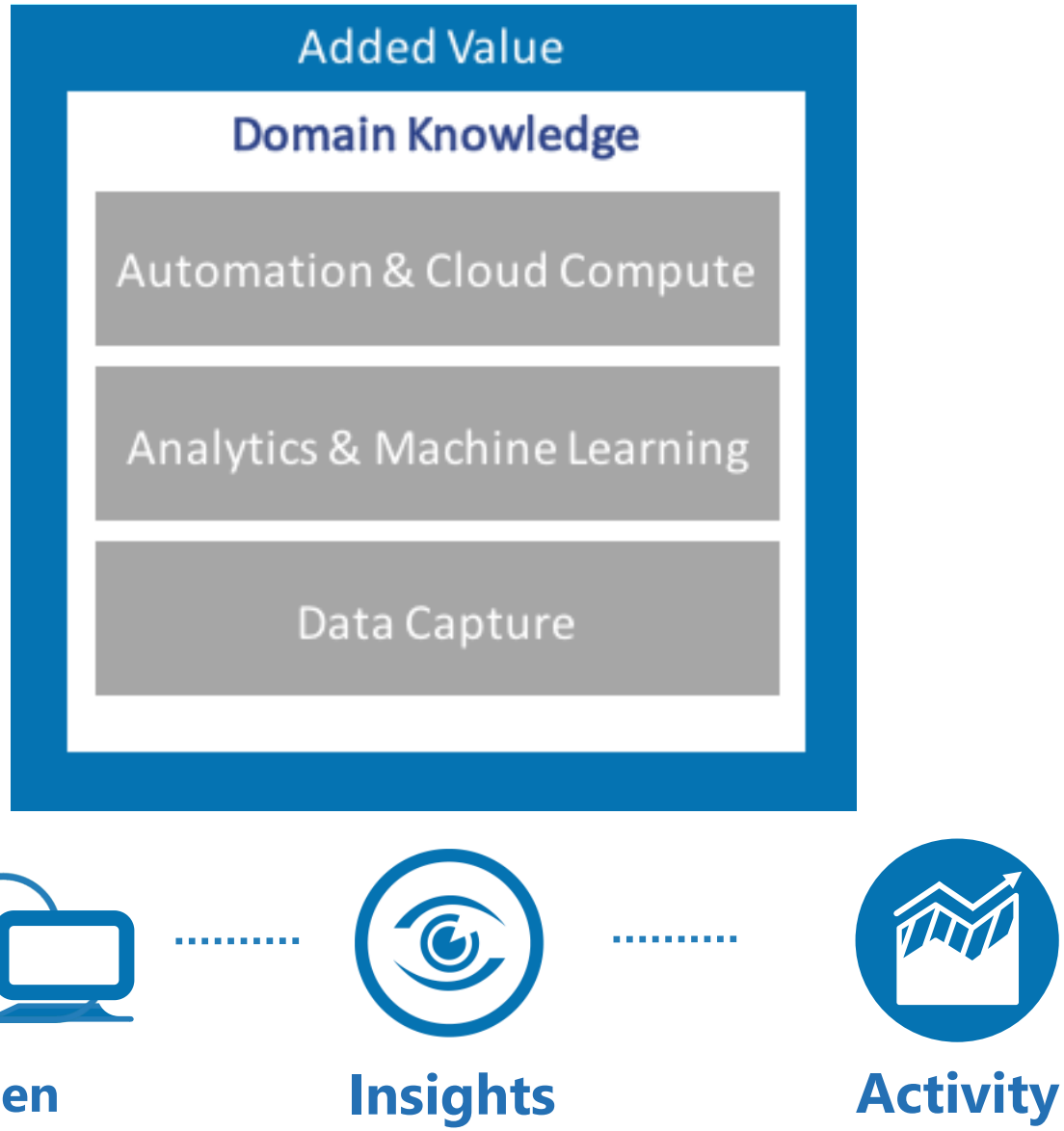
Future Direction



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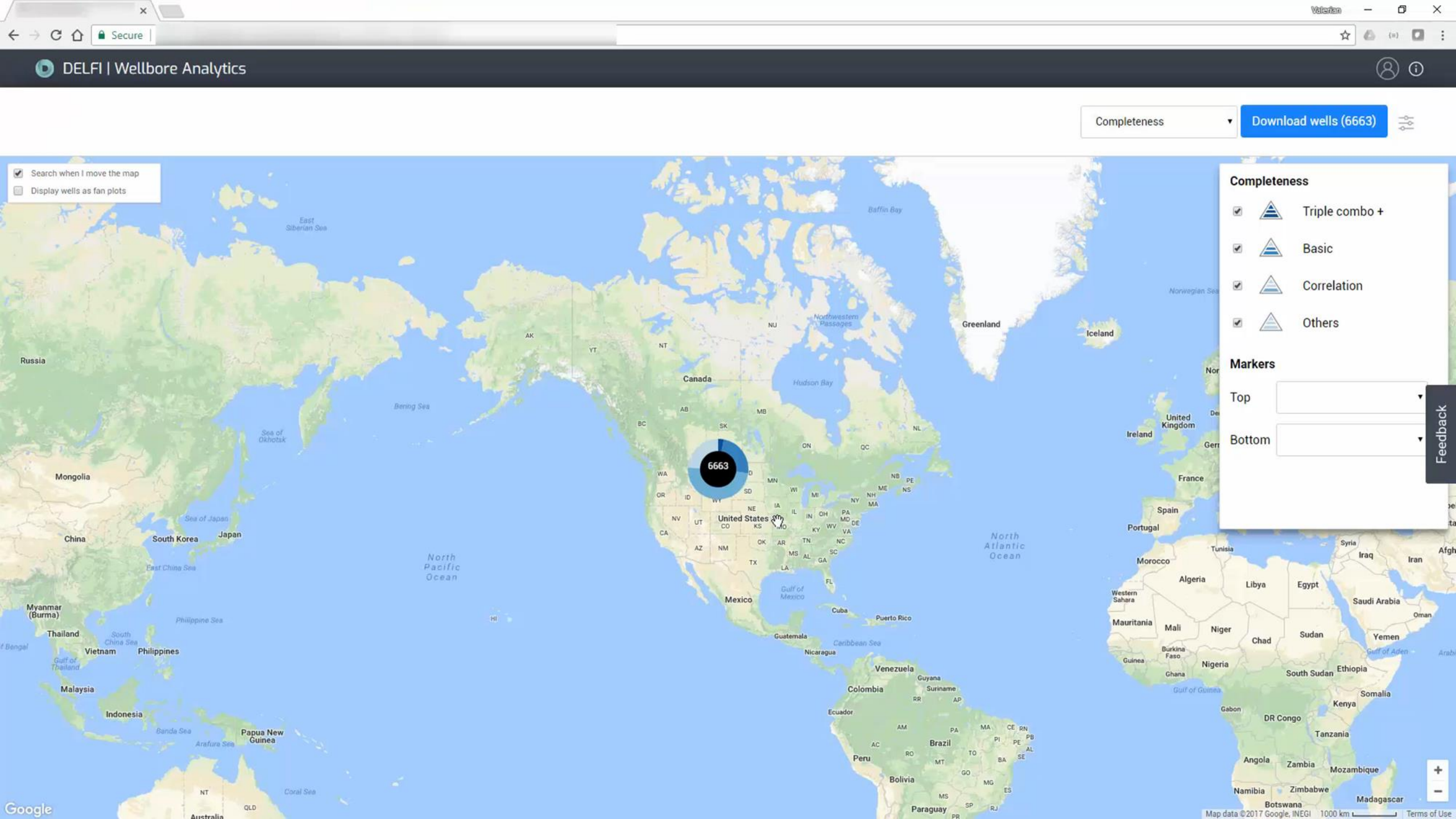

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Others
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Iceland
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Portugal
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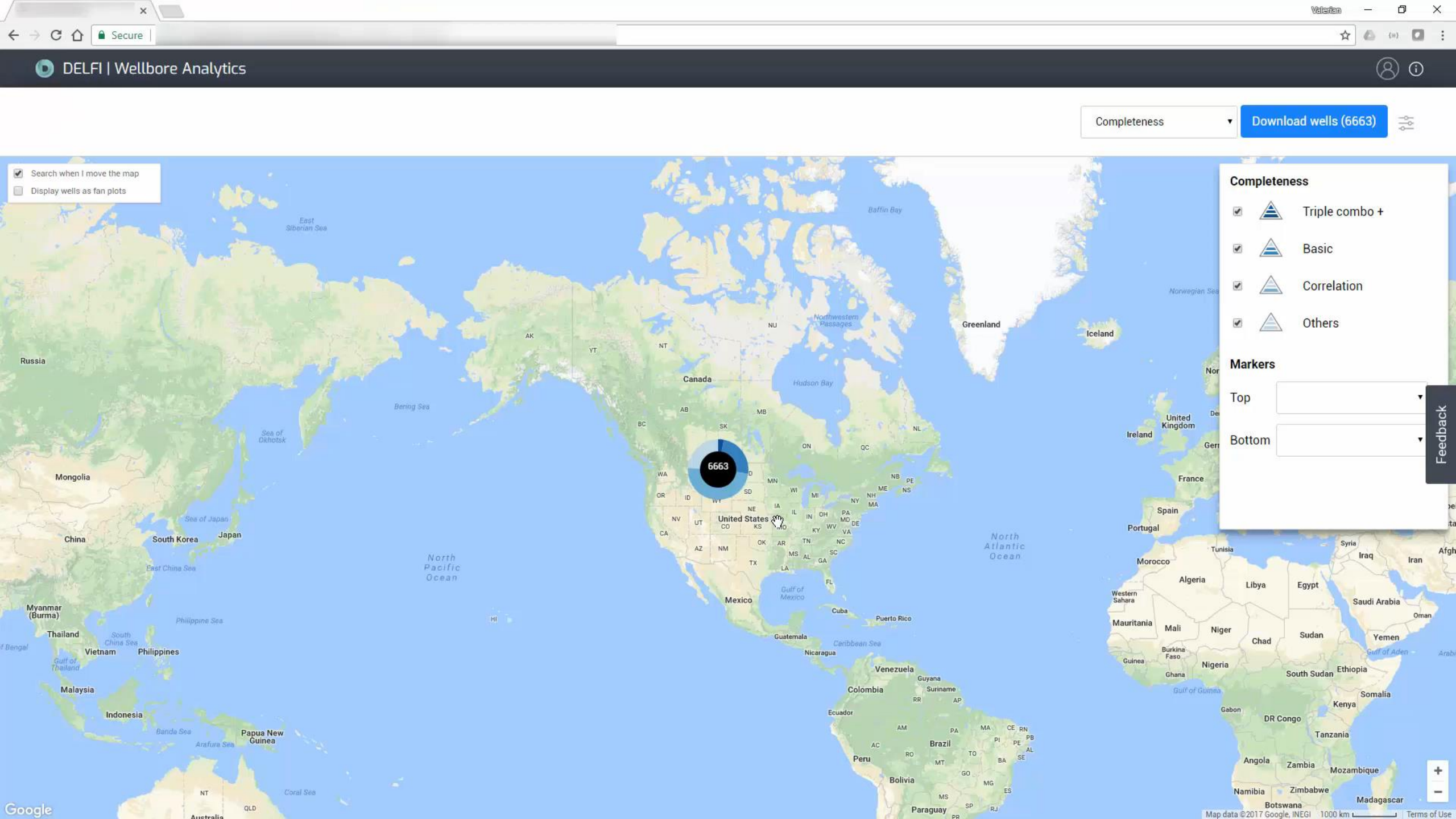
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Nigeria
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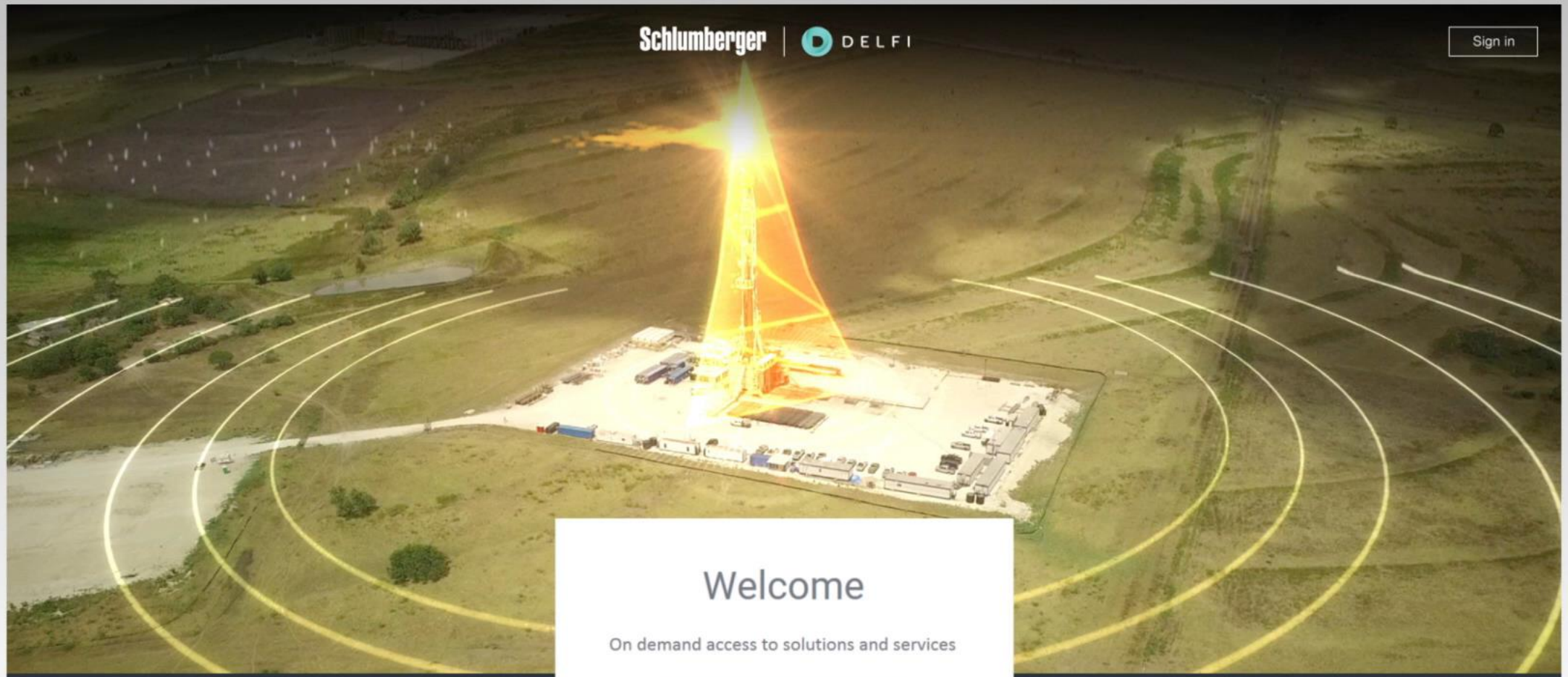
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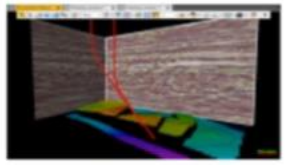

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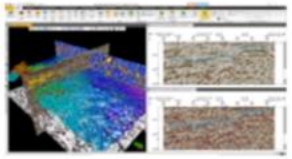

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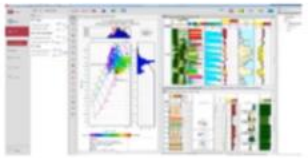


Taupul.tlp

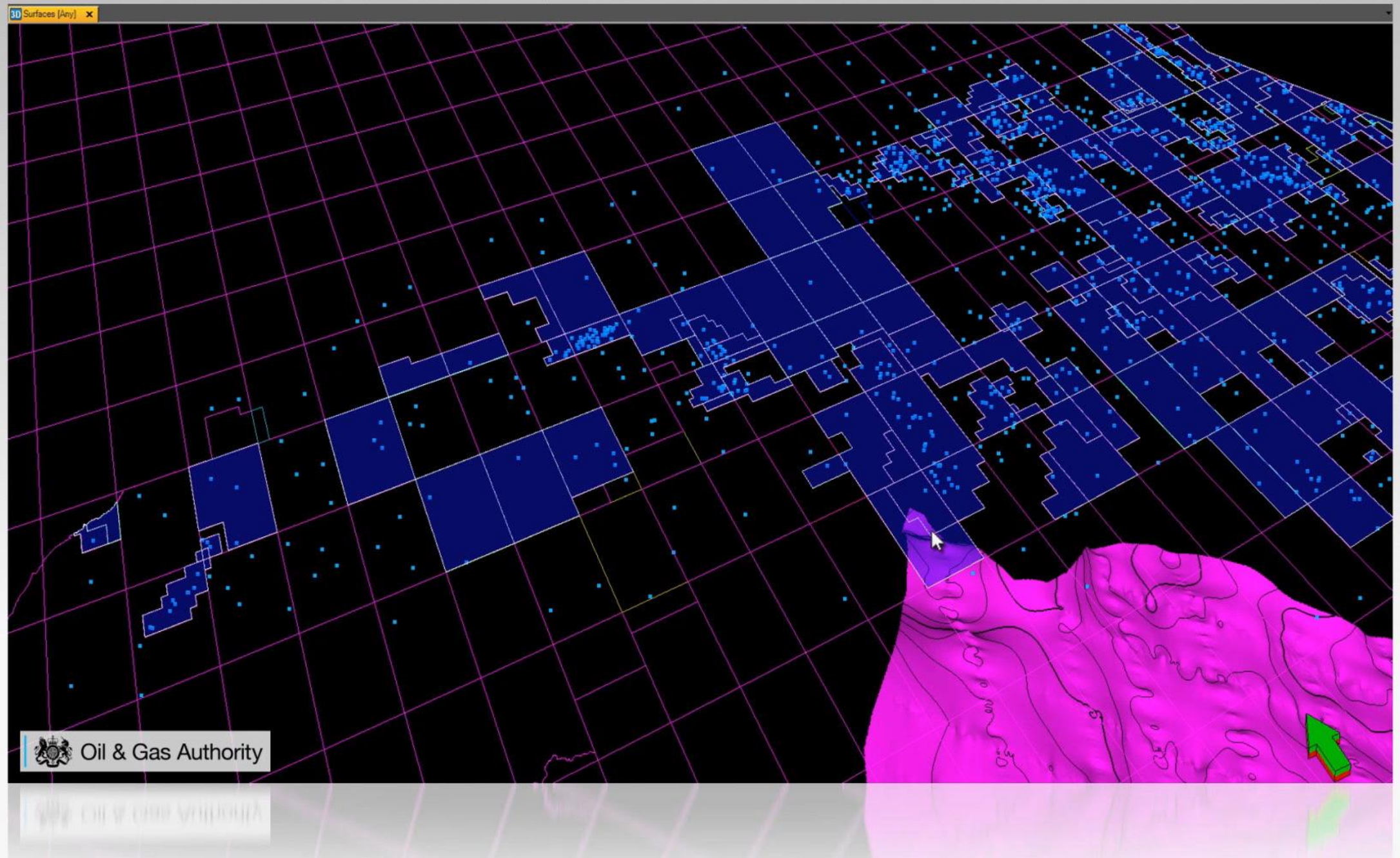
Data Storage

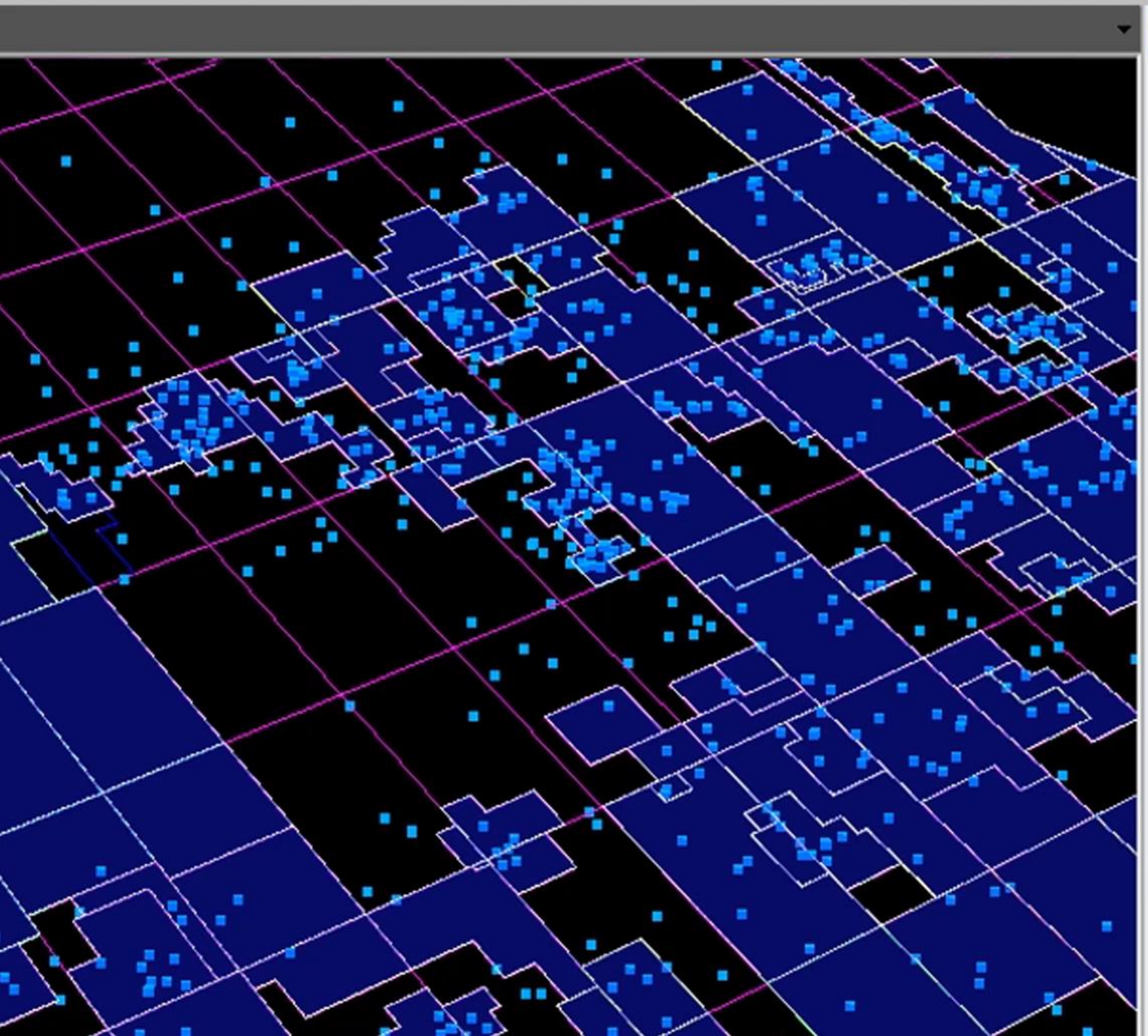
5GB

PERSONAL STORAGE 10GB

621GB

SHARED STORAGE 1001GB


3D Surfaces [Any]
Oil & Gas Authority



Data Insights

Search for: lost circulation

Within:

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38_03-_1_rep_GEOL_CHEM_242505474.pdf

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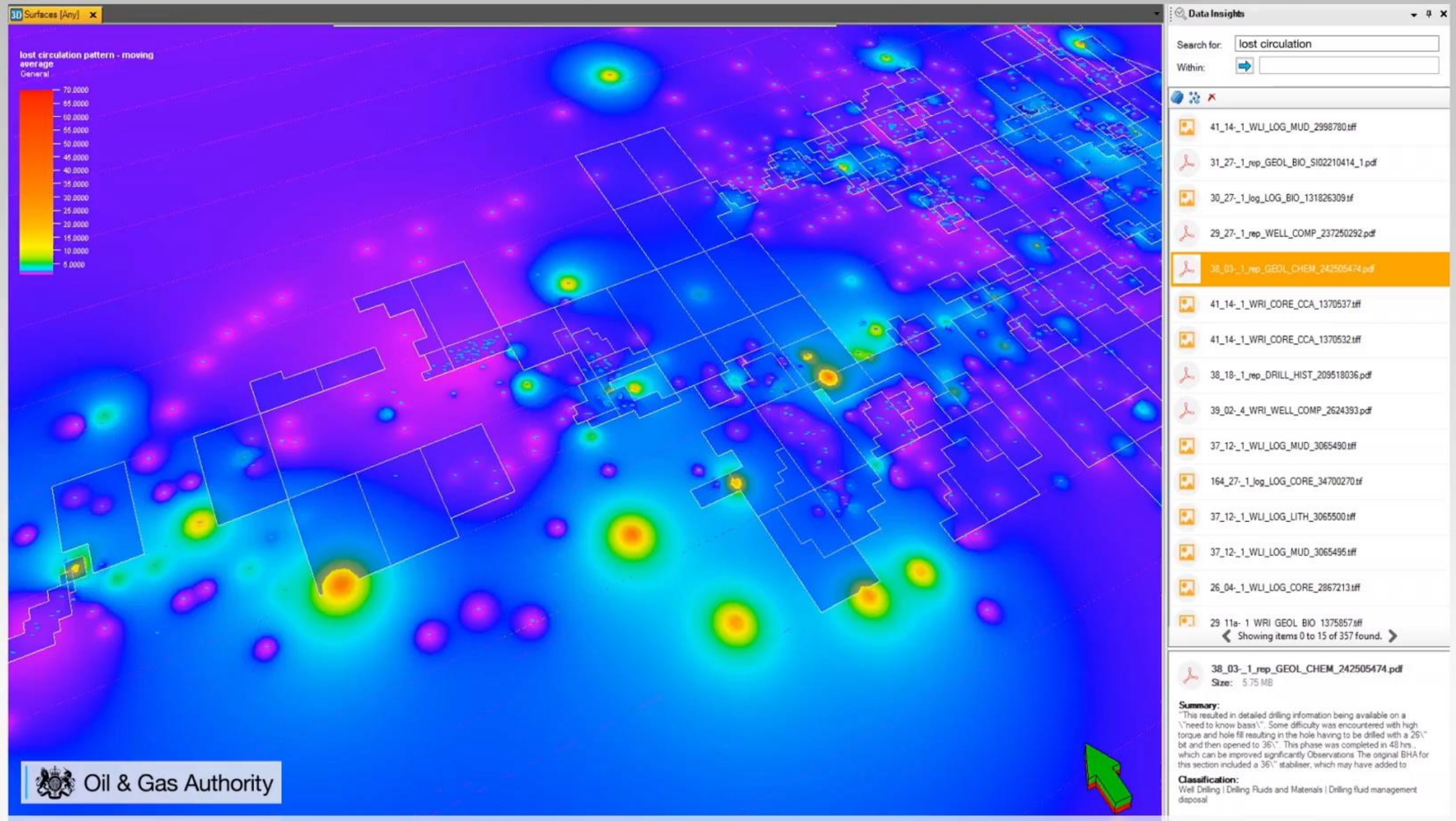
Surfaces [Any]
lost circulation pattern - moving average
General
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50.0000
45.0000
40.0000
35.0000
30.0000
25.0000
20.0000
15.0000
10.0000
5.0000
Oil & Gas Authority
Data Insights
Search for: lost circulation
Within:
41_14-_1_WLI_LOG_MUD_2998780.tiff
31_27-_1_rep_GEOL_BIO_SI02210414_1.pdf
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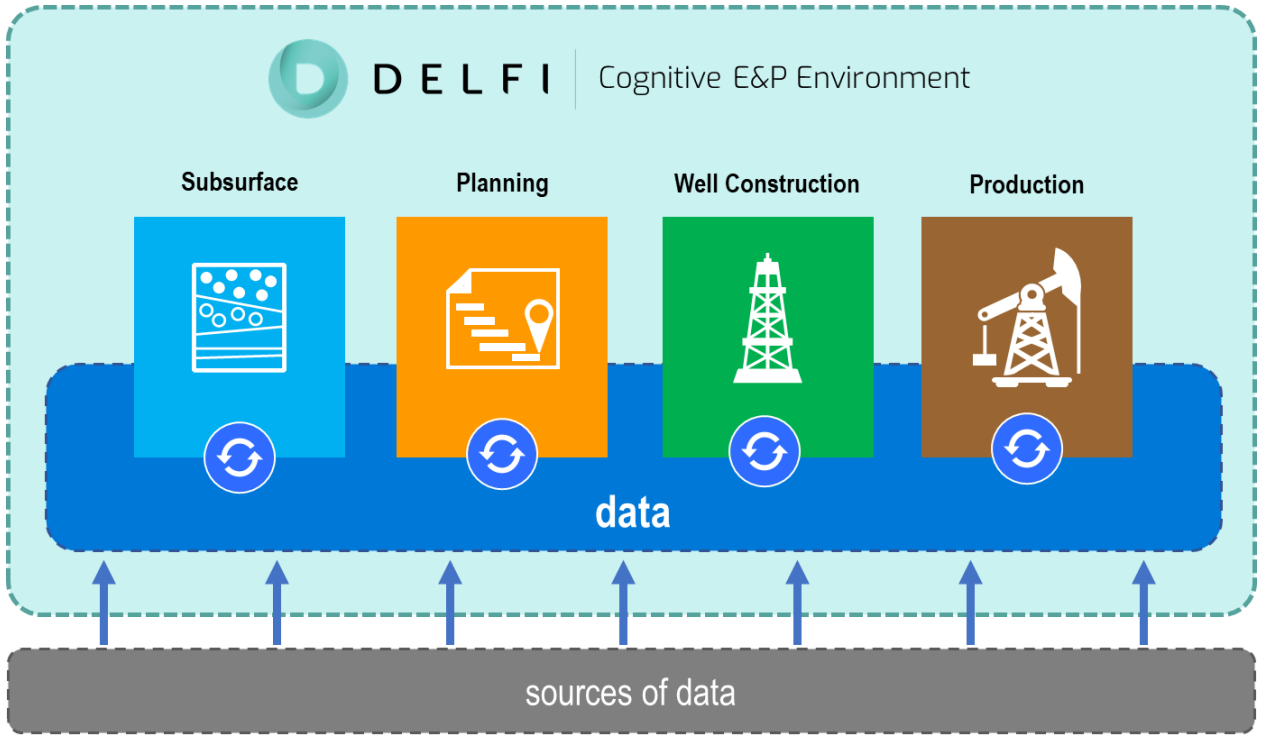
37_12-_1_WLI_LOG_LITH_3065500.tiff
37_12-_1_WLI_LOG_MUD_3065495.tiff
26_04-_1_WLI_LOG_CORE_2867213.tiff
29_11a-_1_WRI_GEOL_BIO_1375857.tiff
Showing items 0 to 15 of 357 found.
38_03-_1_rep_GEOL_CHEM_242505474.pdf
Size: 5.75 MB
Summary:
"This resulted in detailed drilling information being available on a \"need to know basis\". Some difficulty was encountered with high torque and hole fill resulting in the hole having to be drilled with a 26\" bit and then opened to 36\". This phase was completed in 48 hrs., which can be improved significantly Observations The original BHA for this section included a 36\" stabiliser, which may have added to
Classification:
Well Drilling | Drilling Fluids and Materials | Drilling fluid management disposal

our **data** vision

Create the **industry leading E&P data ecosystem** to enhance and augment E&P digital solutions to deliver domain insight, innovation & enhanced value for our customers workflows

- **Data-enriched domain workflows**
- **Data-driven environment**
- **Open and extensible**



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DEVEX 2018

Thank you
Q&A

Schlumberger

Vicky Stanley

DEVEX 2018 – 8th & 9th May, AECC, Aberdeen

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