blueback reservoir

GeoScience Solutions Partner

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Improving decision making with subsurface data

Improving the framework for Petrel data inventory, analysis and validation

Tools for maintaining Data Quality

Agenda

- Introduction to the Tracker
- Typical Tracker results
- Resolving the issues
- Keeping things maintained

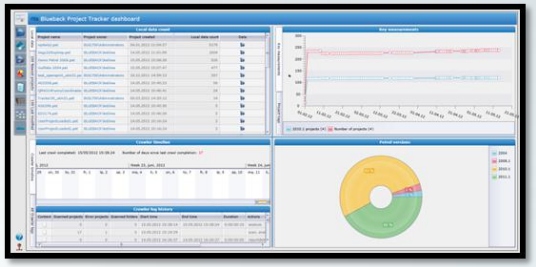
Introduction

- Blueback Reservoir is a provider of GeoScience Software and Consultancy Solutions
- Project Tracker is our main Platform for Data Management Software and Services
- Tracker is built using Schlumberger Ocean Framework
- Where Petrel Studio is a tool for End Users, Tracker is a tool for Data Managers
- In 2013 Blueback Reservoir will be helping Tracker Customers clean up projects and data as the move towards Petrel Studio

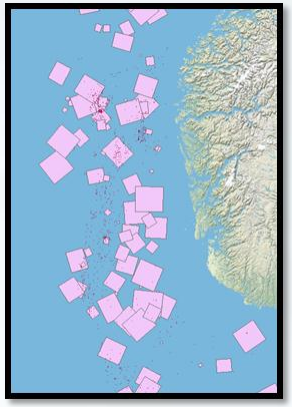
Philosophy of the Tracker

- The Blueback Project Tracker is designed to give the Data Administrators more control and confidence with their Petrel Data Management
- It can provide a global overview of all Petrel Data
- It exposes the results to Data Managers in common office tools

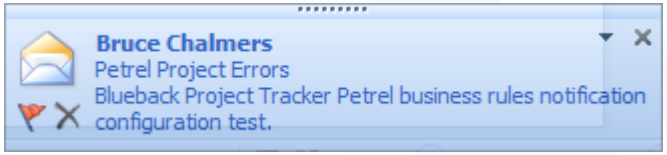
Blueback Project Tracker history

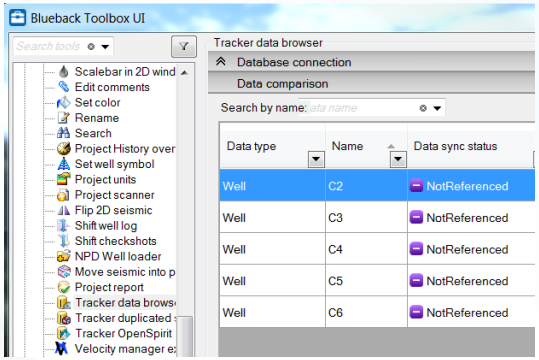


- First release February 2011
- Second release September 2011
  - Spatial data support
  - Integrate with ESRI ArcGIS

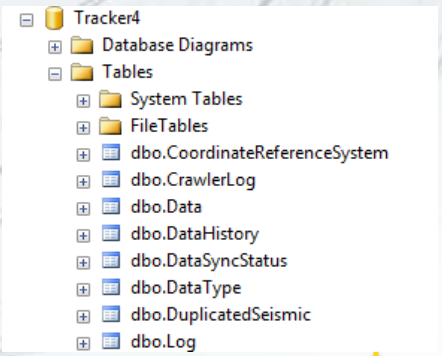


- Third release May 2012
  - Multisite support
  - Identify equal data across Petrel projects based on data values
  - Geodata Exchange module to track OpenSpirit data
  - Project actions
  - End user tools in Blueback Project Management Toolbox
- Fourth Release February 2013
  - Business Rules and Notifications
  - Seismic File Manager Utility
  - Project Upgrade

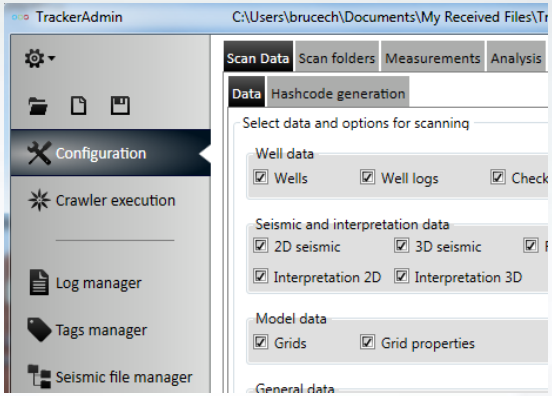




How it works?

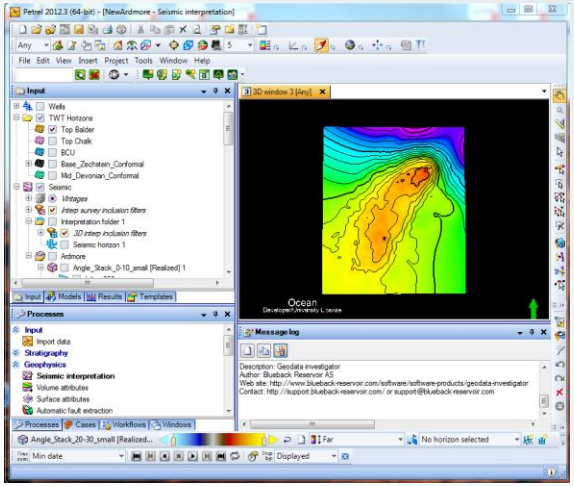


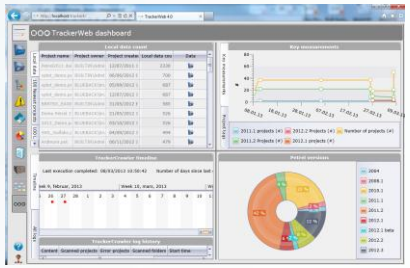
SQL Server Database



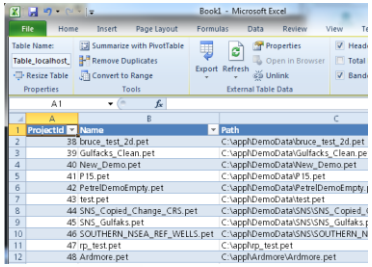
Tracker Admin

Petrel

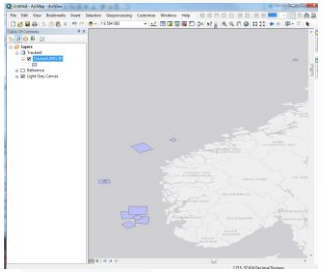




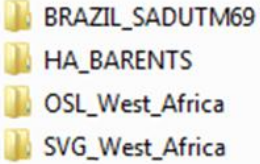
Tracker Web



MS Excel



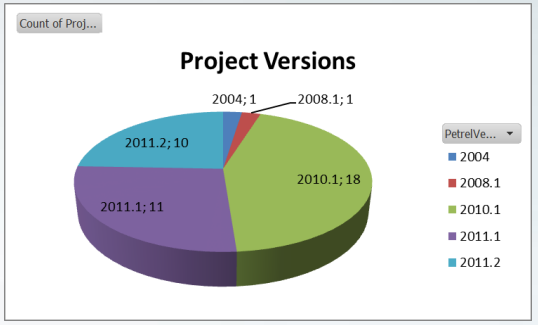
ArcMap



Petrel Projects

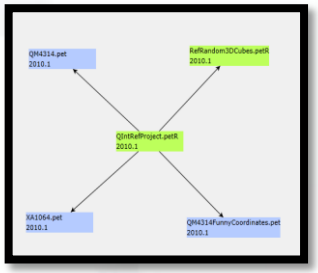
A tool for the Data Manager

- Monitor adherence to data management policies
- Overview of location of Petrel projects across the network
- Overview of Petrel project versions
- Overview of project and seismic duplication
- Understanding of Reference project usage
- Captures Project and data history
- Control disk usage in Petrel projects
- Provides tools to Validate Project Data
- Allows comparison between Petrel and other sources

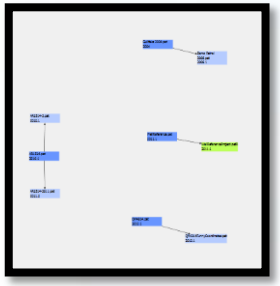


Seismic Bulk Files

Seismic Duplicates



Ref project network



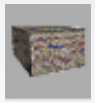
Copied Project Network

Key Features for Problem Solving

- **Project Inventory**
  - Petrel Owner
  - CRS
  - Petrel Version
  - Data Sync Status

- **Data Inventory**
  - Hashcode Generation
  - Search Across Petrel Projects
  - Data History

- **Network Graph**
  - Identify copied projects
  - Show Parent Child relationships



- **Seismic Duplicate Analysis**
  - Identifies Duplicated Seismic

- **Spatial Extension – Link to ArcGIS**
  - Compare sources
  - Identify and measure mis-positions
  - Add extra context to data

- **Link to Excel**
  - Detailed Analysis
  - Reporting

Typical Tracker Results*

- Duplicated Projects in different locations
- Significant amount of Seismic Duplication
- Many Copied Projects (Save As)
- Many Old Versions

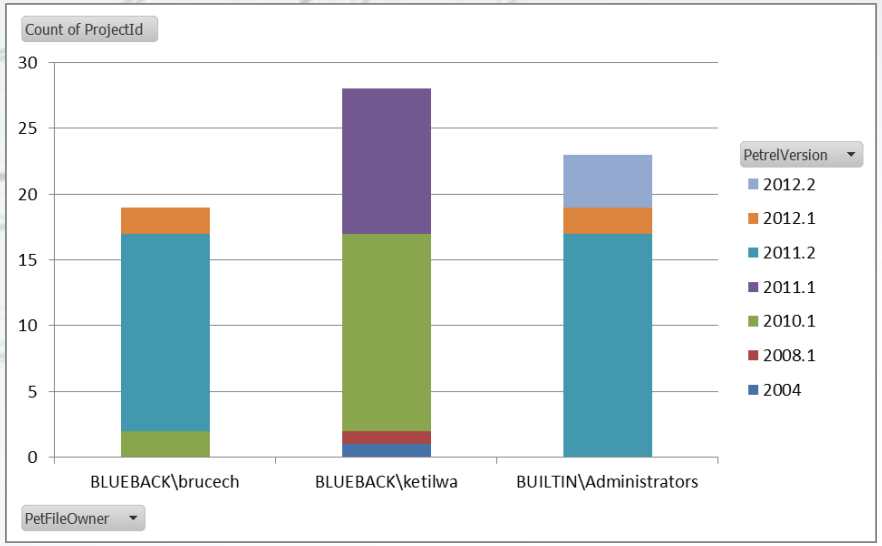
Biggest impact is on Disk Space and Infrastructure

- Ownership/Relevance of Projects and Data
- Missing Data
- Use of Coordinate Reference Systems
- Mis positioned data and duplicated Data (user loaded data)
- Non use of Reference/Corporate Data

Biggest impact is on User decision making

Reconciling The Problems

Ownership & Relevance



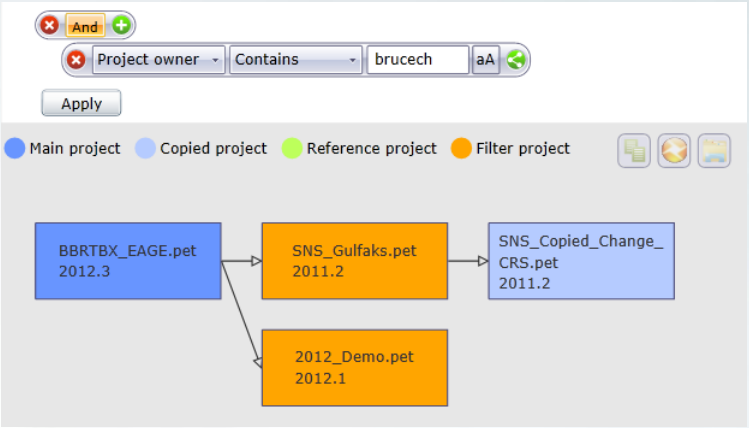
Using Excel we can quickly analyse user patterns and adherence to data management policies

We can also quickly prepare an inventory of projects and owners which do not meet policies

Gullfaks 2004.pet	2004	20.09.2006 14:03	kburkart
Demo Petrel 2008.pet	2008.1	04.09.2008 15:29	Ketil Waagbø
RefRandom3DCubes.petR	2010.1	15.08.2011 14:53	ketilwa
QM4314.pet	2010.1	15.08.2011 15:27	ketilwa
AR1514.pet	2010.1	15.08.2011 15:35	ketilwa
UY4476.pet	2010.1	15.08.2011 16:18	ketilwa
QIntRefProject.petR	2010.1	16.08.2011 11:17	ketilwa
XA1064.pet	2010.1	16.08.2011 11:21	ketilwa
DI4423.pet	2010.1	17.08.2011 14:52	ketilwa
DIIntRefProject.petR	2010.1	22.08.2011 13:36	ketilwa
RefRandom2DSeismic.petR	2010.1	04.09.2011 22:09	ketilwa
AR1514-2.pet	2010.1	05.09.2011 22:01	ketilwa
Segy2DExpImp.pet	2010.1	06.09.2011 13:41	ketilwa
DY8348.pet	2010.1	06.09.2011 21:36	ketilwa
AD2558.pet	2010.1	07.09.2011 12:22	ketilwa
ED3174.pet	2010.1	08.09.2011 16:49	ketilwa
SpatialError.pet	2010.1	19.12.2011 14:57	ketilwa

Project Duplication

Project Duplication(Save As) can be a valid user behaviour i.e. Project Milestones



Name	Path	PetrelVersion	CoordinateSystem	LastModifiedBy	PetSize	ZgySize	RawSize	PtdSize
BBRTBX_EAGE.pet	C:\appl\DemoData\BBRTBX_EAGE.pet	2012.3	ED50-UTM31	brucech	192796	1,96E+08	7101440	4,31E+08
SNS_Copied_Change_CRS.pet	C:\appl\DemoData\SNS\SNS_Copied_Change_CRS.pet	2011.2	PowerPlan:UTM8432	brucech	352922	0	0	2,48E+08
SNS_Gulfaks.pet	C:\appl\DemoData\SNS\SNS_Gulfaks.pet	2011.2	ED50-UTM31	brucech	415373	1,96E+08	8876800	4,75E+08

Important to combine all the information together in one view

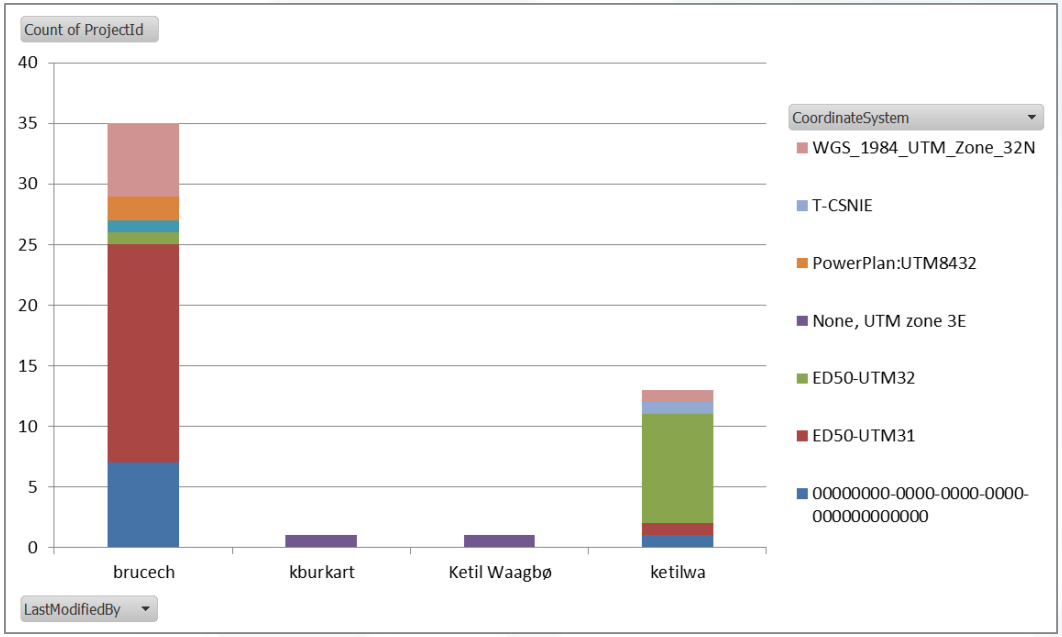
CRS Use

Grouped by: Coordinate system

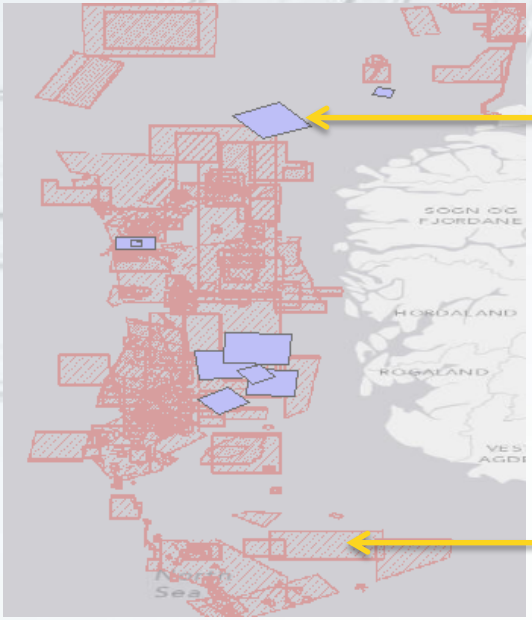
Project name	Data	Coordinate system	Engine	Description
00000000-0000-0000-0000-000000000000				
ED50-UTM31				
bruce_test_2d.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
Gulfacks_Clean.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
New_Demo.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
P15.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
PetrelDemoEmpty.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
test.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
SNS_Gulfaks.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
SOUTHERN_NSEA_REF_WELLS.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
2012_Crop.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
2012_Demo.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
BBRTBX_EAGE.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
xplot_demo.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
Petrel2011 demo project.pet		ED50-UTM31	ESRI	"MENTOR:ED50-UT
ED50-UTM32				
None, UTM zone 3E				
PowerPlan:LIBYA13E				
PowerPlan:UTM8432				
T-CSNIE				
WGS_1984_UTM_Zone_32N				
Asterix.pet		WGS_1984_UTM_Zone_32N	ESRI	
Blueback_Asterix.pet		WGS_1984_UTM_Zone_32N	ESRI	
SRC_Ex2.pet		WGS_1984_UTM_Zone_32N	ESRI	
SRCP2011.pet		WGS_1984_UTM_Zone_32N	ESRI	
Count:50				

Incorrect selection of CRS causes data mis-positioning.

Excel can be used to analyse user behaviour and ensure consistent use of CRS within different groups



Data Coverage

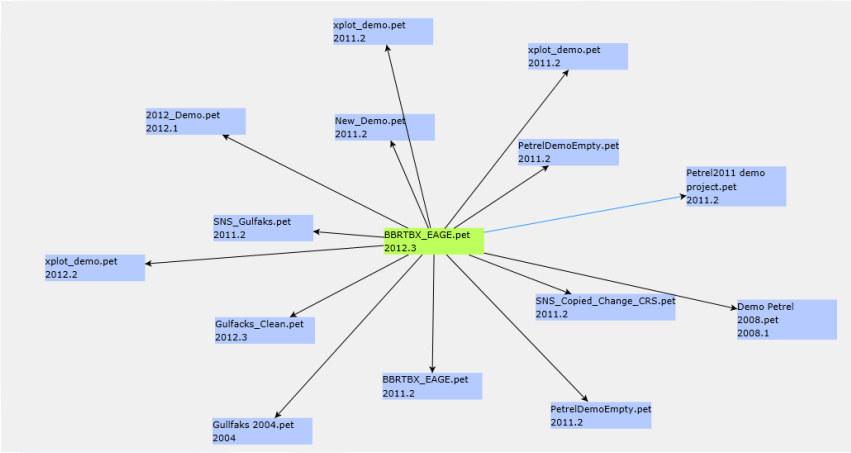


Petrel Data

Corporate Data

Using Spatial extension comparisons can be made between data in Petrel and other sources

Project Network Graphs can also help track project evolution when looking for results



Data Status

NotReferenced Equal Newer Older NewerOrOlder

Capture the state of the Petrel Data in one view.

Drag a column header and drop it here to group by that column

Project name	Data	Referenced wells	Local wells	Referenced well logs	Local well logs
Ardmore.pet		24	0	380	0
SRC_Ardmore.pet		5	0	80	0
Ardmore.pet		24	0	380	0
BBR_Ardmore_Backup.pet		24	0	380	0
NewArdmore.pet		24	0	380	24

Data name	Project name	DataType	Alternative name	Guid	Hash code	Last modified	Last modified by	Sync status
Rho	NewArdmore.pet	WellLog	30_24-02	f92b2ffb-94c6-45e5-8513-429dd973ca80	90aa5a07e30e0b682223b43970b93445	11/03/2013 15:39:51	brucech	NotReferenced
Rho	NewArdmore.pet	WellLog	30_24-03	a778a544-8a85-4dba-ac12-1199f4c24114	0d45ec88e5d23aef797b446cbe327224	11/03/2013 15:39:51	brucech	NotReferenced
Rho	NewArdmore.pet	WellLog	30_24-05	72fe4394-ec97-4acd-8eb0-fc47130470d2	604412825bfe8e0a9d3d60a2fcd755f5	11/03/2013 15:39:51	brucech	NotReferenced
Rho	NewArdmore.pet	WellLog	30_24-06	beb3cd8f-6887-44cd-894d-e725ea73a90c	823163c97819bdc562c80b4904bc7277	11/03/2013 15:39:51	brucech	NotReferenced
Rho	NewArdmore.pet	WellLog	30_24-08	e167fe7e-ba1e-4f5b-aad9-ab103f6c1789	6adcf89515018a052a3d1ea572d026f5	11/03/2013 15:39:51	brucech	NotReferenced
Rho	NewArdmore.pet	WellLog	30_24-09	e0cf63b9-5277-4c32-9be2-6e5c945048c7	a21d55cf24eb43029b181a286f29640a	11/03/2013 15:39:51	brucech	NotReferenced

Mispositioned Data - Wells

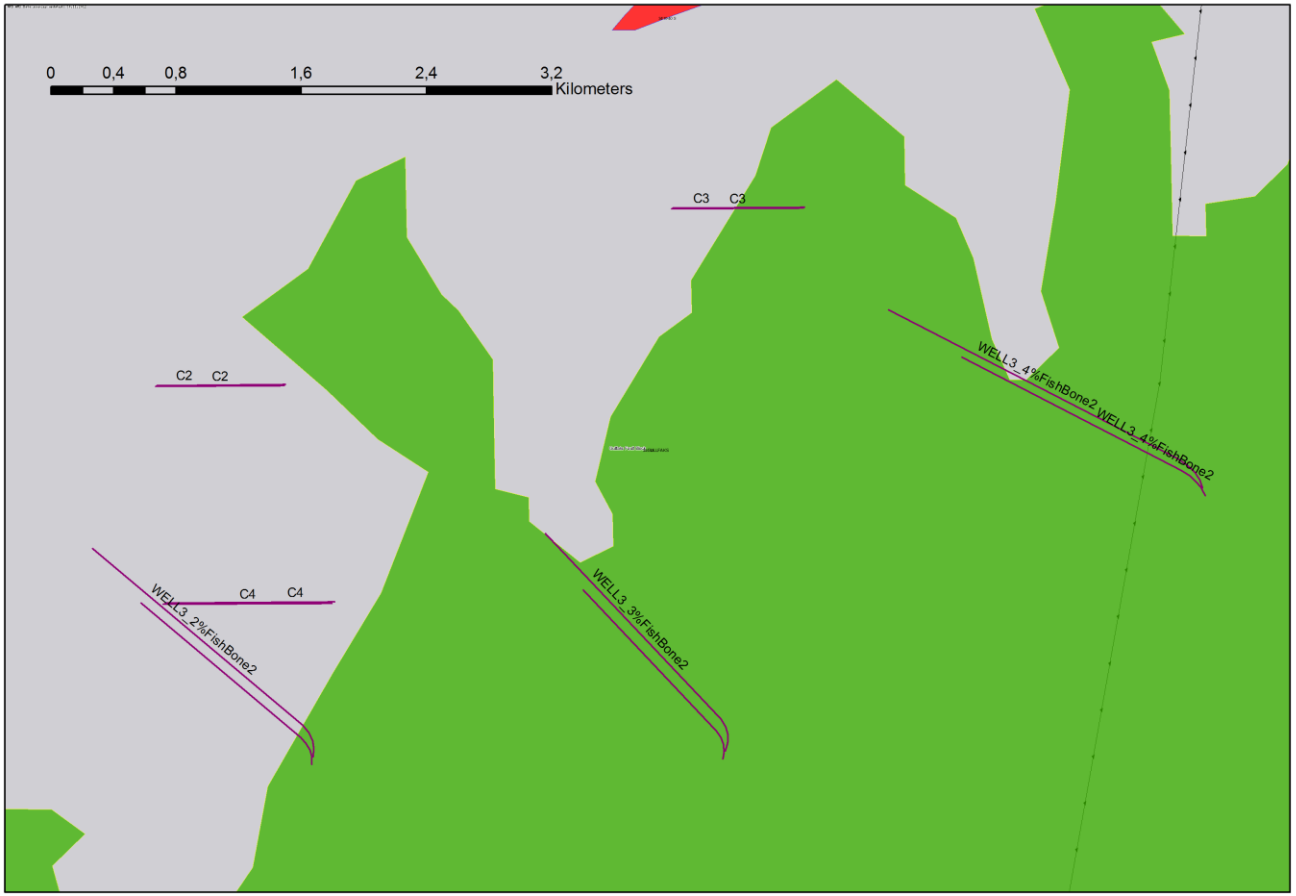
By generating a Hashcode from an objects size and position we can identify mispositioned Data

Same GUID different Hashcode indicates a modified or mispositioned Well

Data name	Project name	DataType	Guid	Hash code
A10	2012_Demo.pet	Well	02c62c82-552d-444d-bf6b-69cd07376368	8d1232d6c44789c5e0ec8d4ec73c6d0b
A10	BBRTBX_EAGE.pet	Well	02c62c82-552d-444d-bf6b-69cd07376368	8d1232d6c44789c5e0ec8d4ec73c6d0b
A10	BBRTBX_EAGE.pet	Well	02c62c82-552d-444d-bf6b-69cd07376368	8d1232d6c44789c5e0ec8d4ec73c6d0b
A10	Demo Petrel 2008.pet	Well	02c62c82-552d-444d-bf6b-69cd07376368	9a7696340a01fc01b2df1a673a9c7f7e
A10	Gullfaks 2004.pet	Well	02c62c82-552d-444d-bf6b-69cd07376368	9a7696340a01fc01b2df1a673a9c7f7e
A10	New_Demo.pet	Well	02c62c82-552d-444d-bf6b-69cd07376368	8d1232d6c44789c5e0ec8d4ec73c6d0b
A10	Petrel2011 demo project.pet	Well	02c62c82-552d-444d-bf6b-69cd07376368	8d1232d6c44789c5e0ec8d4ec73c6d0b

Mispositioned Data – Wells Spatial

Small changes in CRS use can quickly offset Well Data



Identifying Data Sources / Data Duplication

Individual Petrel Objects can frequently have different sources

Data name	DataType	Guid	Hash code	Sync status
19-10-1	Well	3a637936-a8cc-4fb8-b4f3-e359975536d9	ce5ce8bc170976624de047482d23a3a7	Equal
19/10/1	Well	3a637936-a8cc-4fb8-b4f3-e359975536d9	ce5ce8bc170976624de047482d23a3a7	Equal
19 10 1	Well	ad7d0670-0e53-4538-a538-b287436d5463	0429e137b7a3604a18a27a83aad90ab5	NotReferenced
19-10-1	Well	c35fa3df-93b9-460b-ae10-266af59ad1a5	ce5ce8bc170976624de047482d23a3a7	NotReferenced
19-10-1	Well	3a637936-a8cc-4fb8-b4f3-e359975536d9	1a1efb38fc0cb4920f53cd673e0369ca	Equal

The Hashcode states that these objects are physically identical despite having a different Petrel GUID

The Hashcode is used to identify duplicated data irrespective of Hashcode

Tracker also captures an objects history

Data name	Project name	DataType	Alternative name	Guid	Hash code
A10	Demo Petrel 2008.pet	Well		02c62c82-552d-444d-bf6b-69cd07376368	9a7696340a01fc01b2df1a673a9c7f7e

Data history | Data network graph

Time	Petrel version	Action	User	Description
24/04/2002 13:23:59	2002 alpha	Import C:\Documents and Settings\marit\Desktop\A10	marit	Well logs (ASCII)
24/04/2002 14:04:49	2002 alpha	Import C:\Documents and Settings\marit\Desktop\A10	marit	Well logs (ASCII)
04/11/2002 10:52:23	2002	Import C:\Demo\Dip data for Gullfaks2002\A10.txt	marit	Well logs (ASCII)

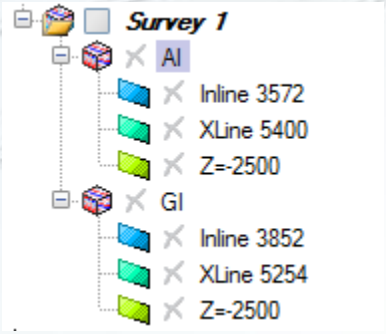
Seismic Duplication

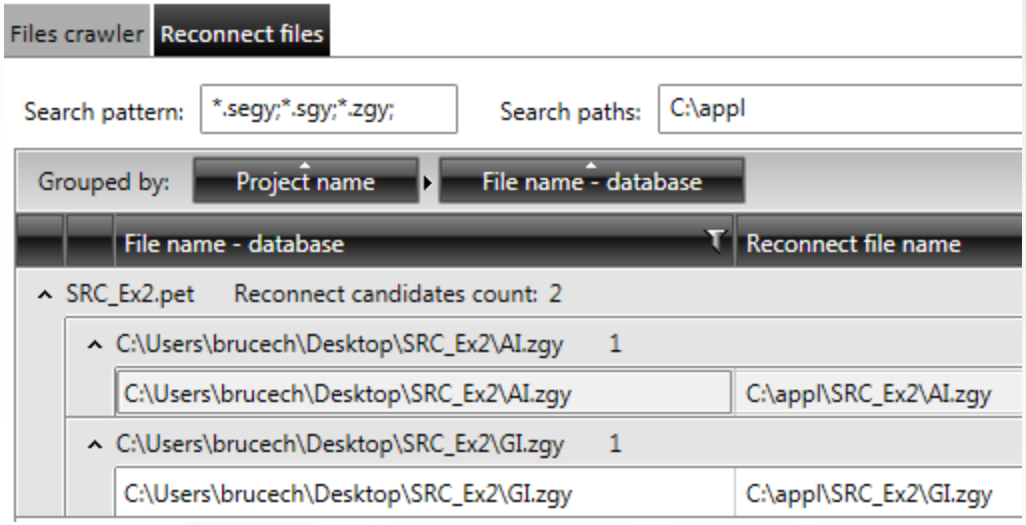
Designed to help identify duplicated internally realised seismic.

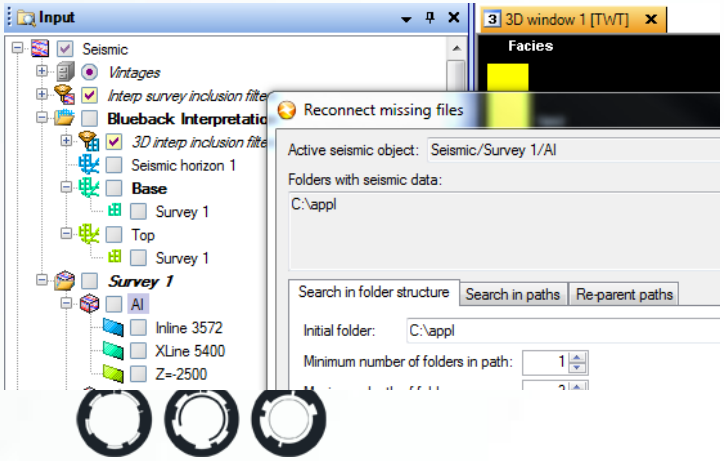
Results are exaggerated due to project copying and Save As

Duplicate id	Pr	Name	Data type	File size (MB)
108				
108	Bl	mid_13_25 [Crop] 1 [Realized] 1	SeismicCube	892.000
108	As	mid_13_25 [Crop] 1 [Realized] 1	SeismicCube	892.000
109				
109	As	far_23_35 [Crop] 1 [Realized] 1	SeismicCube	892.000
109	Bl	far_23_35 [Crop] 1 [Realized] 1	SeismicCube	892.000
110				
110	Bl	Intercept _SRC	SeismicCube	891.000
110	As	Intercept _SRC	SeismicCube	891.000
111				
111	As	Gradient _SRC	SeismicCube	891.000
111	Bl	Gradient _SRC	SeismicCube	891.000
107				
107	As	near_3_15 [Crop] 1 [Realized] 1	SeismicCube	792.000
107	Bl	near_3_15 [Crop] 1 [Realized] 1	SeismicCube	792.000
104				
104	Ar	Angle_Stack_0-10_small [Realized] 1	SeismicCube	221.000
104	SF	Angle_Stack_0-10_small [Realized] 1	SeismicCube	221.000
104	Ar	Angle_Stack_0-10_small [Realized] 1	SeismicCube	221.000

Missing Data







How to Keep it Maintained ?

Monitor the Environment

Project name	Data	Referenced wells	Local wells	Referenced well logs	Local well logs	Referenced well top	Local well top	Referenced checkshot
BBRTBX_EAGE.pet		37	0	188	0	84	0	15
New_Demo.pet		36	0	185	0	0	0	15
SNS_Copied_Change_CRS.pet		36	0	185	0	84	0	15
SNS_Gulfaks.pet		36	0	185	0	84	0	15
2012_Demo.pet		36	0	185	0	84	0	15
Reference project WELLS.petR		31	0	199	0	5	0	0
PetrelDemoEmpty.pet		27	0	185	0	84	0	15
BBRTBX_EAGE.pet		27	0	185	0	84	0	15
PetrelDemoEmpty.pet		27	0	185	0	84	0	15
Ardmore.pet		24	0	380	0	0	0	0
Ardmore.pet		24	0	380	0	0	0	0
BBR_Ardmore_Backup.pet		24	0	380	0	0	0	0
NewArdmore.pet		24	0	380	24	0	0	0
Petrel2011 demo project.pet		16	12	163	17	84	7	15
Demo Petrel 2008.pet		16	5	146	64	84	23	15
xplot_demo.pet		15	12	160	180	84	7	15
xplot_demo.pet		15	12	160	180	84	7	15
Gullfaks 2004.pet		15	9	128	33	0	91	15
xplot_demo.pet		15	12	160	180	84	7	15
Asterix.pet		11	0	142	0	0	0	1
SRC_Ardmore.pet		5	0	80	0	0	0	0
Blueback_Asterix.pet		2	0	6	0	0	0	1
P2012.pet		2	0	6	0	0	0	1

Use Business Rules and Notifications

Refresh | Add new rule | Remove rule | Undo edit

Drag a column header and drop it here to group by that column

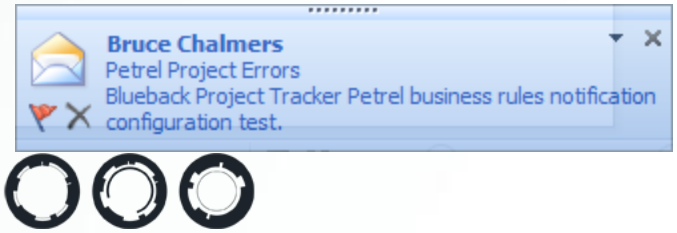
Active	Message	Parameter	Severity
☑	Project must have a coordinate reference system		Error
☑	Petrel version must be one of given versions	2010, 2011	Error
☐	Project must have metric units		Error
☐	Project must have field units		Error
☐	Project must have field-utm units		Error
☐	Project path must be one of given patterns		Error
☑	Seismic should not be stored in project folder		Tip
☑	Wells should be imported from reference projects		Error
☐	2D seismic should be imported from reference projects		Error
☐	Checkshots should be imported from reference projects		Error
☐	Well logs should be imported from reference projects		Error
☐	Well tops should be imported from reference projects		Error
☐	Referenced data is not updated		Error
☑	Project has duplicated seismic		Tip
☐	Project contains disconnected seismic		Error

Quickly identify deviations from corporate rules

Grouped by: Path

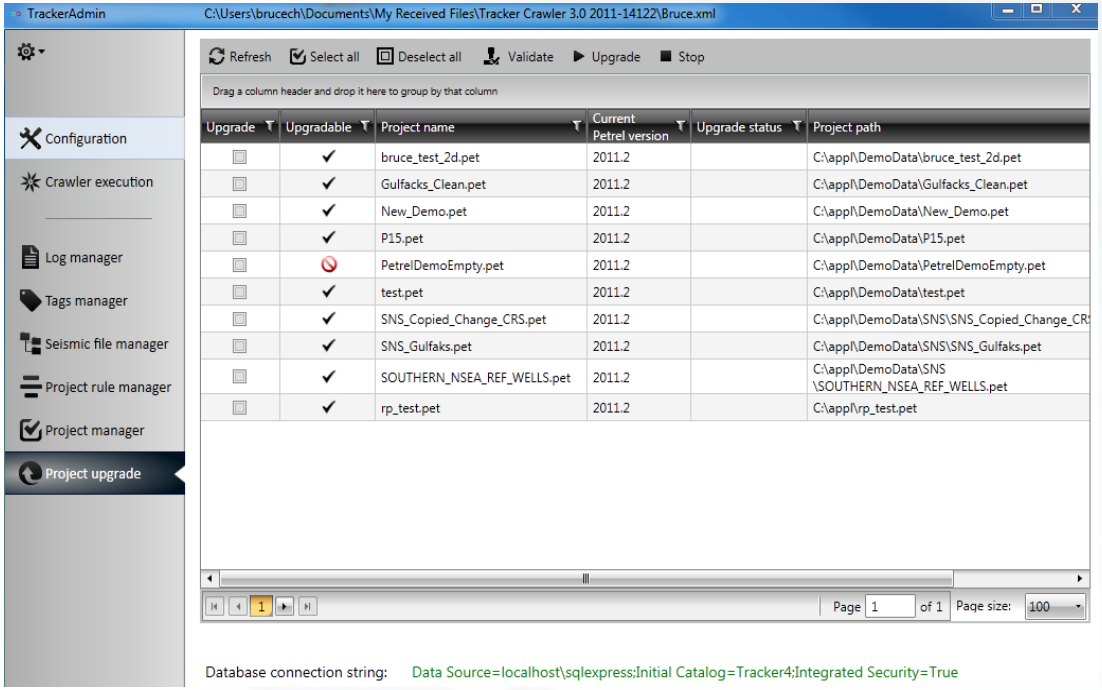
Level	Name	Message
C:\appl\DemoData\Gulfacks_Clean.pet		
	Gulfacks_Clean.pet	Seismic should not be stored in project folder
C:\appl\DemoData\New_Demo.pet		
	New_Demo.pet	Wells should be imported from reference projects
C:\appl\DemoData\P15.pet		
	P15.pet	Wells should be imported from reference projects
C:\appl\DemoData\PetrelDemoEmpty.pet		
	PetrelDemoEmpty.pet	Seismic should not be stored in project folder
	PetrelDemoEmpty.pet	Wells should be imported from reference projects
C:\appl\DemoData\SNS\SNS_Copied_Change_CRS.pet		
	SNS_Copied_Change_CRS.pet	Wells should be imported from reference projects
C:\appl\DemoData\SNS\SNS_Gulfaks.pet		
	SNS_Gulfaks.pet	Seismic should not be stored in project folder
	SNS_Gulfaks.pet	Wells should be imported from reference projects

Notify Data Managers*

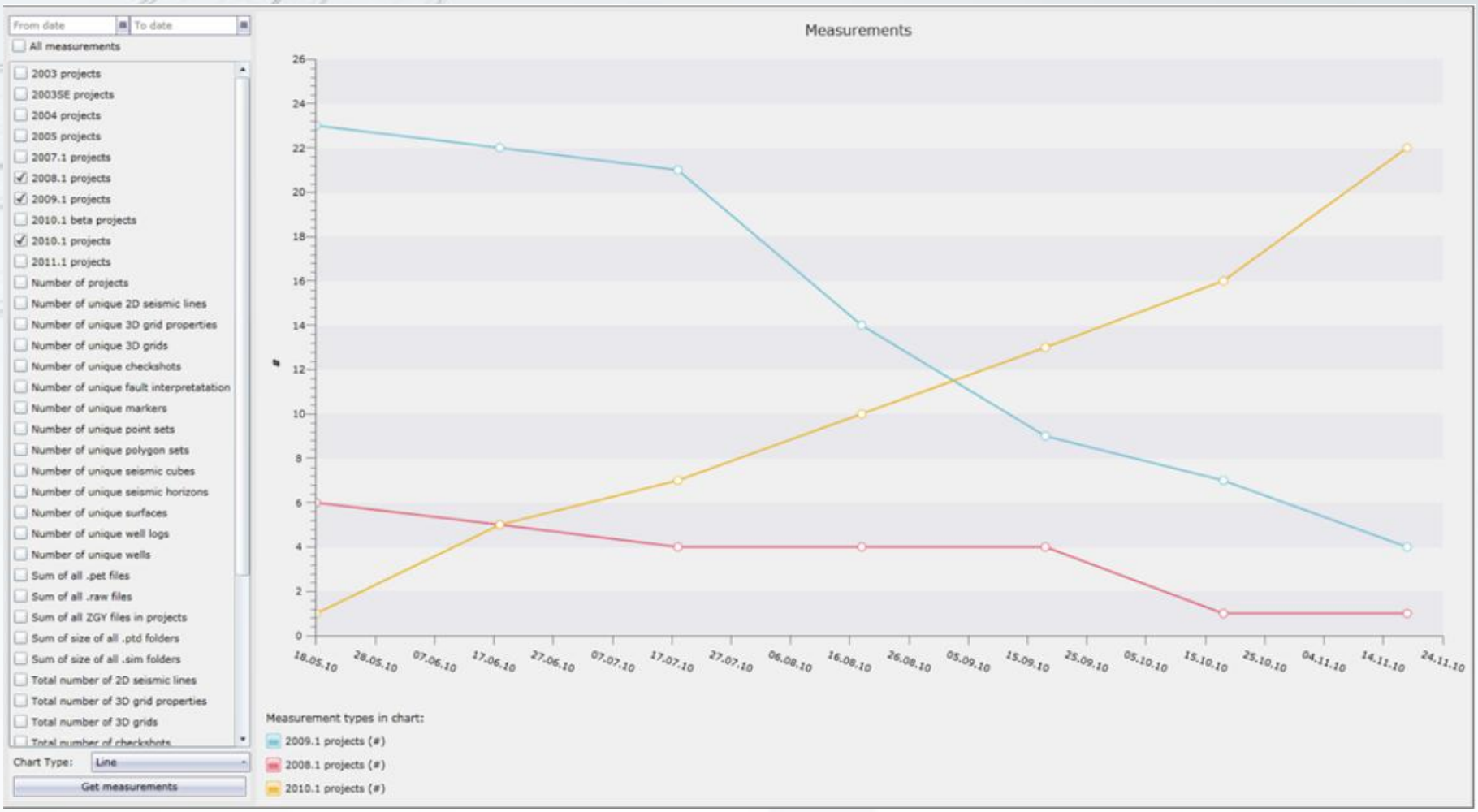


Upgrade / Archive older Projects

Upgrade	Upgradable	Project name	Current Petrel version	Upgrade status
☑	✓	bruce_test_2d.pet	2012.3	Ok
☑	✓	Gulfacks_Clean.pet	2012.3	Ok

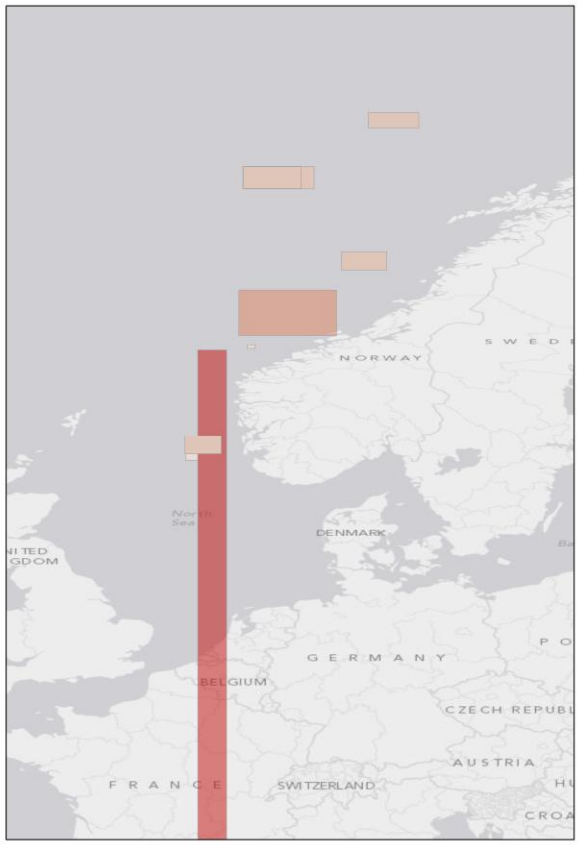


Measure the changes through time

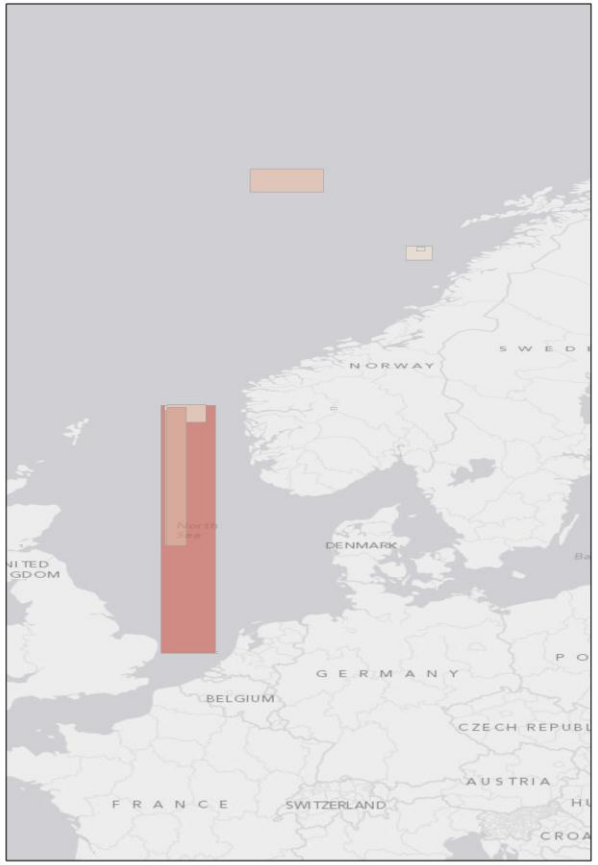


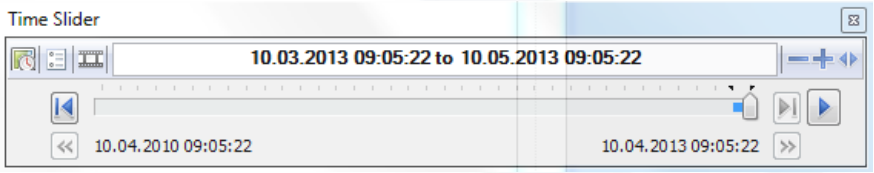
Visualise changes through time

2011



2012





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More Information

Tracker Experience

We have a broad experience of using the Tracker at different companies

ECIM Conference, *Haugesund*, 2012

Management of Petrel projects in ConocoPhillips

- *Stein Sigbjørnsen, Geodata Manager, ConocoPhillips Norge*

Data Management in a Petrel Environment has been a nightmare. By implementing a new Petrel Environment, ConocoPhillips is now able to manage Petrel projects in a much better way

Monitoring the Petrel environment at Maersk Oil

- *Morten Lind, Team Lead, Petrel and GIS Data Management, Maersk Oil*

Capability of Blueback Project Tracker to bring overview and monitor Petrel projects and data.

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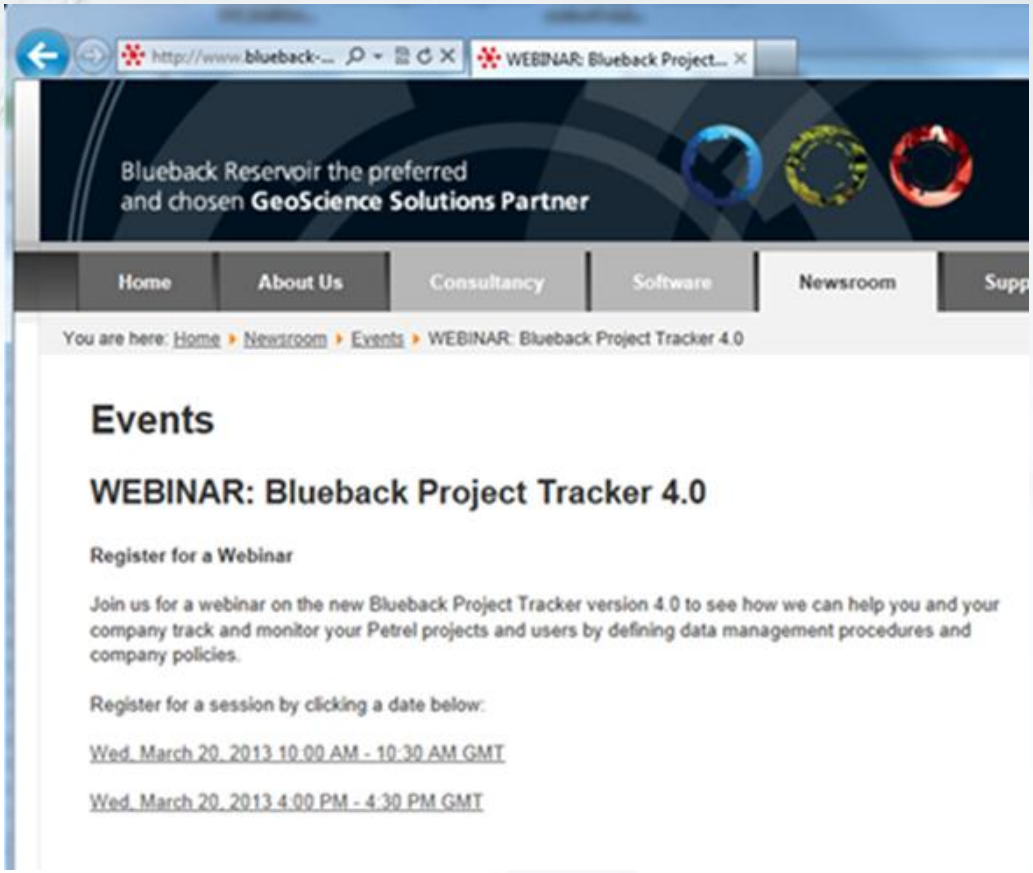
Where is the Tracker Going?

2013 UGM Blueback Project Tracker
Blueback Reservoir will arrange the 2nd Blueback Project Tracker User Meeting taking place 28 - 29 May in Copenhagen, Denmark.

-Deeper level of detail on key data types
-Tracking of other Data Sources / Applications

Webinar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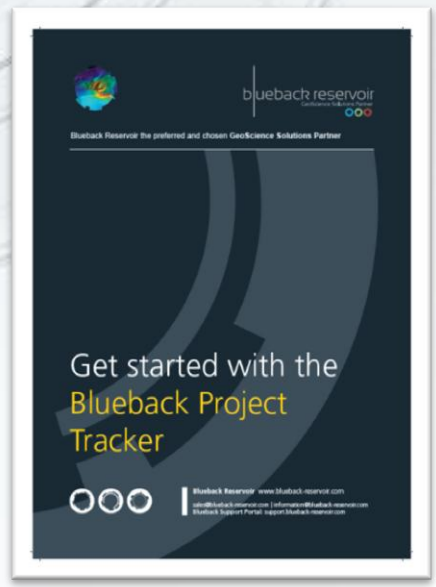
Events
WEBINAR: Blueback Project Tracker 4.0
Register for a Webinar
Join us for a webinar on the new Blueback Project Tracker version 4.0 to see how we can help you and your company track and monitor your Petrel projects and users by defining data management procedures and company policies.
Register for a session by clicking a date below:
Wed, March 20, 2013 10:00 AM - 10:30 AM GMT
Wed, March 20, 2013 4:00 PM - 4:30 PM GMT

Thank You & Questions



Software Quick Guide

Project Management Tools

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