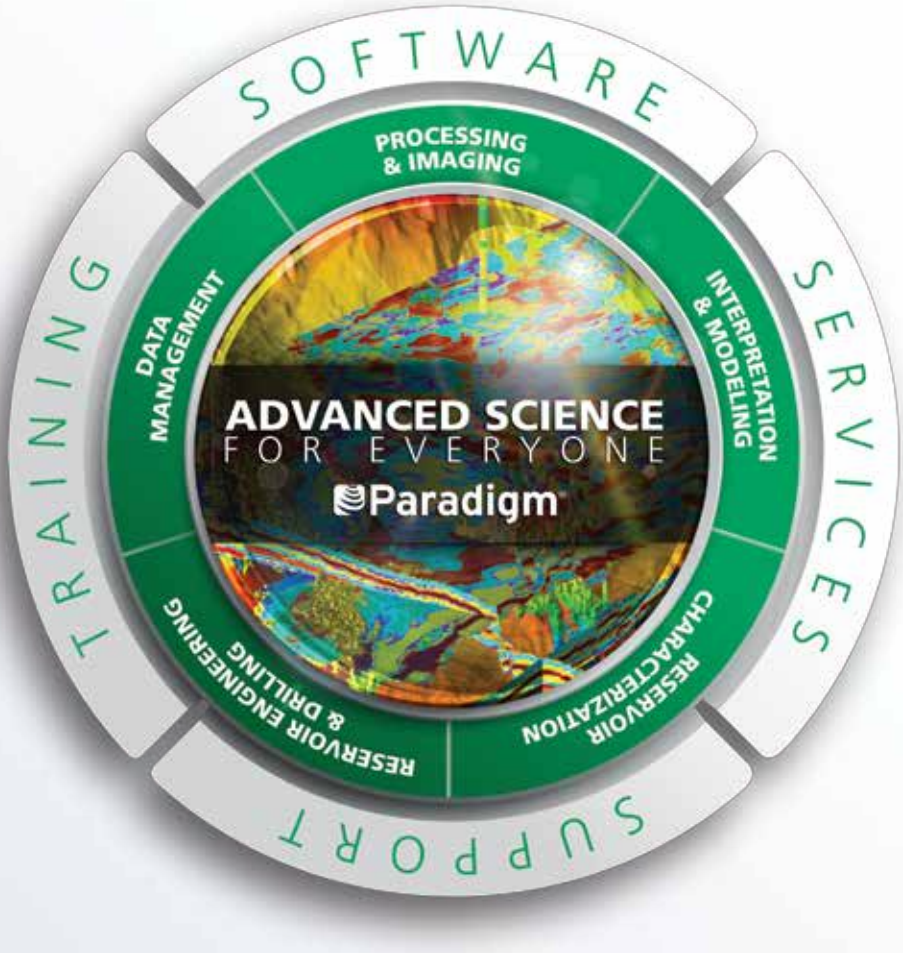
Paradigm®



IPA 2014
May 21-23, 2014
Booth #M6 (Main Lobby)

Jakarta Convention Center
Jl. Jendral Gatot Subroto
Jakarta, Indonesia

Abstracts and Demo Schedule

pdgm.com

Abstracts

Geological Interpretation

Geologic Correlation and Sectioning - Improving 3D Reservoir Characterization, Development Planning and Well Planning

Wednesday 1:00 pm
Presented by Luke van den Brul

Correlating markers across wells is a critical component of a broader geological interpretation workflow. In particular for mature plays with large numbers of wells and limited or poor quality seismic, a robust and fit-for-purpose correlation tool is essential for generating structure and net pay maps, based on log cutoffs. We will take you through an integrated workflow that uses geophysical, geological and petrophysical data to aid in the decision-making process. Real-time marker updates, in addition to gridding techniques relying on markers and petrophysical logs, will demonstrate an integrated approach to performing traditional geologic interpretation.

Supporting Technologies: StratEarth®, SeisEarth®

Formation Evaluation

Utilizing Image Log Data to its Maximum Potential

Thursday 4:30 pm
Presented by Wini Rizkiningayu

Image logs are one of the most frequent types of data to be acquired during a logging run, from sonic image wireline image to LWD density image. The information that this data can give you is almost endless, from fracture detection to image petrophysics. If you're ever involved in generating, processing and analyzing image logs, you'll know that the process can be tedious and costly.

Paradigm Geolog Geomage is the only vendor-independent solution that provides a state-of-the-art toolkit for image generation, processing and analysis of your data. From our user-friendly workflow with tool-specific QC layouts, our auto dip picking tool, auto fracture with fracture density and fracture aperture feature, to improved stereonet with contouring option, see how the features in Geolog Geomage can help you utilize your image data with unprecedented freedom and versatility, while at the same time helping you save processing time and costs!

Supporting Technologies: Geolog®

Advanced Electrofacies Analysis and Prediction

Wednesday, 4:30 pm
Presented by Wini Rizkiningayu

Many electrofacies toolkits on the market constrain their users to one algorithm or one technique. But your specific environment or data type may require more flexibility, so why should you compromise your results because of the available tools? The Geolog Facimage advanced electrofacies analysis toolkit allows the integration of all your wireline, core and core description data, and offers a wide choice of clustering techniques optimized for facies creation and log prediction. One of our more innovative tools is Multi-Resolution Graph-based Clustering (MRGC). MRGC allows analysis of the underlying data structure and the formation of natural data groups without operator bias, automatically determining the optimal number of clusters, while also allowing the geologist to control the required level of detail. Join us and see how Facimage can expand your Geolog capabilities.

Supporting Technologies: Geolog®

Integrating Saturation Height Modelling and Wireline Formation Test Pressure Data

Wednesday, 2:30 pm
Presented by Wini Rizkiningayu

If you're responsible for helping to plan the development of a mature field, then you'll understand how important the free water levels are in your reservoir. From reservoir compartmentalization by sub-seismic faults through to selecting the right EOR strategy, saturation is a critical factor. The Paradigm saturation height modeling workflow is the complete solution for understanding this. Running on the same scalable, multi-user database as the rest of the Paradigm suite, we'll show how everything, from simple data loading for all core and spreadsheet data, through visualization and correction, to construction of either predefined or customizable saturation height functions, is simple while technically rigorous. Finally, estimated free water level and saturations are calculated across the field.

Supporting Technologies: Geolog®

2D NMR Processing and Interpretation

Friday, 9:30 am
Presented by Wini Rizkiningayu

Wellsite acquisition companies may easily advise on all the virtues of running a magnetic resonance imager through your formation. But when it comes to the critical interpretation phase of actually identifying your fluids and quantifying permeability, the picture can become less clear. We are proud to offer the only vendor-independent tool for analysis of the Schlumberger MR Scanner, Baker Hughes MREX and Halliburton MRIL. Geolog NMR2D provides everything you need for data loading and preparation, quick, intuitive, multi-dimensional inversion at every depth frame, and interactive fluid volume identification. Come and see how this sophisticated new addition to your favorite formation evaluation system – Geolog – can add value to your reservoir descriptions.

Supporting Technologies: Geolog®

Seismic Processing and Imaging

Common Reflection Angle Migration (CRAM) – An Advanced Imaging Technology for Improved Reservoir Imaging and Characterization

Thursday, 10:00 am
Presented by Masako Robb

The Common Reflection Angle Migration (CRAM) advanced imaging technology is of huge value both when re-evaluating vintage seismic data in order to maximize use of the information within existing datasets, and for processing new acquisitions. CRAM uses the subsurface angle domain (Local Angle Domain, or LAD) to generate true-amplitude angle domain image gathers. Ray tracing is performed from every image point up to the surface in uniform opening angle and dip angle increments, ensuring all arrivals are taken into account, even in highly complex geological areas. This makes the technology well suited to high-precision, reservoir-level seismic imaging that is challenged by the presence of irregular water bottom, steep slope, multiple faults and salt/gas, where it may show improvements over Kirchhoff and conventional beam migration techniques. CRAM gathers are also ideal as inputs to velocity analysis, in amplitude versus angle (AVA) inversion, and other reservoir characterization workflows.

Supporting Technologies: GeoDepth® CRAM

Echos - LIFT Workflow for Amplitude Preserving Noise and Multiples Suppressions

Wednesday, 1:30 pm
Presented by Masako Robb

LIFT is a proprietary technique from Paradigm that enhances the signal by attenuating different types of noise (random noise, ground roll, air blasts, etc.) while preserving the amplitude integrity of primaries. LIFT is an alternative approach to standard noise attenuation and signal enhancement. The standard approach reduces noise from the entire bandwidth of the seismic data; this will generally produce synthetic looking data, so noise is added back to the original data. LIFT is different in that the signal and noise are separated first. The noise section will still have a residual signal, so after attenuating noise from the noise section, the residual signal is added back to the signal data. The LIFT workflow can be built in a variety of ways, depending on the types of noise that need to be attenuated. The output of the process provides excellent data sets for pre-stack migrations as well as additional amplitude work using the image gathers. In this demonstration, we will show how to use LIFT to solve everyday problems in seismic processing.

Supporting Technologies: Echos®

Well-tie Tomography - A Fast and Efficient Workflow for Updating a Velocity Model in Anisotropic Media

Thursday 1:00 pm

Presented by Masako Robb

The iterative update and progress towards the most accurate velocity model are fundamental requirements for best migrated image and optimized well placement. However, when working in the depth domain, seismic interpretation does not always tie well markers – a clear indication that something is wrong with the velocity model. The Paradigm well-tie tomographic update capability allows the anisotropic characteristics of the play to be accurately and easily incorporated into the velocity model. This presentation shows how we update medium parameters (velocity and anisotropy) for a depth-to-depth correction using the principles and methodology of 3D tomography in a traveltime preserving manner. We also show how well tie tomography can be used to investigate pitfalls in seismic data interpretation and evaluate different scenarios.

Supporting Technologies: GeoDepth® Tomography, SeisEarth®

Well Planning and Drilling Engineering

Drilling from the Cloud. Cloud and Oil & Gas: A Perfect Fit

Wednesday 3:00 pm, Friday 1:00 pm

Presented by Ilhan Akbar

Amazon Web Services has built a cloud infrastructure designed to support the most demanding workloads from some of the world's largest enterprises. Upstream workloads are about finding and extracting hydrocarbons from the subsurface, which require huge amounts of information to be analyzed and acted upon. At Paradigm, we see real value for oil and gas in the scalability, flexibility and ease-of-use of cloud services to run these workloads with minimal IT management and additional investment. And this closely aligns with our mission of providing advanced science software solutions to all E&P users – without boundaries or limitations. Sysdrill demonstrations will highlight how the advanced software solutions provide detailed engineering design and accurate well placement at every stage of the process, helping geologists and geoscientists:

- Enhance well planning accuracy
- Reduce drilling uncertainty
- Quantify wellbore position and precision
- Improve drilling safety

Supporting Technologies: Sysdrill®

Geological Modeling

Advanced Fracture Interpretation and Characterization

Thursday 11:00 am

Presented by Luke van den Brul

Fracturing plays a defining role in production, storage and seal characteristics for many play types, including carbonates, basements and shales. However, accurate fracture interpretation and characterization are some of the most tedious and poorly understood tasks associated with 3D model building. In this demonstration, we explain how fracture density and orientation information derived from a variety of seismic, petrophysical and geomechanical sources may be integrated to generate geologically constrained discrete fracture networks (DFN). Fracture induced permeability, porosity and fracture area per volume are output directly to the reservoir model, from where they can be exported to a reservoir flow simulator. Uncertainty related to the fracture network is reduced by providing an understanding of the fracture permeability and porosity distribution up front, allowing development and production infrastructure to be planned with greater confidence.

Supporting Technologies: SKUA®, SeisEarth®

Integrated Uncertainty Analysis – The Impact of Fault Position Uncertainty on Reservoir Assessment

Friday 10:30 am

Presented by Luke van den Brul

Fault uncertainty affects, among other things, hydrocarbon in-place volumes, well positioning, fault seal calculations, and of course producible reserves. It is seldom given robust, quantitative consideration during flow simulation and history matching due to the technical difficulties involved in modifying the reservoir grid while still preserving the integrity of the structure.

Join us as we show an innovative new approach based on SKUA's UVT transform. SKUA enables the stochastic simulation of a complete structural model, including multiple horizons and faults, automatically updating the associated geological model. When combined with petrophysical uncertainty, our approach enables us to properly quantify the impact of structure on reservoir volumes and connectivity, as well as on production forecasts.

Supporting Technologies: SKUA®

Seismic Interpretation

Seismic Facies Determination - Delineating Facies Heterogeneities and Predicting Lithology Distributions

Wednesday 4:00 pm, Thursday 9:30 am

Presented by Ruben Raj

The ability to predict lithofacies away from the wellbore and assess uncertainty for each rock type is invaluable for the population of a 3D reservoir model. Particularly in a heterogeneous reservoir, this information can make the difference between a successful well and a dry hole. See how Paradigm 14 expands the traditional use of pre-stack data for seismic characterization through the use of pre-stack classification procedures for lithofacies prediction. This innovation enables us to capture reservoir heterogeneities and detail normally not feasible in standard reservoir characterization workflows, and allow the geoscientist to build or update a 3D geologic model with quantification of uncertainties. The principles of the method will be illustrated by a carbonate reef case study.

Supporting Technologies: SeisEarth®, Facies Prediction

Seismic Interpretation - Discover New Reservoirs with Seismic Attributes

Friday 11:00 am

Presented by Ruben Raj

Prospecting in new exploration territories? Searching for new reservoirs? Working with available wells miles away? Seismic data can reveal what we need to know - lithology and fluid. Join us in this systematic walk-through incorporating highly interactive and visual technologies and workflows for lithology delineation, prospect mapping and prospect quality evaluation, using seismic data from deep water Equatorial Guinea. This presentation uses seismic inversion, seismic attribute visualization and interpretation, and pre-stack seismic visualization, for a comprehensive lithoseismic analysis.

Supporting Technologies: SeisEarth®, Seismic Data Attributes

Quantitative Seismic Interpretation - Introduction to the Gather Processing Utility for both Interpreters and Processors

Friday, 1:30 pm

Presented by Masako Robb

Qualifying and complementing post-stack interpretation workflows with pre-stack interpretation has historically been a somewhat disjointed affair, potentially increasing risk in prospecting and development planning. Interpreters working with post-stack volumes now have easy access to our pre-stack gather conditioning utility, which can be used for core gather conditioning and AVO analysis within a unified 3D workspace, without the need to access multiple displays/software. You can interactively QC the effect of gather conditioning on your post-stack volume and build an optimal workflow for the subsequent AVO inversion and analysis. This demonstration follows a simple AVO workflow example that uses the new gather conditioning utility to condition and flatten gathers, and generate angle stacks. The angle stacks are then crossplotted to find AVO anomalies, which are displayed as geobodies in the volume.

Supporting Technologies: GeoDepth®, Probe®

Demo Schedule

Wednesday 21 May	Title	Supporting Technologies
12:00 Noon - 12:30 PM	**Lucky Draw**	
1:00 - 1:30 PM	**Geological Interpretation:** Geologic Correlation and Sectioning - Improving 3D Reservoir Characterization, Development Planning and Well Planning (Presented by Luke Van Den Brul)	SeisEarth®, StratEarth®
1:30 - 2:00 PM	**Seismic Processing and Imaging:** Echos - LIFT Workflow for Amplitude Preserving Noise and Multiples Suppressions (Presented by Masako Robb)	Echos®
2:30 - 3:00 PM	**Formation Evaluation:** Integrating Saturation Height Modelling and Wireline Formation Test Pressure Data (Presented by Wini Rizkiningayu)	Geolog®
3:00 - 3:30 PM	**Well Planning and Drilling Engineering:** Drilling from the Cloud. Cloud and Oil & Gas: A Perfect Fit (Presented by Ilhan Akbar)	Sysdrill®
4:00 - 4:30 PM	**Seismic Facies Determination:** Delineating Facies Heterogeneities and Predicting Lithology Distributions (Presented by Ruben Raj)	SeisEarth®, Facies Prediction
4:30 - 5:00 PM	**Formation Evaluation:** Advanced Electrofacies Analysis and Prediction (Presented by Wini Rizkiningayu)	Geolog®
Thursday 22 May	**Title**	**Supporting Technologies**
9:30 - 10:00 AM	**Seismic Facies Determination:** Delineating Facies Heterogeneities and Predicting Lithology Distributions (Presented by Ruben Raj)	SeisEarth®, Facies Prediction
10:00 - 10:30 AM	**Seismic Processing and Imaging:** Common Reflection Angle Migration (CRAM) - An Advanced Technology for Improved Reservoir Imaging and Characterization (Presented by Masako Robb)	GeoDepth®, CRAM
11:00 - 11:30 AM	**Geological Modeling - Fractures:** Advanced Fracture Interpretation and Characterization (Presented by Luke Van Den Brul)	SKUA®, SeisEarth®
11:30 AM - 12:00 Noon	**Lucky Draw**	
1:00 - 1:30 PM	**Seismic Processing and Imaging:** Well-tie Tomography - A Fast and Efficient Workflow to Update a Velocity Model in Anisotropic Media (Presented by Masako Robb)	GeoDepth® Tomography, SeisEarth®
2:00 - 4:00 PM	**Customer Appreciation Event**	
4:30 - 5:00 PM	**Formation Evaluation:** Utilizing Image Log Data to its Maximum Potential (Presented by Wini Rizkiningayu)	Geolog®
Friday 23 May	**Title**	**Supporting Technologies**
9:30 - 10:00 AM	**Formation Evaluation:** 2D NMR Processing and Interpretation (Presented by Wini Rizkiningayu)	Geolog®
10:30 - 11:00 AM	**Geological Modeling - Integrated Uncertainty Analysis:** The Impact of Fault Position Uncertainty on Reservoir Assessment (Presented by Luke Van Den Brul)	SKUA®
11:00 - 11:30 AM	**Seismic Interpretation:** Discover New Reservoirs with Seismic Attributes (Presented by Ruben Raj)	SeisEarth®, Seismic Data Attributes
11:30 AM - 12:00 Noon	**Lucky Draw**	
1:00 - 1:30 PM	**Well Planning and Drilling Engineering:** Drilling from the Cloud. Cloud and Oil & Gas: A Perfect Fit (Presented by Ilhan Akbar)	Sysdrill®
1:30 - 2:00 PM	**Quantitative Seismic Interpretation** - Introduction to the Gather Processing Utility for both Interpreters and Processors (Presented by Masako Robb)	GeoDepth®, Probe®