AGENDA

2018 Denver Petroleum Data Symposium

Data As An Asset: How Data and Analytics Add Value To Your Business

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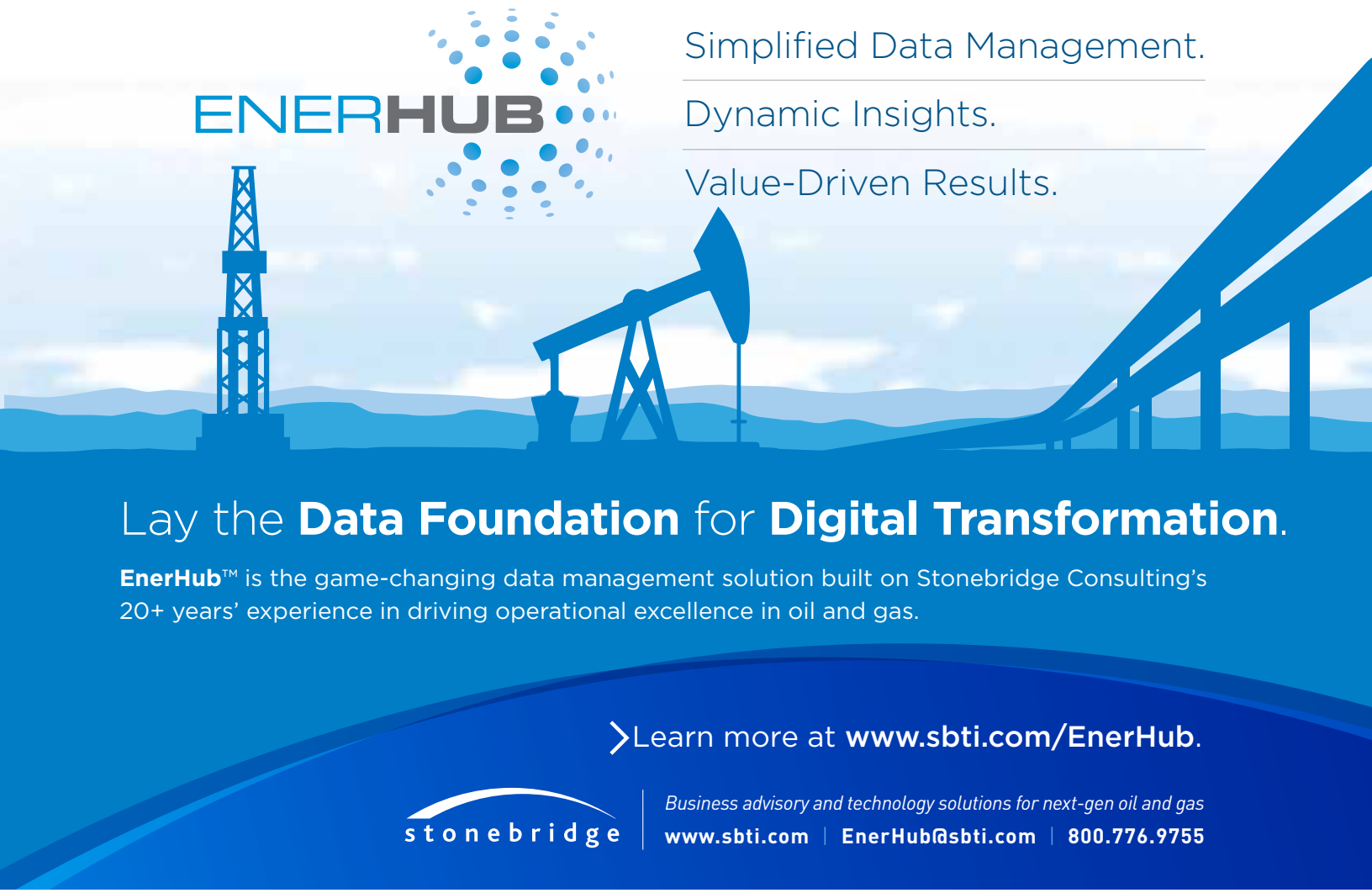
Wednesday, November 7, 2018

7:15-8:00 am	**REGISTRATION & BREAKFAST**	
8:00-9:00 am	**Welcome & Opening Remarks** Trudy Curtis (PPDM Association)	
9:00-9:10 am	**Platinum Sponsor Spotlight - Stonebridge Consulting**	
9:10-9:55 am	**Keynote Presentation - The Transformed Oil & Gas Company** Jim Claunch Jr (Equinor)	
9:55-10:05 am	**Platinum Sponsor Spotlight -geoLOGIC systems ltd**	
10:05-10:25 am	**MORNING BREAK**	
	Breakout Session - Operational Track	**Breakout Session** - Data Management Track
10:25-10:55 am	**Aggregating Big Frac Data Sets With Network Graphs** Michael Raubach (Well Data Labs/Aarus University)	**Marathon Oil's Master Data Management Journey** Jesus Rodriguez (Marathon Oil)
11:05-11:35 pm	**Machine Learning Application In Decline Curve Analysis** Cheng Zhan (Anadarko)	**What Every Business Needs To Know About Artificial Intelligence** Lawrence Eribarne (Enaxis Consulting)
11:35-12:50 pm	**LUNCH**	
12:50-1:20 pm	**Integrating Environmental Intelligence In Oil & Gas Operations** Aman Chhikara, Janahan Gnanachandran, Ajit Joseph (Publicis.Sapient)	**Data Trust And Curation Starts At The Source** Philippe Flichy (Energy Embassy)
1:30-2:00 pm	**Getting A Handle On Hauling** Wesley Dyk (Renovos)	**Quantifying Business Intelligence ROI** Charity Queret (Stonebridge Consulting)
2:00-2:20 pm	**AFTERNOON BREAK**	
2:20-3:50 pm	**Panel Discussion: Analytics** Moderator: Jim Crompton (Reflections) Panelists: Cynthia Crow (OSI Soft) - What Analytics Are Working In Oil & Gas Bill Bruner (Trilucent Consulting) - Taking Data Governance To The Analytics Level Matthew Bauer (Anschutz Exploration Corporation) - Python Mining The Bakken: Scraping, Landing Zones And Spatial Residuals.	
3:50-4:00 am	**Sponsor Spotlight - TBD**	
4:00-4:15 pm	**Closing Remarks** Trudy Curtis (PPDM Association)	
4:30 - 6:00 pm	**HAPPY HOUR - Rock Bottom Brewery - *Sponsored by Stonebridge Consulting***	



Stonebridge Consulting (Platinum Sponsor)

Stonebridge Consulting focuses 100% on the oil and gas industry. Our domain knowledge, project IP, and solution accelerators and software tools enable us to deliver projects end-to-end – from the drawing board and solution development to implementation and ongoing support. We create innovative solutions that help our clients drive measurable improvements in operational efficiency, accelerate project timelines, and reduce project costs by as much as 50%.
EnerHub™ from Stonebridge Consulting is an oil and gas data management solution that simplifies data management, provides business users with dynamic insights, and generates bottom-line value. EnerHub's modular design allows oil and gas companies to select specific data management solutions to meet their current and future needs. EnerHub modules include:

- Data Quality – Ensures business decisions are based on the most accurate information
- Data Integration – Integrates data from Reserves, D&C, Operations, Finance, and third-party sources
- Master Data Management – Matches, blends, and synchronizes data from Reserves, D&C, Operations, Finance, and third-party sources
- Analytic Cubes – Enables interactive viewing of key metrics (LOE, Volumes, Capital Spend Over Time, Well, Zone, Play)
- Analytic Packs – Provides pre-configured analytic applications (Shale Play Optimization, Financial Analytics, Production Analytics, Downtime Analytics)
- Upstream Dimensional Data Model – Includes template data structures optimized for analysis and reporting
- Electronic Well File – Provides pre-configured repository for well documents based on ECM best practices
- Energy Portals – Function-specific portal solutions (Well Portal, Partner Portal, Lease Portal)
- Connectors – Pre-built connectors to move data in and out of commercial applications

Learn more about Stonebridge Consulting at www.sbti.com.

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Since 1983, geoLOGIC has been delivering premium oil and gas data and innovative software to energy professionals. Today, we're trusted by energy professionals to deliver rich, complete, validated and updated government and proprietary data through inventive, leading-edge software. Our products (gDC, geoSCOUT, and basinINTEL) leverage new technology and sleek, user friendly interfaces to help you save time, save money, reduce risks and make better decisions. We continuously innovate alongside our customers, devoting millions of dollars and thousands of man hours to new product development. We also partner with renowned companies like Microsoft, Esri, GDM, HydroFax, MJ Systems, and others.

Evolve, Always.

That's geoLOGIC.

Thank You To Our Leadership Team

The PPDM Association would like to thank the Denver Leadership Team for all their invaluable efforts in making the 2018 Denver Petroleum Data Symposium a success.

Throughout the year, these individuals help organize and enhance all our Denver PPDM events, and we are truly fortunate to work with them to build our Denver Community together.

- *Mike Skeffington (Chair)*
- *Ashley Bailey (Secretary)*
- *Amy Giles Bhikha*
- *Andrew Roberts*
- *Carrie Salerno*
- *Chris Skinner*
- *Jenny Redmond*
- *Jim Crompton*
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- *Ken Robertson*
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EnergyIQ (Gifting Sponsor)

EnergyIQ is uniquely positioned as the leading provider of commercial Oil and Gas data management software, with customers like Pioneer, BP, Devon, Marathon, Apache, Anadarko, QEP, Whiting, Hunt and many others. EnergyIQ's software and expert services help companies organize huge volumes of data they are acquiring; presenting information in ways the business consumes it; automating collaborative processes that drive data flows beyond a single function and across the entire asset team; enabling and supporting data standards and governance to improve data quality and integrity; and preserving and maturing proprietary data, making it a vital asset that drives a competitive edge and the bottom line.

Today, we're helping companies of all sizes transform their business to become more efficient with less risk by accessing and sharing trusted data across asset teams, as wells are managed throughout their lifecycle. Our customers are solving their most complex data management challenges including Master Data Management (MDM), geoscience data management, corporate data repositories, well lifecycle automation, analytics, and more.

EnergyIQ is driving these key transformational benefits:

- Enable better, faster, lower risk decisions, by providing greater certainty in underlying information.
- Automatically provide integrated, accurate and timely Well and subsurface information in an easily consumable manner from all company data sources.
- Enable and enforce consistent knowledge capture, data governance, and quality measures to ensure the highest data integrity possible, putting a spotlight on data that does not meet corporate standards.
- Give team members as much as 30%-70% of their day back, by reducing the time it takes to find and fix data.

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Abstracts & Biographies

Welcome & Opening Remarks - Opening Remarks for the Perth Petroleum Data Symposium, along with updates on the activities of the Professional Petroleum Data Management (PPDM) Association.

Trudy Curtis is the Chief Executive Officer of the Professional Petroleum Data Management (PPDM) Association, the global Not-For-Profit society focused on data management best practices and standards and data management as a professional discipline. Based in Calgary, Canada, Curtis has nearly four decades of years of experience in the industry and is known around the world for her outspoken advocacy of data as a strategic asset, and its management as a core business function. In 1996, she joined the PPDM Association as architect, CIO and ultimately CEO of PPDM Association. Curtis is leading the way to the emergence of data management as a global discipline, the creation and industry adoption of data management standards and best practices, the development of professional development and certification programs for data managers, and the professionalism of data management in the petroleum industry.

Keynote Presentation - The Transformed Oil & Gas Company - Since the early 2000's our lives have been radically transformed through digitalization, however, since the early 2000's O&G companies have not been transformed near as much as we have in our personal lives. I will talk about what a "transformed oil and gas company" could look like, what the barriers are that we will need to overcome (and it is not technology related), how we can overcome the barriers AND how this transformation will change the industry's overall commitment to humankind.

Jim Claunch is currently Vice President of Operational Excellence for Development and Production USA/Mexico in Equinor (formerly Statoil). He joined Statoil in 2009 as Vice President of Global Business Services in the Houston office and subsequently held VP of HR positions in Norway and in Houston. He has over 25 years of experience in the energy sector including 14 years of international experience serving in various financial and shared services roles.

Aggregating Big Frac Data Sets With Network Graphics - As the amount of data available to E&P companies rapidly increases, new methods will be necessary to make sense of these vast sets of information. Network graphs present one new strategy for visualizing and aggregating large sets of data, and can be used to disclose causal relationships between seemingly disparate information points. Not simply a novel type of data visualization, the mathematics underlying network graphs – known as 'network theory' – provide empirical metrics for deeper analysis of these relationships by describing the various structural properties of the network graphs (Coello et al, 2015). This presentation will provide a brief introduction to the basics of Network Theory and network graphs to demonstrate how these techniques can turn big data sets into value adding assets for an operator.

Michael Raubach is the strategic account manager for Well Data Labs, a big frac data structuring platform, where he has worked for a little over a year. Prior to joining Well Data Labs he was living in Aarhus, Denmark where he was working as a PhD Fellow at the University of Aarhus. His research there used Network Theory to study sociographic and cliometric data for the European Union "Horizon 2020" project.

Machine Learning Applicatin in Decline Curve Analysis - One of the central questions in science is forecasting: based on the past history, how well can we predict the future? In many domains with complex multivariate correlation structures and nonlinear dynamics, forecasting is highly challenging. In the oil and gas industry, conventional approaches such as the modified hyperbolic method, have been utilized to analyze the production decline curve. Forecasting decline curves is an important component for E&P companies in business planning, asset evaluation, and decision making. Here we introduce a machine learning approach to tackle the problem, and to be more specific, an LSTM approach (LSTM stands for Long Short Term Memory, which is one kind of recurrent neural network). Compared with the hyperbolic approach, where the problem has been reduced to an over-simplified curve and essentially determined by a global curvature structure, the LSTM model is more dynamic and has a better chance of capturing non-linear events. In time series prediction, one main difficulty is how to stabilize the solution, as the error can easily accumulate over time. One way to make the algorithm more robust is through feature engineering, and here we leverage historical data from other wells, which improves our prediction significantly. We also build the prediction model from the accumulated curve domain, and eventually ensemble multiple models to reduce the variance. Given the fact that the model is only trained on the first 3 months of data (around 10% of the data), the oil rate prediction for the first 2 years shows great promise. *Cheng Zhan received a B.S. in mathematics from Sun Yat-sen University, and a Ph.D. in mathematics from University of Houston. He began his career at CGG as a seismic imager, later joined TGS as a processing geophysicist. Currently he is working as a senior data scientist in Anadarko Petroleum.*

Abstracts & Biographies

Marathon Oil's Master Data Management Journey - Marathon Oil went live with a Master Data Management solution in September 2016. Since that time the solution has grown to provide value across the company. In this presentation, Marathon Oil will discuss the challenges that led them to implement a solution, where they started, and how the solution and benefits evolved over time. Marathon Oil will discuss the impact to analytics, process automation, data transformation, integration, data governance, lessons learned, success factors, and more. *Jesus Rodriguez is an exploration and development geoscientist with over 15 years of experience from prospect maturation, evaluation, drilling, operations, and planning for deep water and deltaic prospects and fields. He joined the IT organization in January 2016 with the task of creating a well database that is reliable, consistent, and accessible to everybody within the company. During this short journey in IT, Jesus has been able to understand the challenges, processes and responsibilities within the IT organization. Now, he is responsible for the evaluation, analysis, design, implementation, and management of the corporate well database that integrates business tools and subsurface systems in Marathon Oil.*

What Every Business Needs To Know About Artificial Intelligence - Artificial intelligence (AI) promises to disrupt most every industry. Organizations that are able to leverage AI have the opportunity to significantly boost profits and market valuations. Companies failing to understand how and where AI investment is necessary will likely experience long-term sub-optimal, or even disastrous, results. It's important to separate fact from fiction so businesses are prepared to integrate what is becoming a general purpose technology. This presentation offers practical insights about how you and your organization can prepare for this rapidly developing technology. *Lawrence Eribarne is a Principal at Enaxis Consulting with over 20 years of experience as a technology leader performing IT organizational transformations as both an industry leader and IT advisor. Lawrence has a cross-industry background covering media, technology, military, and a strong emphasis on energy and manufacturing. Lawrence focuses heavily on IT strategy, portfolio management, cost optimization, operational process improvement, and value realization. Prior to Enaxis, Lawrence held senior leadership roles within several global companies with responsibilities across strategy, planning, and service delivery. Lawrence also led IT service delivery and advisory engagements within SAIC at several Fortune 100 energy clients. He earned his BS from the University of Houston and MBA from Texas A&M University*

Integrating Environmental Intelligence in Oil & Gas Operations -In the interest of sustainable operations reflecting on the environment and climate is essential. Environmental Intelligence refers to a technology and data driven approach of obtaining information on ambient conditions. As the number of satellites grow and technology to interpret the data advances, large and precise datasets are available to accurately predict the atmospheric conditions. Environmental Intelligence on a holistic will provide predictions for Emissions, Air Quality, Aerosol concentration, Acid Depositions, and Ozone conditions and how these factors interplay. The datasets for Environmental analysis can be obtained from different remote sensing (IOT enabled) devices, Satellites and historical repositories Once such data insights are available, the technologies for algorithmic processing and analysis can then be applied in conjunction with global scientific research and models as available to simulate Earth's system and climate and build regional recommendation models. *Aman Chhikara works in Energy Trading and Risk Management industry from past 11 years and has worked with several Oil and Gas clients for system selection, design, implementation and integration. His expertise is in Natural Gas and LNG Trading business processes and design analysis. Past Experience Includes: Sapient Global Markets (5 Yrs) - ETRM Domain, Price Waterhouse Coopers (5 Yrs.) - Energy Advisory, Publicis.Sapient (1 Yr.) - Digital Transformation. Educational Background: B.Tech (Electronics). Presented with Janahan Gnanachandran and Ajit Joseph.*

Getting A Handle on Hauling - Hauling liquids in the oilfield will never go away. Whether used to supplement capacity of gathering systems or provide all delivery capacity for a field, hauling adds significant cost per barrel to LOE. Reducing this cost by just 10% can have visible impact on the bottom line. Dispatch personnel can make this happen by being empowered to make optimal decisions regarding hauling efficiency through utilization of up to the minute data, machine learning and operations research. Not only does this approach give significant hours of the day back to personnel, but they can be assured of the quality of their decisions. This is where IoT and machine learning meet operations management for a more cost-effective oilfield. *Wesley Dyk has worked in the industry since 1999. His resume includes time at Tom Brown, Inc., Encana and Noble Energy Inc. Wesley developed and implemented a load dispatch system to enable the dispatch team to manage the delivery of oil and water efficiently. In 2014, this system, combined with a decision support model, reduced their manual effort by 80%. Wesley has presented on this topic at multiple sessions, including SPE PD2E and IFORS (International Federation of Operations Research Societies)*

Abstracts & Biographies

Data Trust & Curation Start At The Source - In the context of ever expanding data volume and its influence on our decision systems one can wonder how much one can rely on this ever-increasing feed of data or information we have no or little control over. In this context it seems fair to ask, "How do we build trust?" We will demonstrate how indeed we can trust the data once it has been properly (and transparently) validated. At which point we will establish that trusted data becomes an asset for the users and therefore the company which owns it. Such assets deserve to be curated like museums do with their master pieces. Only then can you let the data bloom with the advent of all forms of analytical and correlation tools. The author will highlight how to adapt this logic to remote data gathering and the challenges it has traditionally represented *Philippe Flichy is a digital transformation strategist and advisor to tech companies with deep knowledge of the energy industry. He held senior positions at Baker Hughes and Weatherford. He joined the O&G industry from the 2002 Salt Lake Olympics delivering all the games results. He initiated the Digital Transformation Study Group at the Society of Petroleum Engineers. Philippe graduated from Boston University in Management Information System*

Quantifying Business Intelligence ROI - Business Intelligence ROI calculates the value of an organizations investment in Business Intelligence. Measuring Business Intelligence ROI can be problematic, as it involves defining measurable values for tangible (quantifiable financial values) and intangible (non-quantifiable financial values). It is further complicated by the fact that the value of Business Intelligence may be best captured by measuring the cost of an organization not investing in Business Intelligence. Therefore, it is vital for an organization to make an informed decision by quantifying the costs and benefits of an investment in Business Intelligence. This presentation offers practical insights in defining and measuring Business Intelligence ROI. Attendees will learn about the challenges associated with quantifying Business Intelligence ROI, difference between Tangible and Intangible Business Intelligence ROI and factors associated with the cost of not having a BI Solution. *Charity Queret is a senior consultant at Stonebridge Consulting. Charity has over 20 years of experience in designing and developing end-to-end business intelligence and data warehousing solutions. Her data management expertise includes business intelligence services, such as Cognos and Crystal development, requirements gathering, data verification, data mapping and testing. She also provides documentation of existing systems, user manuals and training and BI roadmaps for future development.*

Panel Discussion: Analytics - Featuring three short presentations followed by Questions & Answers.
What Analytics are working in Oil & Gas? - With all the hype there is a gap in expectations but there are some proven results.I will share several analytics examples of ESPs, Plunger pumps, PCPs, Gas lift, and compression results. I have pump off control examples coupled with shape files to show the analytics around pump off control as well. Having an interactive discussion bringing the audience into the conversation. Asking the audience for examples they have and the detail to accomplish the analytics evaluations they have results to share. Taking questions as to the gaps and the "how to" for assisting in getting to success. Happy to go thru in detail the information flow and required steps to deliver analytic results. The Denver area has a large amount of gas I can share an example of gas lift analytics. We could then follow it up with a machine learning example for compression. In closing I could summarize the how to and required information to get to analytics improvement. *Cindy Crow is Global Industry Principal for OSIsoft with over 37 years experience, Working for Chevron and specialty chemicals, her last 13 years with Schlumberger prior to joining OSIsoft. She is experienced in assessing current use of information, machine learning and automation technologies, developing strategies and plans to drive business value. Most recently focusing on Analytics, IIoT and the growth in edge devices, drones,and business intelligence. She is a ChE and an MBA.*

Abstracts & Biographies

Taking Data Governance to the Analytics Level - While many companies have initiated data governance programs that support operational data quality, the move in oil & gas companies to using advanced analytics requires new levels of data governance to support enterprise reporting and analytics. Existing operational data governance primarily helps define and insure what the data should be, where it should be kept, and when it should be there. Analytical data governance requires more information and at a higher level of detail to provide adequate support. A clear discussion about each of these additional requirements will assist in planning the extension of current data governance efforts to the support of advanced analytics in our progressive energy companies in the future. *Bill Bruner is the head of Trilucent Consulting, a data management consulting firm. He has over 40 years of experience in IT, primarily in solutions delivery. Bill has spent the last ten years on data management projects working with businesses establishing data governance organizations as well as working with both users and IT to implement MDM, metadata management, RDM, and hierarchy management solutions as well as establishing policies, processes and standards for corporate data management.*

Python Mining The Bakken: Scraping, Landing Zones And Spatial Residuals - This study automated the collection, separation, and quantitative analysis of data with Python to better understand geologic influences on production trends from the Pronghorn Member of the Bakken Formation. Public core, well log, and completion data was mined by automating website interactions in a process known as scraping. Scraped core photos, NMR, and elemental logs provided structural definition higher than from triple combo logs alone. Production separation was automated by comparing well deviation surveys to a 3D point cloud of the landing zone using a haversine formula nearest neighbor search. Wells found to be landing in zone were included in production metrics calculations. Interpolated data was resampled on a grid and evaluated for correlations with a scatter matrix. Residuals were calculated for correlations with a Pearson's Correlation Coefficient of $|r|>0.3$ then mapped to the grid. This method provided a deeper understanding of variable correlation behavior spatially. *Matthew Bauer is a Geologist with Anschutz Exploration Company and a Research Faculty Member with the Colorado Geological Survey at Colorado School of Mines. He earned a MS in Geology from Colorado School of Mines and a BS in Geology from The University of Missouri-Kansas City. Research interests include stress, quantitative geology, and utilizing Python to let geologists spend more time interpreting geology.*