

## Harness Oil and Gas Big Data with Analytics: Optimize Exploration and Production with Data Driven Models (Wiley and SAS Business Series)

By Keith Holdaway



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# Use big data analytics to efficiently drive oil and gas exploration and production

Harness Oil and Gas Big Data with Analytics provides a complete view of big data and analytics techniques as they are applied to the oil and gas industry. Including a compendium of specific case studies, the book underscores the acute need for optimization in the oil and gas exploration and production stages and shows how data analytics can provide such optimization. This spans exploration, development, production and rejuvenation of oil and gas assets.

The book serves as a guide for fully leveraging data, statistical, and quantitative analysis, exploratory and predictive modeling, and fact-based management to drive decision making in oil and gas operations. This comprehensive resource delves into the three major issues that face the oil and gas industry during the exploration and production stages:

- Data management, including storing massive quantities of data in a manner conducive to analysis and effectively retrieving, backing up, and purging data
- Quantification of uncertainty, including a look at the statistical and data analytics methods for making predictions and determining the certainty of those predictions
- Risk assessment, including predictive analysis of the likelihood that known risks are realized and how to properly deal with unknown risks

Covering the major issues facing the oil and gas industry in the exploration and production stages, *Harness Big Data with Analytics* reveals how to model big data to realize efficiencies and business benefits.

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#### **Editorial Review**

From the Inside Flap

Uncertainty is the enemy of oil and gas exploration and production—and while it will never be eliminated entirely from these processes, big data analytics can go a long way to mitigating risks and revealing efficiencies that can make energy production more reliable and profitable. With *Harness Oil and Gas Big Data with Analytics*, expert author Keith Holdaway offers the most comprehensive compendium of advanced analytics methodologies that oil and gas engineers can apply to their data.

This complete resource serves as a guide for fully leveraging data, statistical, and quantitative analysis, exploratory and predictive modeling, and fact-based management to drive decision making in oil and gas operations. The book delves into the three major issues that face the oil and gas industry during the exploration and production stages:

- Data management, including a discussion of the challenge of storing massive quantities of data in a manner conducive to analysis and effectively retrieving, backing up, and purging data
- Quantification of uncertainty, featuring an in-depth review of the statistical and data analytics methods for making predictions and determining the relative certainty of those predictions
- Risk assessment, including predictive analysis of the likelihood that known risks are realized and how to properly assess and prepare for unknown risks Intended as a hands-on guide, this resource provides a complete overview of upstream data analysis and data management and then dives into details specific to the industry, addressing such topics as seismic attribute analysis, drilling and completion optimization, reservoir management, production optimization, and exploratory and predictive data analysis. Covering the major issues facing the oil and gas industry in the exploration and production stages, this groundbreaking work reveals how to model big data to realize efficiencies and business benefits in the oil and gas exploration and production phases like never before.

From the Back Cover

## Praise for Harness Oil and Gas Big Data with Analytics: Optimize Exploration and Production with Data-Driven Models

"This is a time of great change in the oil and gas industry, and even before embracing real time systems, we were struggling to extract meaningful insights from a large accumulation of data that was right under our noses. Based on his years of global experience, Keith has developed a deep technical understanding of these issues, and in his book *Harness Oil and Gas Big Data with Analytics*, he combines this understanding with his unique talent for communicating complex issues in a straightforward manner. Reading this book you will begin to see your data as the insight it was intended to be, and not the burden it has become."

—Dennis Seemann, Supervisor, Reservoir Management Analytical Division, Saudi Aramco

"Keith Holdaway has written an important and timely book addressing the significance of data-driven analytics in our industry. Keith is highly knowledgeable in this area and has a strong command of the important aspects of this subject. This book is a testimony to his dedication to, and depth of understanding of, data-driven analytics as they relate to the exploration and production industry. This is a must-read for anyone interested in this subject."

—**Shahab D. Mohaghegh, PhD,** CEO, Intelligent Solutions, Inc.; Professor of Petroleum & Natural Gas Engineering, West Virginia University

# EXPLOIT NEW EFFICIENCIES THAT BIG DATA ANALYTICS CAN BRING TO OIL AND GAS EXPLORATION AND PRODUCTION

From an expert in the field of oil and gas data analytics comes *Harness Oil and Gas Big Data with Analytics*, a complete view of big data and analytics techniques as they are applied to the oil and gas industry. Including a compendium of specific case studies, the book underscores the acute need for optimization in the oil and gas exploration and production stages and shows how data analytics can provide such optimization.

With a unique focus on applying big data analytics to the oil and gas industry, this book provides a roadmap for leveraging data, statistical, and quantitative analysis, exploratory and predictive modeling, and fact-based management to drive decision making in oil and gas operations. Starting out with a complete overview of data analysis and oilfield analytics, this resource hits all the high points of big data analytics best practices and challenges before delving into the specifics of oil and gas exploration.

Featuring ten chapters of in-depth information, readers will get a full view of the most important issues for oil and gas data analytics, including seismic attribute analysis, reservoir characterization and simulation, drilling optimization, reservoir management, and production forecasting and optimization. For oil and gas engineers and IT professionals working in the field, this is the resource for making the most of data to forge efficiencies and increase profits from the processes of exploration and production.

About the Author

**KEITH R. HOLDAWAY** is Principal Industry Consultant and Principal Solutions Architect at SAS, where he helps drive implementation of innovative oil and gas solutions and products. He also develops business opportunities for the SAS global oil and gas business unit that align SAS advanced analytics from Exploratory Data Analysis and predictive models to subsurface reservoir characterization and drilling/production optimization in conventional and unconventional fields. Prior to joining SAS, Holdaway was a senior geophysicist with Shell Oil, where he conducted seismic processing and interpretation and determined seismic attributes in 3D cubes for soft computing statistical data mining.

#### **Users Review**

#### From reader reviews:

#### **Nancy Smith:**

Why don't make it to be your habit? Right now, try to prepare your time to do the important work, like looking for your favorite e-book and reading a guide. Beside you can solve your trouble; you can add your knowledge by the book entitled Harness Oil and Gas Big Data with Analytics: Optimize Exploration and Production with Data Driven Models (Wiley and SAS Business Series). Try to make the book Harness Oil and Gas Big Data with Analytics: Optimize Exploration and Production with Data Driven Models (Wiley and SAS Business Series) as your buddy. It means that it can to become your friend when you truly feel alone and beside regarding course make you smarter than before. Yeah, it is very fortuned for you personally. The book makes you a lot more confidence because you can know anything by the book. So, let me make new experience and also knowledge with this book.

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