

Teradata Predictive Analytics for Oil and Gas

Achieve Drilling and Production Excellence

If your business is like most in today's oil and gas industry, you're already well equipped with sophisticated front-end dashboards and simulation models that tell you when to perform a well workover, when to change a waterflood injection scheme, or when to replace critical equipment before failure. But what may be difficult for you to do is use your collected data to determine when the next change or repair is needed or what impact not replacing a specific part would have on your bottom line.

Ask yourself these questions:

- > Do you analyze just a few well events? Or can you look at *all* events for *all* your wells in the field to forecast and avert possible production failures?
- > Do you comb through cumbersome reports and manuals, reading text to determine the nature of failures? Or can you automate the *what, when, and how* of the failure?
- > Do you face excess drilling nonproductive downtime because of multiple trips? Or can you minimize downtime with a proactive, optimized maintenance program based on predictive analysis?

If you find yourself answering yes to the first parts of those questions, your exploration and production operations need a new, better way to integrate, collaborate, and analyze data so users across your business can make more reliable decisions and take faster action.

The Best of Both Worlds

And that's where Teradata Corporation, the global leader in enterprise data warehousing, can help. We take our decades of experience and expertise in manufacturing process solutions and techniques and tailor a program that's just right for your business.

For years now, leading-edge companies in many industries have taken advantage of Teradata's Active Enterprise Intelligence capabilities to align and drive smarter, faster strategic and operational decision making. This new kind of business intelligence allows exploration and production companies like yours to uncover multiple business improvement opportunities, speed time to production, and achieve operational excellence. By applying our predictive analytics solutions across your business functions and operational areas, you'll be better prepared to derive subtle new insights to users across your organization.

Teradata can show you how to combine the industry full-physics models with statistical in-database mining to create an exciting new capability that allows you to:

- > Augment modeling and simulation with powerful statistical approaches proven in other industries.
- > Solve problems even when your models are overrun with too many effects.



Production Surveillance and Optimization

Among the array of business improvement opportunities Teradata solutions open up to oil and gas companies are:

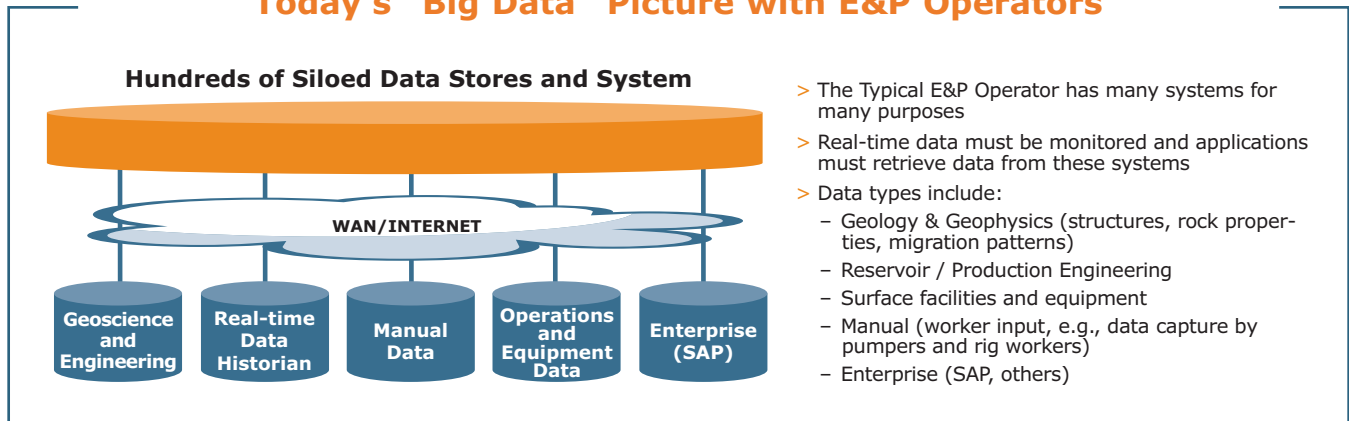
- > Well and field surveillance that brings operations and cost transparency to your operations.
- > Production optimization, a *models and mining* combination of traditional oil and gas industry models facilitated by cross-discipline integration and in-database statistical analytics.
- > Predictive equipment maintainability and reliability: equipment monitoring that employs time-tested predictive methods already successfully used in other industries.

Well and Field Asset Surveillance

Currently, your engineers may have to embark on a time-consuming and manual search process, looking at multiple applications to answer simple questions about well event history. But bringing together separate systems, such as OpenWells,

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Today's "Big Data" Picture with E&P Operators



FINDER, Maximo, and SAP® into a data warehouse from Teradata will allow your engineering and operations personnel to see specific well activity and performance. Bringing these data environments together enhances the drilling and production process for both your individual assets and your entire business unit.

The data warehouse will let you and your business view well event history, including the latest producing status; last well test; initial rate; producing reservoir; types of interventions, maintenance, or spare parts/equipment employed; and the costs associated with the intervention. The result: the ability to generate a well events list that shows all interventions, observations, maintenance, monitoring, and production data for a given well. With that information, you'll be able to score-card wells and prioritize which activities on any given well are leading to lost production and higher operating costs. Plus, you'll be able to reduce time to

action by detecting and solving problems faster with centralized data for analysis.

Production Optimization

Optimizing production often entails recommending optimal well settings. Engineers armed with the capabilities of an active enterprise data warehouse can tap into existing real-time asset data streams, as well as other asset applications to establish a centralized source for asset data. These incoming data automatically flow into your data warehouse, which then continuously calculates optimal facility and well settings, including the optimal choke setting and gas-lift optimization for each modeled well. The data warehouse can also identify significant deviations from established performance trends.

We can show you how to utilize process data, production history, gas lift data, and completion information to:

- > Integrate data from many disciplines without limits.

- > Recommend facility and well settings that will optimize oil production.
- > Identify significant deviations from established performance trends.

Equipment Reliability and Maintenance

Even if you already have a robust maintenance program in place, deploying a data warehouse will complement your current programs with better real-time capabilities. It will allow you to better predict imminent equipment or well failure and propose solutions based on total company experience. Specifically, it will help your engineering personnel quickly see the complete and most accurate information and data on all components of your assets, including wells and facilities, so they can:

- > Identify significant deviations from long-term performance trends.
- > Predict which equipment needs additional (unscheduled) maintenance.
- > Predict imminent equipment failure.
- > Propose solutions based on successful historical resolutions.

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Here too, Teradata predictive analytics will allow you to:

- > Reduce your unscheduled equipment maintenance events.
- > Cut down on production loss and deliver higher asset performance.
- > Flag an immediate issue.
- > Maximize reliability through root-cause and failure-and-effect analyses.
- > Recommend solutions based on similar equipment failures on other assets.
- > Ensure continuous safe operations.

Why Teradata?

Teradata brings you a blend of technology and experience unavailable from any other source. We're focused solely on the data warehouse market, a focus that has allowed us to meet the unique needs of 900 customers in more than 1,900 installations. Teradata consultants have been providing innovative, best-in-class business solutions for more than 25 years, accumulating more data warehousing experience and expertise than any other source.

Top industry leaders around the world already rely on Teradata, including:

- > 90% of top 10 global telco firms
- > 70% of top 10 global airlines
- > 60% of the top 10 transportation logistic firms
- > 50% of top 10 global retailers
- > 40% of top 10 global commercial and savings banks

Teradata, the global leader in data warehousing and analytic technologies, provides solutions that help make smart companies smarter. Teradata gives companies the people, technology, innovation, and a world-class network of customers and partners enabling them to gain competitive advantage to master their markets. With Teradata, the smartest wins.

For More Information

To find out more about how Teradata predictive analytics for the oil and gas industry can help you achieve production excellence and grow your business, contact your local Teradata representative or visit Teradata.com.

Reliable, Optimized, Faster, Safer Production

- > **If your equipment reliability is maximized to the entitlement (design capability)...**
 - > **If you manage your AFEs to field-costs predictions...**
 - > **If your maintenance is efficient and repairs handled proactively...**
 - > **If you minimize performance variation and are alert to impending operational problems that could deter production...**
 - > **If you predict and manage extraordinary expenses...**
 - > **And if you can do all that by exploiting the inherent data from operations, reduce the human expense in detecting and utilizing those data, and predict future events...**
- ... you will achieve production excellence.**

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