

Oil and Gas Industry Applications



Large data management and processing, process management, and machine learning.



Solutions for Oil and Gas Industry

◊ Weather Data ◊ Data API ◊ Customer Data Portal ◊
Customer Contact Management ◊ Service Level Agreement
Monitoring ◊ Key Customer Insight ◊ Demand forecasting

Weather Data

Weather data source for demand forecasting, scenario analysis, machine learning, financial forecasting



Problem

- + Weather data is required for many business functions and applications
- + Consistent weather assumptions must be made across multiple business processes and applications
- + Required weather data may need to be integrated from multiple data sources

Why Fractal

Delivered weather data management system with Fractal Programming.

Integrates data from multiple data sources and reconciles the sources for a consistent data view.

Data accessible both interactively and programmatically via web APIs.

Insures consistent weather assumptions across business processes and applications.



Solution

Weather data management system



Integrates data from multiple data sources

Provides data at multiple levels of time granularity (5-minute, hourly, daily, weekly, monthly)



Data accessible via interactive graphical user interface(s) as well as application programming interface(s) API

Impact



Increased consistency across business processes.



Increased quality and consistency in analysis and forecasting processes and applications.



Data API

Web services data API for metering, billing, customer information.



Problem

- + Customers increasingly requesting programmatic access to their data
- + Large customers want convenient access to their entire portfolio of accounts and associated information
- + An API is necessary In order to make many third party services available to customers

Why Fractal

Delivered parallel data management system with Fractal Programming.

Make metering, billing, weather, and other customer data available without imposing any load on legacy systems-of-record.

Consistent interface and interaction for customers across all data types and data requests.

Impact



Increased customer satisfaction.

No additional load on IT resources.



Third party services easier to enable for customers.



Solution

Web services API's are exposed as components of parallel systems for managing meter data, billing, and customer information



Customers can access the data both via interactive web portals and via programmatic APIs



Multiple data format supported (JSON, XML, CSV) as well as custom data formats



<https://FractalWeb.app>

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CUSTOMER DATA PORTAL

Make customer bills, meter data, and rate plans available on customer's desktops and mobile devices.



Problem

- + Customers want access to energy and billing data on digital devices
- + Customers want to do scenario analysis for rate plans
- + Customers want budget forecasts
- + Customers want visibility to solar and wind energy usage metrics
- + Customer want to supplement their data

Why Fractal

Delivered a parallel customer care and billing system in 90 days at 1/10th the cost of legacy system.

App provides customer rate plan scenario analysis, budget forecasts, green energy metrics, and enables customer to enter supplemental information about energy efficiency projects.

Customers can self-service their information needs on web portal from their digital devices.

Solution



Parallel customer care and billing system that is accessible from customer's digital devices



Instant customer visibility to their real time bill

Customer can test different rate plans in real time

Customers have easy access to budget forecasts



Customers can self-service their data needs which frees up key account and call center resources

Impact



\$10 million development cost savings and customer support cost reduction for customer information portal.



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Customer Contact Management

Critical loads, priority loads, and key account contact management. Automated email, text, and voicemail communication of information, alerts, and alarms.



Problem

- + Contact information for notification of outages or other problems can be different than billing contact
- + The scale of customer base can make data management and automated communication challenging
- + Customers need to be able to update contact information and preferences to track changes in their internal organization

Why Fractal

Fractal enables data portals to be easily built for both internal and external customer use.

Flexible database definitions enable easy addition of attributes for tracking critical, priority, and key accounts.

Native email, text, and voicemail communication for alerting and alarming

Solution scalability for entire customer base.

Impact



Customers proactively notified and updated on issues.



Changes in customer organization and contact points continually tracked and accounted for.



Solution

Customer portal that enables customers to update their contact information and preferences



Internal support portal for use by call center and key accounts team to track and update customer contact information



Identification and classification of critical, priority, and key accounts loads for real-time detection of site-specific outages and other issues



Service Level Agreement Monitoring

Monitoring, analysis, and alarming for data provider service level agreements



Problem

- + Data provider service level agreements can be challenging to monitor, analyze and manage
- + Meter data service level shortfalls can lead to billing problems with customers
- + Quick early detection of data provider problems is needed to prevent downstream issues

Why Fractal

Delivered parallel meter data management system (MDMS) with Fractal Programming.

Parallel MDMS application identifies all missing data and meter reading errors.

Automatic alerting and alarming of failures to meet data service level agreement metrics.

Utility is able to bill with confidence that meter data is correct.

Impact



Increase in bill quality.



Reduction in customer billing complaints and issues.



Solution

Parallel meter data management system



Analyze all interval and daily data to locate any missing data elements and test against service level agreement metrics

Reconcile all interval data against all daily data to check for consistency



Machine learning module to identify unusual consumption patterns that can indicate meter reading issues



KEY CUSTOMER INSIGHT

Incorporate key customer insights from multiple data sources both internal and external to utility.



Problem

- + Key customer insight data is often located outside of systems-of-record
- + Valuable customer information is located department-level computers or desktop spreadsheets that are not accessible by systems-of-record
- + Customer entered and customer maintained data needs to be incorporated into customer insight apps
- + Public domain information (eg. tax records) must be incorporated into customer insights

Why Fractal

Fractal Programming enables continuous real-time data import.

Data import tools work with data sets internal and external to utility, including public domain data sets.

Data import tools work with desktop resources such as spreadsheets and text files in addition to data exports from systems-of-record.

Customer data entry / import supported.

Impact



Deeper key customer insight.



Enables all customer information, regardless of where it resides, to be incorporated into 360 degree view of customer relationship and customer activities.



Solution

Implement continuous real-time data import from systems-of-record



Implement continuous real-time data import from department-level computers and desktop applications



Implement continuous real-time data import from public domain sources

Implement continuous real-time data import directly from customers



DEMAND FORECASTING

Legacy forecasting system would not run quickly enough for capital markets futures positions to be taken



Problem

- + Forecasting system must run in less than 12 hours
- + Using major data center, legacy system did not always finish in time
- + Utility also needed to increase system size and capacity
- + Utility needed to accurately bid in futures market

Why Fractal

Fractal Programming enabled the development of a demand forecasting App that runs over 1,000 times faster than the legacy App.

Forecasting system was delivered in a single business quarter and is more accurate than legacy system.

Solution



Fractal Programming enabled new demand forecasting system to be written and deployed in a single business quarter



Dramatically increased accuracy and number of scenarios that can be run

Uses full customer data set instead of just a data sub-set



System runs in minutes instead of hours

Financial Impact



Added accuracy of forecasting 100% of the data, not samples, impacts millions of dollars of futures contracts each year.

