# 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

## fractal

#### 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



#### 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

#### 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.

## Impact Increased of business pr Increased of

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.

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#### **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-ofrecord.

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

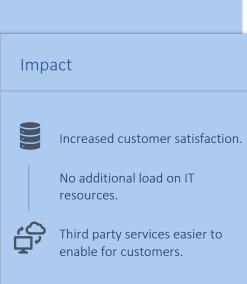


#### Solution

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





#### 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

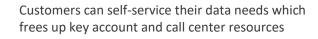
#### Solution

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



#### Why Fractal

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

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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.





#### 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



#### 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

#### Why Fractal

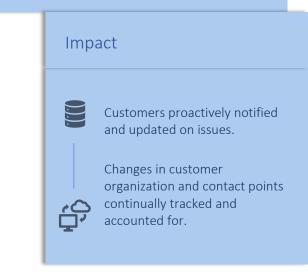
Fractal enables data portals to be easily built for both internal and external customer use.

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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.





#### 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



#### 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

#### Why Fractal

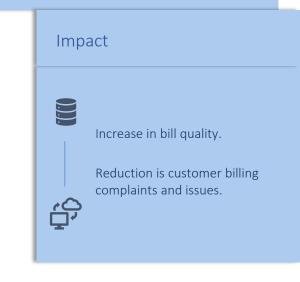
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Delivered parallel meter data management system (MDMS) with Fractal Programming.

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.





#### **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 departmentlevel 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

#### 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

#### Why Fractal

Fractal Programming enables continuous real-time data import.

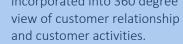
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Data import tools work with data sets internal and external to utility, including public domain data sets.

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





#### DEMAND FORECASTING

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

#### Problem

Solution

sub-set

single business quarter

scenarios that can be run

- + 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

Fractal Programming enabled new demand

forecasting system to be written and deployed in a

Dramatically increased accuracy and number of

Uses full customer data set instead of just a data

System runs in minutes instead of hours

#### Why Fractal

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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.

### Financial Impact

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

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https://FractalWeb.app