

# Telecommunications Applications



Customer insight, network  
management, billing, rate  
modeling, forecasting  
solutions.



## Solutions for Telecommunications

✦ Customer Care and Billing ✦ Data API ✦ Customer Data Portal ✦  
Customer Contact Management ✦ Service Level Agreement Monitoring  
✦ Rate Design and Simulation ✦ Rate Assignment and Validation ✦ Key  
Customer Insight ✦ Key Customer identification ✦ Program  
Measurement and Verification ✦ Billing Quality Assurance

## Customer Care and Billing System

Major electric utility customer care and billing system transformation



### Problem

- + Billing system too complex to easily modify
- + Needed 360 view of major corporate customers
- + Give customers ability to self-service their data needs
- + Check each bill for 100% accuracy before sending
- + Give key account team flexible customer info

### Why Fractal

Delivered parallel solution with Fractal Programming.

Parallel application ran over 1,000 times faster, reduced storage 90%, and eliminated billing errors.

Utility was able to add new features in hours and days rather than months.

### Solution



Delivered parallel customer care and billing system costing 1/10<sup>th</sup> of legacy app

Reconciled every bill before being sent to customer



Delivered customer data portal to all customers

Entire solution in production in 90 days

Utility gained deeper understanding of its largest customers



Key accounts team and call center increased customer satisfaction

### Financial Impact



Eliminated need for \$35 million billing system rewrite



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## 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.



### 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

### Impact



Increased customer satisfaction.

No additional load on IT resources.



Third party services easier to enable for customers.



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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 1/10<sup>th</sup> 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.



### 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

### Impact



Customers proactively notified and updated on issues.



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



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## 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.



### 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

### Impact



Increase in bill quality.



Reduction in customer billing complaints and issues.



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## RATE PLANNING AND SIMULATION

Real time plan any rate across every customer with 100% accuracy.



### Problem

- + Utility needs to plan different rates across millions of customers every year
- + Rates complicated due to wind, solar and other green energy and distributed generation initiatives
- + Costs millions of dollars to simulate rates, create financial forecasts, and estimate customer impact
- + Large or individual customers may have surprises

### Why Fractal

Fractal Programming enables flexible real-time creation of rate plans.

App performance enables rate plans to be run against 100% of customers for dozens (multiple years) of billing cycles in minutes.

Utility eliminates all new rate surprises for customers.

Utility has highly accurate financial forecasts for itself and its customers.



### Solution

Implement real time rate planning engine



Test every rate, across every customer, using previous bills

Forecast utility yearly revenue to the penny

Eliminate all new rate surprises



Enable utility profitability analysis by rate plan

### Impact



Saved \$2 million paid to rate consultants for single rate plan.



Saved \$8 million for subsequent rate planning.



## RATE ASSIGNMENT AND VALIDATION

Scan all customer accounts to validate qualification for assigned rate. Automatically assign rates to customer accounts.



### Problem

- + Assigning rates to accounts can be time consuming and error prone
- + Rate assignment complicated due to wind, solar, EV and other green energy and distributed generation initiatives
- + Qualification requirements for rates change over time requiring reassessment of all customer accounts

### Why Fractal

Fractal Programming enables flexible rules for checking rate assignments.

App performance enables 100% of customer accounts to be validated for correct rate assignment.

Automatic assignment of correct rates.

Automated customer notification of new rate assignments along with explanation.



### Solution

Implement qualification rules for each rate class

Test every rate on every customer account



Enable "what if" scenario analysis for key account customers for qualification for different rate

Forecast customer budget impact and utility revenue changes for new rate assignments



Enable utility profitability analysis by rate plan

### Impact



Saved half a million dollars in consulting fees for validating rate assignments.



100% of customers on correct rate plans.





## 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.



### 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

### 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.





## KEY CUSTOMER IDENTIFICATION

Identify key account customers based on consumption patterns, spending levels, program participation, and rules-based metrics.



### Problem

- + Key customer relationships are not always obvious – especially when customers have a portfolio of locations and multiple billable entities
- + Ownership of commercial properties frequently via special purpose vehicles, making it unclear who the portfolio customer relationship is with
- + Qualification for key account status based on spending levels and program participation can be complicated to identify and track

### Why Fractal

Fractal Programming enables flexible rules for assigning accounts to a customer based on multiple attributes.

App performance enables rule sets to be applied to entire customer base to identify key account relationships.

Automatic assignment of key account status based on qualification rules.

Both metered and non-metered attributes incorporated into rules.



### Solution

Implement qualification rules for key accounts



Implement aggregation rules to identify portfolio relationships

Classify every customer at both individual account and aggregate customer portfolio level



Enable utility profitability analysis by key account relationship

### Impact



Identify key account customers by evaluating total portfolio consumption and behavior.



Enables more focused programs by identifying impactful portfolio level decision makers in customer base.



## Program Measurement And Verification

Virtual meters used to measure aggregate response to utility programs and events. Program effectiveness analyzed and customer response behaviors verified.



### Problem

- + Effectiveness of utility program difficult to measure and analyze
- + The scale of large programs make data processing difficult
- + Need to analyze sub-groups within programs
- + Need to adjust group definitions based on changing conditions

### Why Fractal

Fractal Programming enables virtual meters that aggregate millions of individual meters.

Virtual meter definitions are easy to create and edit.

Fractal Programming performance enables real-time analysis.

Utility can now accurately measure and analyze program participation and effectiveness.



### Solution

Virtual meters defined for program participants to analyze aggregate behavior



Each individual customer's behavior also analyzed

Virtual meters defined for each sub-group within the program



Virtual meters also defined for reference groups that do not participate in the program

### Impact



Programs can be analyzed at overall program level and sub-groups to identify where program is most effective.



Program resources can be allocated based on effectiveness to maximize program impact and results.



## Billing Quality Assurance

Verification and line item reconciliation of all customer bills including reconciliation against source meter data.



### Problem

- + Billing system complexity makes billing errors likely
- + Changes in rate structures and rate plan assignments require additional quality assurance checks
- + Need to quickly check bills before sending
- + Need to reconcile billing input values against source meter data

### Why Fractal

Delivered parallel solution with Fractal Programming.

Parallel application ran over 1,000 times faster, reduced storage 90%, and eliminated billing errors.

Utility is able to update rate models in minutes.

Utility now has an independent way of checking billing and meter data.

### Solution



Delivered parallel billing system to check system-of-record billing system



Reconciled every line item of every bill before being sent to customer



Rate editor enables real-time changes to rate structures and rate plans



Billing inputs reconciled against source meter data and any discrepancies flagged

Rate assignments on every account checked to insure that account qualifies for that rate

### Impact



Eliminated need for \$35 million billing system rewrite

