

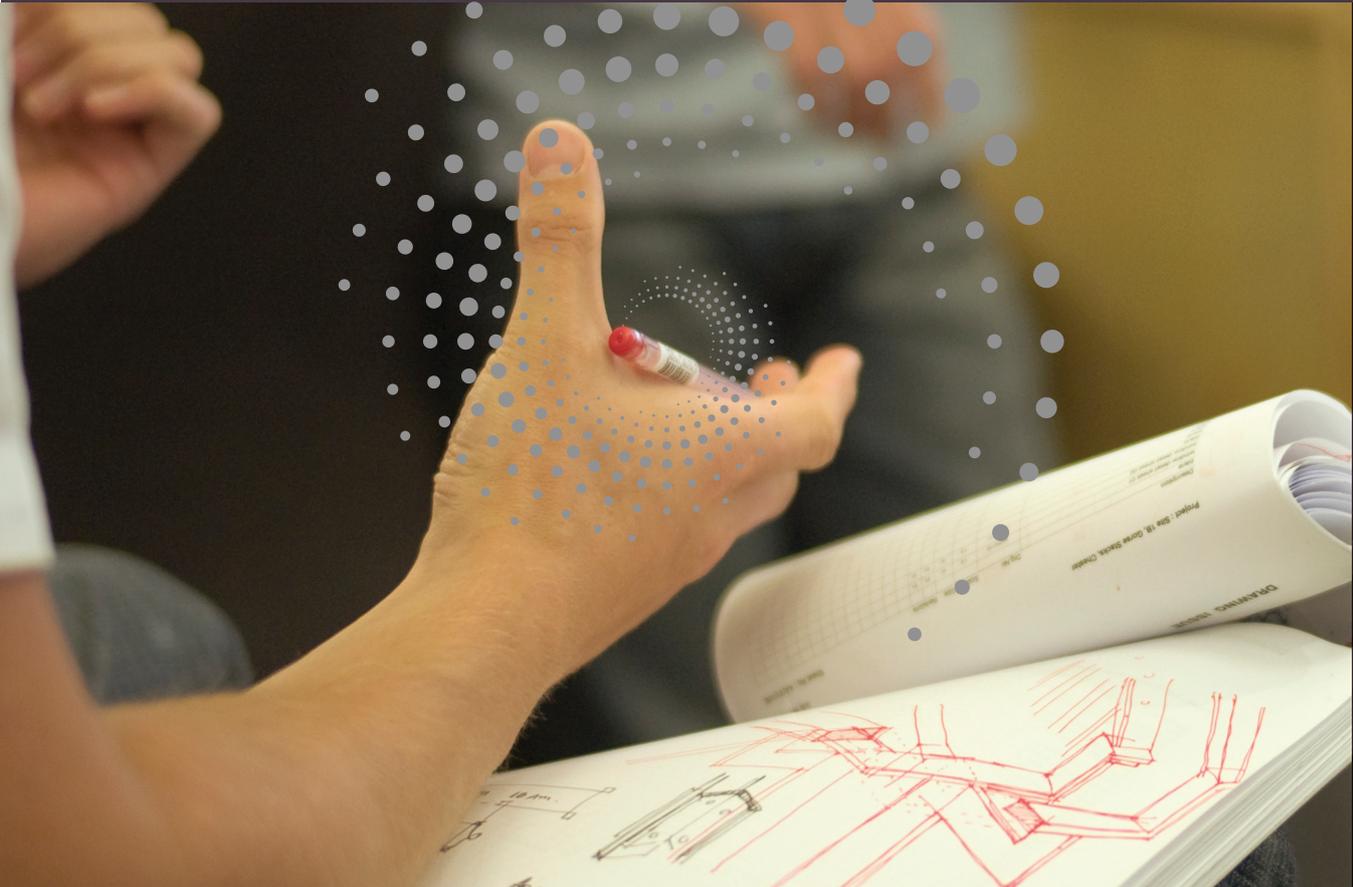
Smart Analytics for the Utility Sector



People matter, results count.

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The need for a paradigm shift



At work

While preparing for a weekly staff meeting, the CEO of a large electric utility highlighted three key issues to be covered:

- A Private Equity firm that was interested in taking the utility private had for weeks been asking for performance information;
- The Public Utility Commission (PUC) was threatening a seven digit fine for non-compliance in the service order performance reporting;
- Calls from customers in the Smart Meter rollout pilot were pouring in, claiming 2X to 5X increases in their monthly bills.

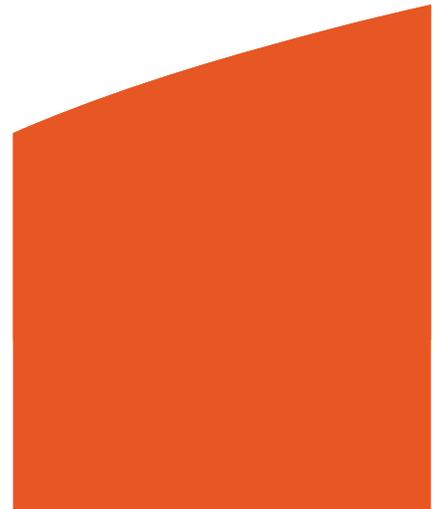
As the CEO glanced around the room at the staff, of an average tenure with the company over 25 years, he was amazed that this collection of industry experts couldn't solve some basic blocking and tackling problems. "We just spent three years and US\$50 million installing a new ERP. We have launched a Smart

Meter Pilot and plan to spend an additional US\$500 million rolling it out to the entire customer base. We have implemented a new 50TB, state-of-the-art Storage Area Network (SAN) to store all of this data. And you are telling me we cannot answer some pretty basic questions?"

It's an all too frequent scenario. Utilities today are struggling to react to this "explosion of data" which is a consequence of the "Smart Revolution". A mature infrastructure burdened with an ever increasing demand and technology advances has resulted in exponential increases in data volumes. This is compounded as utilities continue to make the grid smarter, installing an average of four devices for every meter monitored and this critical data must be collected, processed and stored.

In the 1980's and 1990's, telecommunications companies were faced with similar challenges. As new technology was introduced, companies were inundated with new sources of data and had little experience of how to deal with it. They struggled to store and to process it (processing was a must for billing!) but largely ignored proactively managing it and seldom thought to analyze it for business benefit. And yet today, the telecommunications industry is one of the most "analytically savvy" in the business world. Call detail (their equivalent of utility Smart Meter or Smart Grid data) is a rich data set that is mined extensively by their marketing departments with astounding results.

Utilities today must take prompt action to secure capabilities to interpret consumer usage patterns and develop competencies to forecast demand and plan generation. At the same time they are faced with one of the biggest technology and data management challenges the world has ever seen. If



the industry treats the daunting task of storing all this data as just another cost of doing business, the storage vendors will be very happy and the utility customer will suffer. However, if utilities view the explosion of data as an opportunity to leverage information for competitive advantage and generate additional revenue, they will better control the vital data elements of their business.

Is your organization prepared for the future?

Here are some questions to consider as you think about the state of your organization's readiness to cope with emerging needs:

- Have you been able to utilize your data repository to provide strategic insights to different functional units, while containing costs? Or are you simply storing the data?
- Do you have a strategy in place for managing and organizing the data to facilitate analysis and enable business decisions?
- Do you have access to cross-functional data from operations, outage, customer and metering in one place as the basis for e-analysis?

- Is your operational and customer data organized on legacy models or is it spread over disparate systems or technologies?
- Are you able to interpret and forecast the needs, preferences, and dynamics of your diverse customer base to create a segmented, targeting approach for rate plans and energy efficiency programs?

The future of utilities

Initiatives such as Automated Meter Infrastructure (AMI) and Smart Grid are sometimes likened to bringing the utility industry into the Internet age. Enabling direct communication with metering devices opens up a realm of possibilities for understanding usage patterns that were not even registered,

let alone analyzed and leveraged with conventional manual meter reading.

The ability to measure and analyze data about electricity distribution and consumption on a more granular basis – in time and in detail - can unlock significant value:

- Unbilled consumption identified by following the ‘meter-to-cash’ trail can generate incremental revenue.
- Detection of theft and fraud in the grid can reveal lost revenue.
- Proactive maintenance of expensive transformers and other such heavy equipment in the grid can save millions of dollars by postponing replacement to the future.

In order to realize such value from the data, it needs to be structured in a logical manner which represents the business model. This strategic view is essential to ensuring that the data is available to answer questions posed by managers, executives and regulators, not merely stored for posterity.

Demand Response programs have been cited as a key business tool for utilities to leverage this data from ‘smart’ devices. Currently, such programs are already in use at Commercial and Industrial (C&I) organizations where they represent a large opportunity for load reduction during times of peak demand.

Using interval meters, utilities have had visibility into C&I customers’ consumption patterns.

With the installation of smart meters at domestic residences, utility companies will need to implement similar demand response programs,

but on a much larger scale, entailing much more automation. The advantages to be gained include:

- Analyzing the entire customer base to find the customers most likely to participate in the Demand Response program;
- Analyzing individual customer usage behavior and aggregated trends during a Demand Response event; and
- Educating residents about incentives available to limit usage during periods of peak demand.

By working with customers enrolled in the Demand Response program to lower the demand on the grid during peak periods, utility companies can service all customers effectively. They can also avoid the costly alternatives of building ‘peaking’ power generation capabilities or buying additional power from the spot market.

In preparation for these and other future challenges, it is time for utilities to adopt a customer centric view of their world and organize their information accordingly, to support the needs of their increasingly vocal and social stakeholders – the citizens. Online social networks and e-commerce, with industry leaders like Google, Facebook, eBay and Yahoo, have set high standards for customer service and user experience. Today’s consumers expect their utilities to evolve to the same levels, especially with the media attention given to current ‘smart’ infrastructure upgrades. It is imperative for utilities to take the long view and build a robust and competitive capability to manage their information and support their future business operations in an efficient and sustainable manner.

Business drivers for Smart Analytics

Demand Response – To realize one of the key benefits of implementing ‘smart’ technologies, utility companies need to design and implement Demand Response programs that enable customers to contribute to energy load reduction during times of peak demand.

Revenue Management – As requests for rate increases become more challenging, companies need to demonstrate that business operations are functioning optimally. Ensuring all meters are accounted for and billed accurately is essential to maximizing revenue recovery. Utilities are finding proactive process monitoring to be the key to quickly identifying unbilled and under-billed meters.

Fraud & Loss Prevention – Utilities need near real time information about loads to detect system energy losses through fraud or theft. Such capabilities can realize significant financial benefits.

Energy Efficiency – Utilities need to create, pilot, monitor and run programs to educate consumers in their service areas about energy efficiency and conservation. These activities will need to be supported with timely analysis and data-driven insights.

Compliance – Regulatory requirements drive the need for consistent, complete and accurate reports on operational KPIs. Non-compliance could result in companies incurring penalties.

Asset Maintenance and Management

– The ability to identify potential problems in grid and power supply equipment can extend the life of expensive assets and avoid unplanned service interruptions.

Customer Care and Management

– Utilities are now expected to provide customers with web-based interactive capabilities to view and manage all aspects of their relationships well beyond the basic enrollment, billing, payment, and historical usage

information. Utilities need to develop tailored pricing plans and provide incentives for customers to use energy efficiently.

Forecasting and Load Management

– Accurate forecasting is essential to timely and economical demand and supply management. Utilities need to leverage data on consumption, weather and supply constraints to effectively manage their wholesale operations – and minimize the need for expensive spot market purchases of power.

Example usage scenarios for Smart Analytics:

- Calculation and verification of demand response at a customer level
- Identification of fraud/theft of power via bottom-up consumption analysis
- Meter-to-Cash Analysis
- Customer Usage Pattern Analysis
- Service reliability and performance reporting to regulatory bodies
- Transformer overload detection and circuit analysis
- Extension of the life of assets via predictive and pro-active maintenance
- Load profile characterization and definition for segmented customers – residential and commercial
- Calculation, verification and audit of assured load relief performance by load aggregators
- Capacity Offset Forecasting for load reduction programs (like demand response and interruptible load control programs).

Potential impact*

Revenue Management:
Improvements of 2% - 4% of annual revenues

Collections Management:
Improvements of 3% - 5% of annual Accounts Receivable

Customer Management:
Cost improvements of 4% - 8% per campaign

Demand response:
Reduction in peak load by 5%

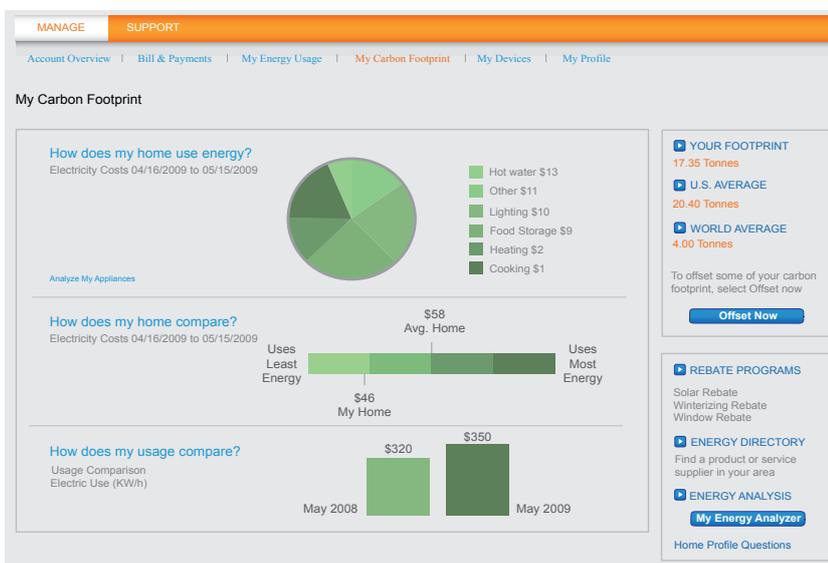
Energy conservation:
Reduction in technical losses by 15%

Energy conservation:
Reduction of non-technical losses by 50%

Outage Management:
First call resolution Improved by 50%

* Based on Capgemini experience

Interactive Dashboards



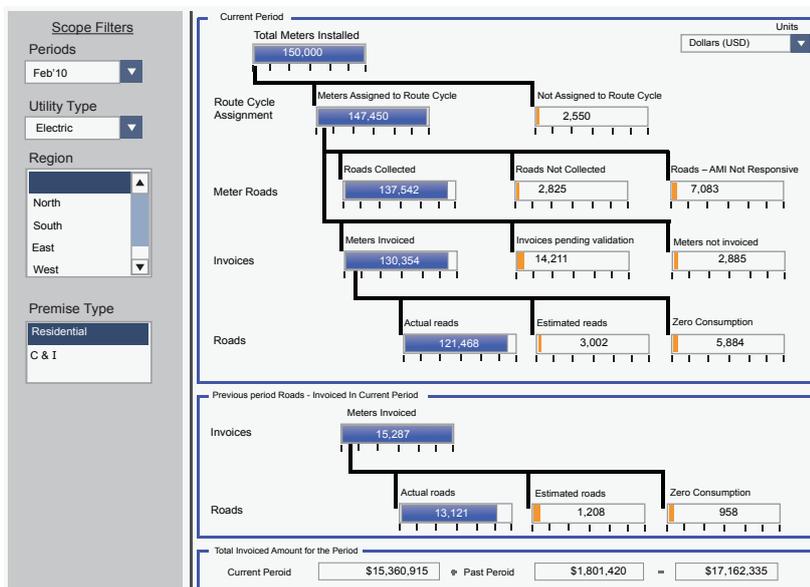
How can Smart Analytics help your business?

Smart Analytics offers utilities multidimensional support across functional areas and provides an integrated platform for the deployment of business intelligence. It pushes “actionable intelligence” to all levels of the organization.

Key benefits of Smart Analytics capabilities include:

- Improved interfaces and decision support in the form of interactive dashboards, reports and ad hoc query tools to analyze data from different business areas in a single reporting solution thus providing cross-functional business insights not previously available.
- Improved ability to analyze and understand customers’ energy use patterns, via segmentation
- Ability to educate customers on the financial and environmental impacts of their energy usage via interactive tools and portals.
- Robust and scalable data model solutions for utilities (uLDM) developed by Teradata that ensure data accessibility, enable reuse comprehensive documentation resulting in time and cost savings.
- Monitoring and analysis solutions like Demand Response Management, Time of Use (ToU) billing, Predictive Asset Maintenance.
- Exploratory analysis of rate case studies, and energy efficiency programs

Meter to Cash Decomposition Analysis



The Partnership Model

Strategic partnership enhances the speed of delivery for analytical solutions and helps create operational efficiencies while reducing risks. Partnering provides the toolsets to deliver solutions tailored to our clients' varying requirements and disparate systems.

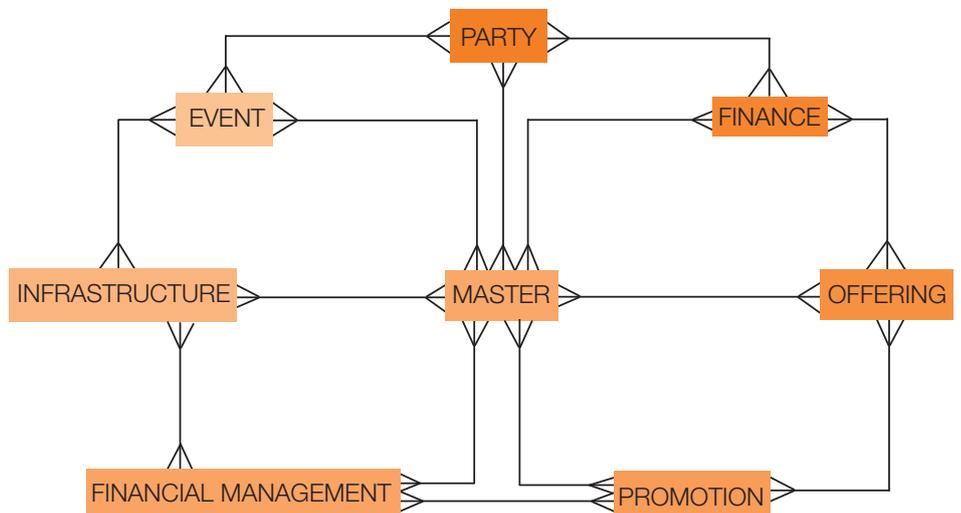
Our partner Teradata is a global leader in enterprise data warehousing and analytic technologies, providing affordable, powerful, and easy-to-deploy solutions for organizations of all sizes.

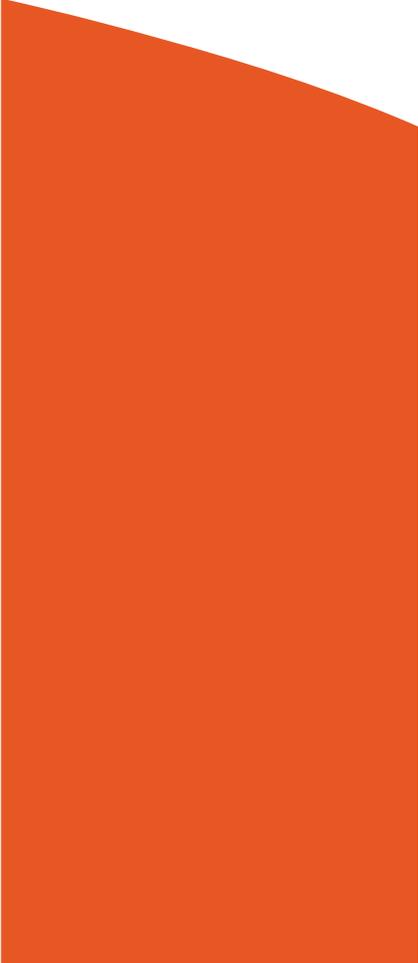
Key partnership solutions include:

- An analytical platform from Teradata enabling utility companies to evaluate usage information from Smart Meter technology alongside

their Customer, Operational and Financial information in order to gain new business insights.

- Linear scalability that allows even the largest of data sets to be analyzed.
- Historical information analysis using Teradata's ability to store data automatically and economically by how often it is accessed (i.e. hot/warm/cold data).
- Utility Logical Data Models (uLDM from Teradata) that provide a robust and flexible map demonstrating how data attributes are related across the enterprise. and facilitating enterprise business intelligence platforms.
- Centralization of data for analysis and reporting.





About Teradata

Teradata is the world's largest company solely focused on raising intelligence through data warehousing, data warehouse appliances, consulting services and enterprise analytics, with affordable, powerful, and easy-to-deploy solutions. Teradata addresses a range of needs from data mart appliances to active enterprise data warehousing strategies, consulting services, and applications tailored to specific issues in a variety of industries. Teradata Active Enterprise Intelligence solutions give actionable insight for smarter, faster decisions, adding value and real opportunity across countless dimensions.

Providing data warehousing for companies of all sizes, needs, and budgets, Teradata gives companies a smarter, more competitive enterprise. Visit www.teradata.com.

Capgemini and Business Information Management

About Capgemini

Capgemini, one of the world's foremost providers of consulting, technology and outsourcing services, enables its clients to transform and perform through technologies. Capgemini provides its clients with insights and capabilities that boost their freedom to achieve superior results through a unique way of working, the Collaborative Business Experience™.

Capgemini Business Analytics

Capgemini's Business Analytics global practice network is a core unit within the Business Information Management (BIM) global service line and operates in 25 locations across the world, drawing on a database of over 100 analytics client credentials and analytical models. It provides high-function analytics-based solutions to all major industry sectors and business functions.

Capgemini has over 7,000 consultants working in BIM across the world. We work with all the leading big data and analytical technologies, and provide services to support business analytics, from high-level strategy to managed outsourced services. We recognize that analytics are specific to industry sector and sub-sector, and have experts and solutions across all of them.



About Capgemini and the Collaborative Business Experience

With around 120,000 people in 40 countries, Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. The Group reported 2011 global revenues of EUR 9.7 billion.

Together with its clients, Capgemini creates and delivers business and technology solutions that fit their needs and drive the results they want.

A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business Experience™, and draws on Rightshore® , its worldwide delivery model.

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