Rolta White Paper

Leveraging Operational Intelligence to Improve Service Reliability and Customer Satisfaction

Alabama Power Gains Valuable Insights into Process Improvement Opportunities through Better Access to Key Operational Data Across Business Functions

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ROLTA

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Background

Service reliability for any utility organization is one of the highest priorities.

Across Alabama Power's 44,000 plus square miles of service territory, it maintains nearly 11,000 transmission towers, over 110,000 transmission poles, four distribution towers, over 1.4 Million distribution poles and nearly 92,000 miles of line.

That's enough line to travel from Los Angeles to New York over 37 times.

Alabama Power's track record for reliability is excellent, with an average of 99.97% uptime for the past two years.

Striving to continuously improve reliability and efficiency, Alabama Power embarked on an operational intelligence project in 2010 to enhance the way it monitors and responds to operational functions that impact these Key Performance Indicators.

Alabama Power engaged Rolta to support this initiative.

About Alabama Power

Alabama Power provides electric service to more than 1.4 million homes, businesses and industries in the southern two-thirds of Alabama. It is one of four U.S. utilities operated by Southern Company, one of the nation's largest producers of electricity. Alabama Power was the first electric utility in the U.S. to establish an Economic Development Department. Southern Company and Alabama Power generate power from the combination of fossil, nuclear, hydroelectric and gas turbine plants.

Its revenues for 2010 were $5.33 Billion where residential customers accounted for 42.76%, commercial customers were 28.75%, industrial customers were 23.04% and resale revenues were 4.95%. Total kilowatt hours produced and sold by Alabama Power in 2010 topped 60 Billion hours.

Business Drivers

Alabama Power focused the initiative on its transmission organization which faced many of the same challenges that confront all transmissions organizations. A reliable network typically translates to happy customers and met revenue targets. This is especially critical for Commercial & Industrial customers where lost revenue or low customer satisfaction can have a significant impact on the business.

Specifically, there were six specific dimensions that Alabama Power felt were mission-critical KPIs:

- Safety
- Financial Insight
- Reliability
- Maintenance and Infrastructure
- Encroachment Management
- Customer Impact of Outages

Alabama Power believed that if it could look across these processes and dimensions and correlate them to one another that it would find meaningful insights that could lead to opportunities for process improvement, cost reductions and improved risk management.

To accomplish that objective, management required better access and visibility into the key data that impact the service reliability drivers. Because the source data systems were not connected, any previous analysis of this type was time consuming and unreliable.

Most of the data was spread across numerous, siloed source data systems that support one or more discrete processes. Because many of these operational processes are interdependent, it was difficult to generate accurate, timely reporting.

This was the primary focus of the initiative: to aggregate, correlate and contextualize key operational data to improve decision making for operational processes that impact reliability.

Getting Started

The initial steps of the project focused on the refinement of a data model and metadata model to allow source systems for operational data together to be linked together.

Rolta brought to the initiative a pre-defined industry data model with over 50 pre-configured KPIs for Electric Transmission.

OPERATIONAL ANALYTICS SCOPE

BUSINESS INSIGHTS	TECHNOLOGY INNOVATION
›SAFETY	›BUSINESS PROCESS AUTOMATION
›FINANCIAL INSIGHT	›SYSTEMS UNIFICATION
›RELIABILITY	›SYSTEM INTEGRATION
›MAINTENANCE AND INFRASTRUCTURE	›NEW APPLICATIONS
›ENCROACHMENT MANAGEMENT	
›CUSTOMER IMPACT OF OUTAGES	

Additionally, ROLTA offers a pre-configured data warehouse and proprietary connectors to numerous source systems. These solutions simplified the initial steps and accelerated the project start.

Over the course of the project. Alabama Power established over 30 distinct business objectives across the six operational dimensions. Each dimension and many of the business objectives mapped to requirements in the technical scope of the project.

Two dimensions that were highly prioritized were Finance Insights and Safety. Management wanted to better understand Budget vs. Actual for capital expenditures and operations expenses, in particular, for maintenance and construction projects.

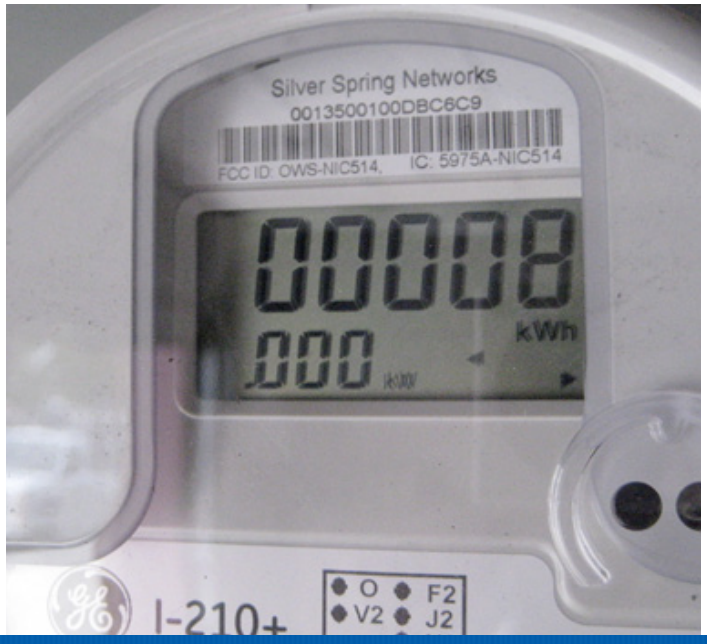
Like most Utilities, Alabama Power holds Safety as its top concern and saw opportunities to adhere to Southern Company's Target Zero program, which strives to eliminate all accidents.

As the source systems associated with these processes were connected to the new data warehouse, previously siloed data began to flow.

Seeing is Believing

To "see" these opportunities, Rolta presents operational data in the form of dashboards that typically leverage business intelligence applications already in use.

In the case of Alabama Power, Oracle Business Intelligence applications were already being



Executive Overview: Roll-up of KPIs with simple Red, Yellow and Green indicators and Target to Actual data by KPI

"We knew we had opportunities in our capital construction projects, safety and other areas, but did not necessarily know what they all were. As the data began to flow, we began to see some things. It was a bit like flying an airplane. We'd direct the Rolta team to look over here and look over there, and soon we began to see some real opportunities for improvement."

- James Weninegar, Alabama Power

used, so the Rolta team configured reporting and analytics for OBIEE.

Early Insights

New insights into financial and safety data emerged. Whereas the monthly budget-to-actual report took weeks to compile, management was now provided with near-real time access of up-to-the minute actuals for construction projects.

These insights enabled managers to see project inefficiencies and monitor adherence to regulatory guidelines such as FERC and PRCN.

Safety data took on a new meaning as well. Managers were able to view incident reports including injuries and vehicle incidents in near real-time.

Alabama Power had powerful new ways to interpret the data and uncover trends such as which day(s) of the week saw the highest incident rate, whether or not internal or external crews were more incident prone as well as powerful views into lost time, restricted duty, etc.

As Alabama Power's managers became more familiar with the depth and detail of information that could be provided, they dove deeper into operational data to uncover new trends and relationships between previously disconnected processes, for example. This trend data has also begun to impact strategic planning and forecasting.

Making it Actionable

To make the data actionable, Alabama Power adopted a rapid discovery and development model to quickly capitalize on these new insights.

This was enabled by Rolta's on-site support services and the inherent adaptability of the solution framework. As insights are uncovered, Alabama Power can trigger process improvement through existing training and programs that address process improvement, behavior modification and other remediation efforts.

Extending the Value

Alabama Power began to go deeper into Finance and Safety and continued to roll out the process across the all six dimensions that were set out in the project charter. For each dimension, certain business milestones were set, many of which had a correlating technical scope.

The following series of charts outline the key business milestones and corresponding scope of technology for each dimension of the initiative.

A small number of technical milestones, namely the accessing and integration of both their

> "One of our objectives is to accelerate the process to get to some operational insights as quickly as possible. The combination of our data model, data warehouse, connectors and the use of existing BI assets makes this possible. Once the insights start to flow, the project comes to life."
> ***- Matt Clarkson, Alabama Power***

FINANCIAL INSIGHTS

BUSINESS INSIGHTS	TECHNOLOGY INNOVATION
›BUDGET VS. ACTUAL REPORTING IN SINGLE SYSTEM	›INTEGRATION OF APCO BUDGETING SYSTEM (BUDWORKS)
›FERC & PRCN REGULATORY COMPLIANCE SPEND ANALYSIS	›INTEGRATION OF ORACLE FINANCIALS
›AUTOMATION OF BVA REPORTING	›IMPLEMENTATION OF REPORTING HIERARCHY
›IMMEDIATE ROLL-UP & DRILL-DOWN CAPABILITY IN BVA REPORTS	›AUTOMATED CLASSIFICATION OF BUDGET ALLOCATIONS / ACTUALS CHARGES
›INSIGHT INTO IMPENDING OVERRUNS VIA BVA TRENDS OVER TIME	

As it is for any business, insight into financial planning and performance is critical to Alabama Power's success. Being a public utility, this insight becomes even more crucial when compliance with FERC and PRCN regulatory guidelines mandate limits on Alabama Power's spending. The OneView™ Business Intelligence solution empowers Alabama Power with a unified, timely and organized reporting view.

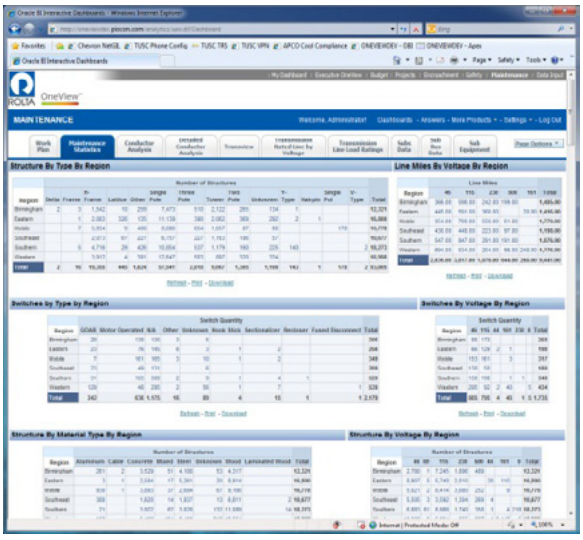
Budworks budgeting system and the Oracle Financials accounting system, immediately provided a single source of comparative reporting.

Previously, large amounts of cumbersome manual data collection and collation had to first be performed before any such analysis could be performed.

An additional technical exercise of defining Alabama Power's operating organization hierarchy with the OneView™ solution and integrating the data from both financial systems into its structure completed the reporting picture.

Budget analysts could now compare projected spending levels with actuals, for any federally regulated allocation type, and do so at any level of their business.

This new reporting ability, along with the timely, automated updating of data enables Alabama



Power to spend more time addressing potential budget over-runs and compliance issues, and less time trying to identify them.

Alabama Power gained new insights into Capital and Operations & Maintenance Budgets several key financial metrics while maintaining standards and methods for FERC accounting.

Key metrics include:

- Budget Status
- Budget Overruns
- Accumulating Budget vs Actuals
- Budget vs Actuals by Hierarchy (Lines, Sub-stations)
- Budget vs Actuals by Department
- Actuals by Activity Code & Cost Types
- Budget vs Actuals by Department
- Trans Clearing Budget vs Actuals
- Budget vs Actuals by PRCN / FERC
- Actuals by Month by Lines and Substations

SAFETY

BUSINESS INSIGHTS	TECHNOLOGY INNOVATION
›FAST, UP-TO-DATE REPORTING OF SAFETY INCIDENTS	›INTEGRATION OF STANDARD TRANSMISSION OPERATION & MAINTENANCE PROGRAM (STOMP)
›INCREASED VISIBILITY TO COMPANY SAFETY PERFORMANCE	›AUTOMATE RELIABLE CALCULATION OF SAFETY MILESTONES AND ACHIEVEMENTS
›ORGANIZATIONAL ROLL-UP & DRILL-DOWN CAPABILITY IN SAFETY PERFORMANCE REPORTS	
›TREND, PATTERN ANALYSIS OF INCIDENT OCCURRENCE BY GEOGRAPHY, ORG. UNIT, CREW TYPES, TIME	

Safe performance has implications which cut across many aspects of Alabama Power's operations. Its own employees, its own bottom line, federal compliance adherence as well as the well-being of the communities Alabama Power serves are just a few examples.

One significant gap in the tracking of safety information was the lack of a true source system for the data. Alabama Power reached a technical milestone when they replaced the myriad legacy spreadsheets holding past safety-related incident information, with the incident tracking capabilities of OneView™.

They now had a single source of truth for incident data, and a uniform interface for entering it. This new system, due to its total integration with the rest of the OneView™ solution now offered real-time visibility and reporting of safety-related occurrences throughout Alabama Power.

Monthly incident total (at left) with trend data (at right).

In addition, due to its integration with the organizational hierarchy information of Alabama Power, safety officers could now rely on OneView™ to automatically and reliably calculate safety awards, milestones and achievements in an aggregate fashion. Such awards are used to motivate continued safe operation and performance among Alabama Power's employees.

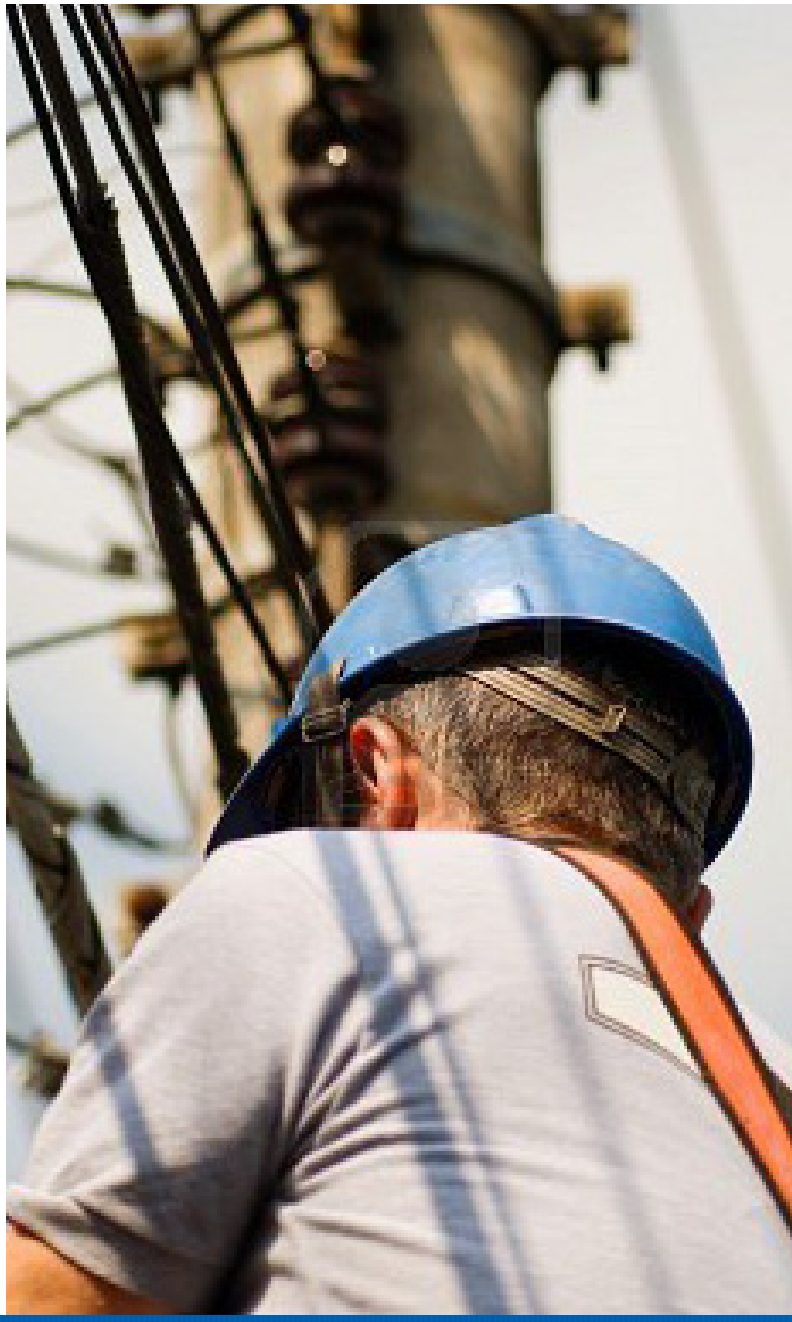
Finally, a true source system with analytic capabilities empowers Alabama Power to do trend and pattern analysis of incidents in ways they couldn't do efficiently before.

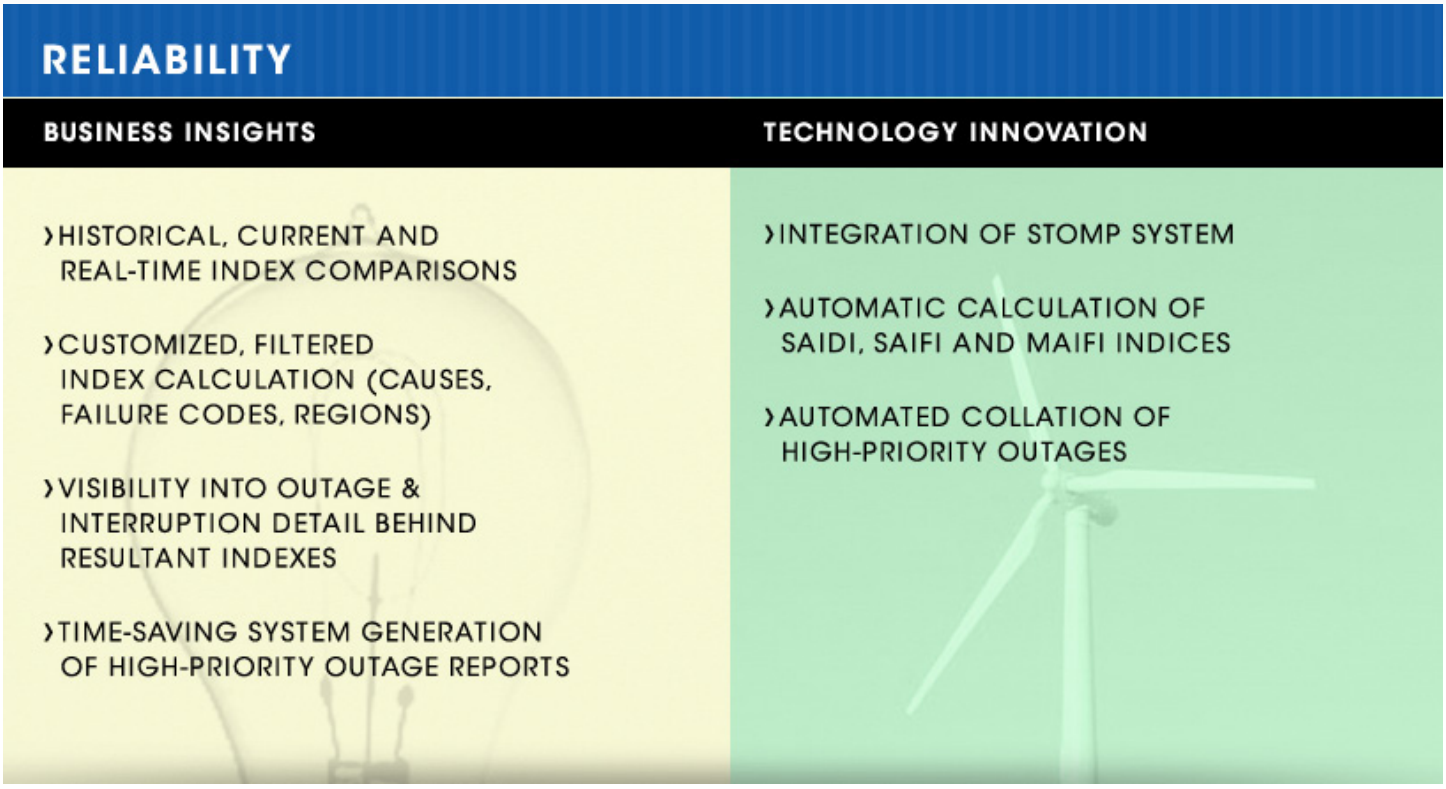
Insight into incident patterns by crew type, geography, even day of the week now gives Alabama Power the ability to target problem areas for improving safe performance.

Safety supports all OSHA reporting guidelines for Health, Safety and Environmental concerns while providing visibility into key risk areas including time lost due to recordable and preventable incidents.

Key metrics include:

- Recordable Incidences
- Lost Time Incidences
- Preventable Vehicle Accidents
- Recordable Incidences for Contractors
- Recordable Incidences Organization
- Recordable Incidences Region





Reliable operation of infrastructure and delivery of power is the goal of any electrical utility, and Alabama Power is no exception. In order to measure reliable performance, Alabama Power monitors closely all system interruptions, as well as calculates the three industry-standard reliability indices.

Alabama Power's legacy processes however, were time-consuming, manually calculated, and lacked flexibility and usefulness due to an inability to easily examine the underlying interruption data at the core of a calculated index.

This changed when Alabama Power achieved integration of its interruption system of record, STOMP, into the OneView™ solution. Index calculations are now calculated quickly and accurately, both for official monthly reporting, but also on-demand and in real-time.

Reliability engineers now have the ability to calculate custom indices by varying parameters such as geographic region, time frames and specific interrupt cause types to analyze their specific impacts.

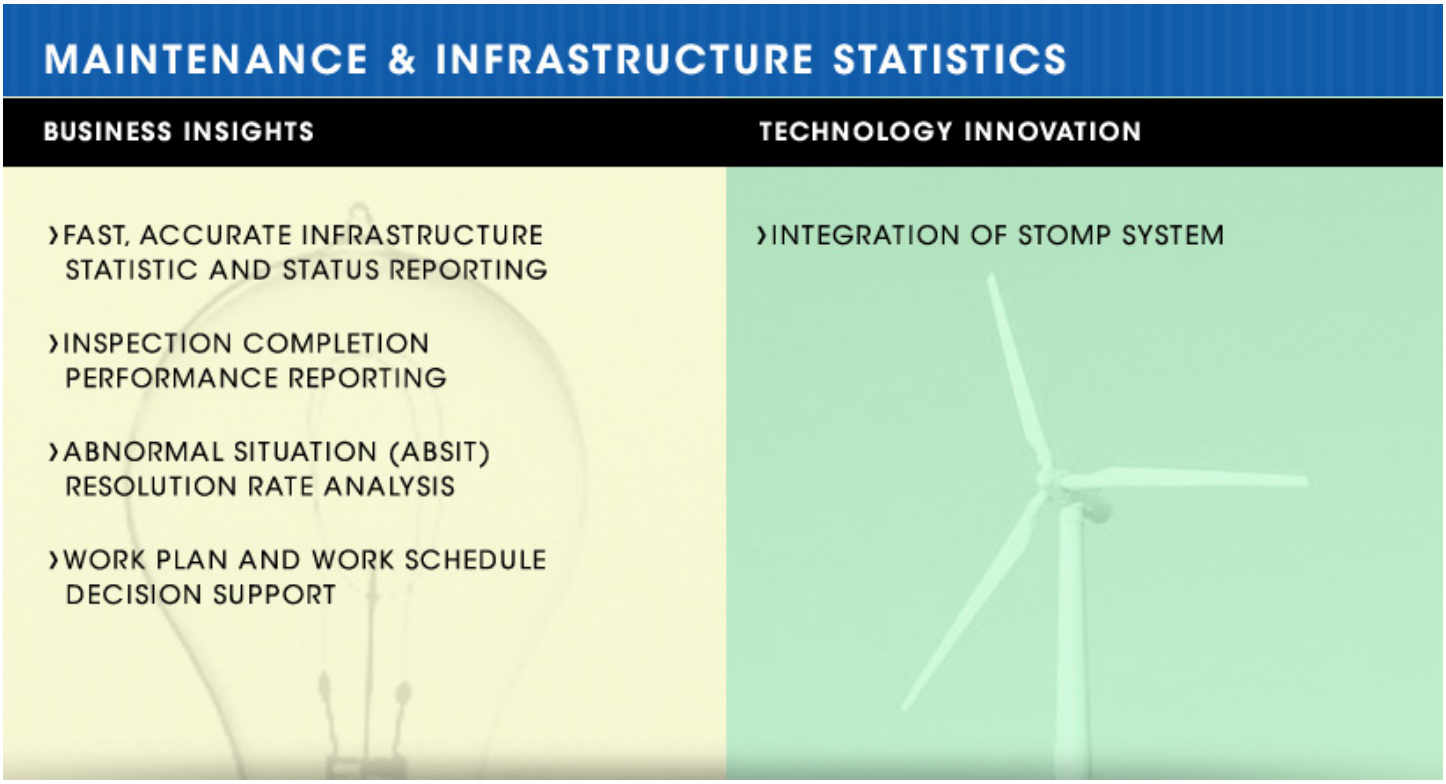
For all indices, drill-down ability is ever-present, enabling inspection of underlying interruptions that make up any index calculation.

In addition to the standard system-wide indices, engineers now have the flexibility to use SAIDI, SAIFI and MAIFI algorithms to identify worst-performing lines, substations and failure causes. OneView™ has enabled more flexible, timely and robust analysis of reliability related information at Alabama Power.

Reliability insights conform to standards for North American utilities set forth in IEEE standard 13.66-1998. Key metrics include:

- SAIDI
  (System Average Interruption Duration Index)
- SAIFI
  (System Average Interruption Frequency Index)
- MAIFI
  (Momentary Average Interruption Frequency Index)

Alabama Power relies on STOMP data for tracking of component details and status, inspection scheduling and abnormal situation (absit) identification.



Integration of the same Computerized Maintenance Management System that Alabama Power relies on for interruption and reliability analysis, STOMP, also enabled a new set of reports and analyses around Alabama Power's physical infrastructure and maintenance.

But wider-scale analysis and reporting is difficult through STOMP's native interface. Integration of STOMP data into OneView™ allows for this broader analysis. Analyses such as inspections scheduled vs. completed vs. newly identified, provides insight into work planning and scheduling.

Similar decision support analysis is now possible as it relates to absit identification and resolution rates. In the realm of raw system infrastructure information, efficient reporting at both summarization and detailed levels of equipment statuses, attributes and conditions is now also possible.

Maintenance Management provides visibility into all abnormalities to enable managers to monitor status of inspections and advise field personnel on changes in prioritization as necessary.

Key metrics Include:

- Anomalous – Lines & Substations
- Anomalous Summary – Lines & Substations
- Inspections – Lines & Substations

Basic statistics and detail for Conductor Analysis, Transmissions Lines by Voltage, Transmissions Lines by Load, Substations, etc.

ENCROACHMENT MANAGEMENT

BUSINESS INSIGHTS	TECHNOLOGY INNOVATION
›SINGLE SOURCE FOR ENCROACHMENT REPORTING	›UNIFICATION OF MULTIPLE ENCROACHMENT TRACKING SOURCE SYSTEMS
›NEW ENCROACHMENT REPORTING ABILITIES - BY TYPE, PRIORITY, STATUS, REGION, HANDLING AGENT	›SINGLE SOURCE FOR ENHANCED ANNOTATION OF ENCROACHMENTS
›ENCROACHMENT RESOLUTION AND AGING ANALYSIS	

With its vast network, the identification and remediation of Encroachments into Alabama Power's property and right-of-way is of constant concern. For reasons of both public safety and Alabama Power's interest in its landed assets, encroachments must be continuously monitored and corrected.

Alabama Power's legacy processes have encroachment information spread across multiple systems, both GIS and non-GIS based.

Further, existing systems are single-encroachment focused in their design, making broad analysis and reporting difficult.

OneView™ bridges the gap by integrating and unifying the information from these disparate systems.

It allows for a single source for reporting of encroachment information from many perspectives - including status, priority, type, geography, handling agent and resolution rates.

OneView™ enables a more efficient and intelligent Encroachment remediation process. Encroachment Management provides valuable visibility into known (reported) encroachments including status of remediation and schedule adherence.

This insight enables management to quickly assess risk and perform triage for critical incidents.

By leveraging Rolta OneView Mobile™, data flows directly from the field into management dashboards to allow for near real-time updates of new encroachment reports and status updates.

Analysis can be applied against historical data to better understand crew efficiency and workload as ratios of reported encroachments to closed cases.

Encroachment Management supports NERC definitions and classifications for encroachments.

Key metrics include:

- Encroachments by Priority
- Encroachments Completed YTD by Status
- Encroachments Complete vs. Incomplete by Priority
- Encroachments Incomplete by Workload
- Encroachments Completed YTD by Workload
- Encroachments by Voltage and Priority
- Encroachments by Reporting Agent
- Encroachments Completed by Agent and Workload
- Incomplete Encroachment Aging by Agent
- Incomplete Encroachments by Agent

CUSTOMER IMPACT OF OUTAGES

BUSINESS INSIGHTS	TECHNOLOGY INNOVATION
›SINGLE PLACE FOR REPORTING MULTIPLE-SYSTEM WORK ITEMS AGAINST COMMON INFRASTRUCTURE	›ESTABLISH SYSTEM FOR HIGH-PRIORITY CUSTOMER TRACKING
›INSIGHT INTO OUTSTANDING INTERNAL WORK ITEM IMPACT ON EXTERNAL CUSTOMERS	›UNIFICATION OF MULTIPLE SYSTEMS ALL TRACKING VARIETIES OF WORK ITEMS
›EFFICIENT SCHEDULING OF CUSTOMER-IMPACTING WORK AROUND CUSTOMERS' OWN PLANNED OUTAGES	›ESTABLISH SYSTEM FOR RELATING CUSTOMERS AND INFRASTRUCTURE

TMC Scheduler (Transmission Maintenance Center): An Innovative New Tool to Address Planned Outages

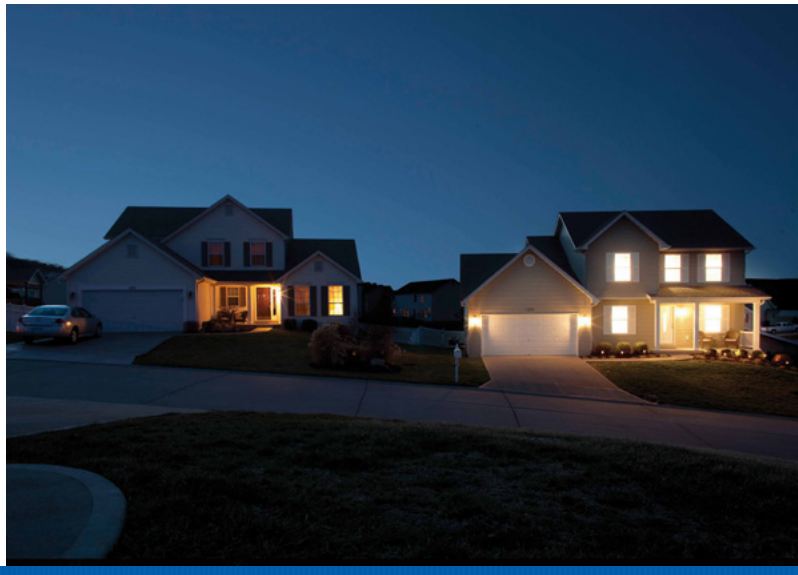
The insights gained through the initiative confirmed one notion that Alabama Power already knew to be true regarding the opportunity to improve alignment between work processes. This was perhaps most impactful to Commercial & Industrial customers which depend heavily on electric power in their production process. No Power = No Production = Loss of Revenue.

Minimizing planned and (unplanned) outages is a very high priority. When certain work crews lacked visibility to activities from other groups, work could get scheduled that would result in an interruption of power.

New insights confirmed for Alabama Power that most of these interruptions in power occurred across three common work processes - Maintenance, New Construction and Facilities Upgrades. This understanding enabled Alabama Power to make proactive changes to eliminate the issue.

To help enable this process change, Rolta designed and developed a scheduling application called TMC Scheduler that the three groups now use to coordinate activities for Alabama Power's 65 largest Industrial and Commercial customers.

Through this improved coordination of work processes Alabama Power reduced the total number of planned outages for customers, and by doing so, it is expected that Customer Satisfaction will be increased two-fold.



What's next for Alabama Power?

The improved visibility into work processes is extending through the Operations Network. Next on the drawing board is the proactive identification of "Bad Actor" assets in the network. Alabama Power believes it can better identify particular assets by type, manufacturer and/or work crews that are most associated with maintenance, repairs and outages.

The ability to have better situational awareness and be proactive with respect to maintaining reliability across the network is very attractive for all T&D organizations. From the identification of the Bad Actor assets to root cause analysis to proactive planning and budgeting, this capability stands to create tremendous financial benefit for Alabama Power.

About Rolta

Rolta is a leading global engineering, technology and consulting firm that serves organizations in Oil & Gas, Utilities, Manufacturing, Homeland Security and Financial Services. For over 25 years Rolta has supported clients in more than 40 countries to improve operational performance by providing solutions for Business Intelligence, Operational Analytics, Quality & Reliability, Health & Safety and Defense.

About Rolta OneView™

Rolta OneView™ Operational Analytics Suite is a unique and comprehensive solution that enables access and insights into mission critical operational information across the various business functions in the enterprise. With a focus on the Process, Power and Utilities industries, OneView™ seamlessly integrates source information from over 30 source systems (financials, engineering, maintenance, asset management, asset historians, operations, performance, reliability and safety) to empower the organization to view and analyze of cross-function KPIs that inform both short-term decisions as well as budgeting and planning.