SAP Ecosystem and Partners

Achieving Operational Excellence in Electric Power Distribution
Gaining Integrated Business Insight with Rolta OneView™ and SAP® Software

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Operating in a Complex Environment

The electric power distribution business is changing. To remain competitive and grow, many companies are working on their strategies to achieve sustainable advantages, investing in a range of measures aimed at ensuring lower costs, agility, and responsiveness. With Rolta OneView™ and SAP® software, including rapid-deployment options, you can gather and analyze data across a wide spectrum of multifunctional key areas to support informed decisions that can help you improve performance and achieve operational excellence.

Many industry analysts believe that the existing power utility business model is headed for radical transformation, albeit subject to significant regional differences. Some expect more usage-savvy pricing models, similar to the ones adopted by mobile telcos. While the smart grid phenomenon is rapidly progressing, there are pressing calls for renewable energy sources (RES) and distributed power generation (DG). Global economic forces, the search for successful business-excellence models, changing policymaker attitudes, and new consumer behaviors are driving the need for transformation in the power distribution industry.

We all realize that the background technology landscape is undergoing a paradigm shift. RES, though currently a small contributor, has vast potential leveraging wind, hydroelectric, solar photovoltaic, ocean, geothermal, and biomass power sources – coupled with other unconventional sources like fuel cells, gas turbines, and reciprocating engines. The availability of cost-effective energy storage technology is a crucial element, enabling the smoothing of transient or intermittent loads, and allowing downsizing of base load capacity for energy and cost savings. Indeed, it is a prerequisite for using RES in remote locations and for increasing the penetration of DG technologies, such as wind turbines, at reasonable economic and environmental cost. ICT advances in power electronics, superconductivity, and power line communications are considered necessary catalysts.

Global economic forces, the search for successful business-excellence models, changing policymaker attitudes, and new consumer behaviors are driving the need for transformation in the power distribution industry.

On one hand, the shale gas revolution is shaping the U.S. markets. On the other, developing economies are witnessing rapid enhancements in their energy infrastructure through focused government-sponsored programs. Europe is leading the RES, DG, and combined heat and power (CHP) initiatives, fueled by policies designed to meet the objectives of the Kyoto Protocol; liberalize the internal electricity market; and improve energy efficiency, security, and diversity.

Despite the diversity in the electricity distribution business across Europe, distribution system operators generally provide a very high level of reliability and quality of supply to their customers. However, decentralized and variable generation and new loads, such as pluggable electric vehicles, require upgrades to aging infrastructure. Blackout risks are increasing, and subsidies for renewable generation are pushing up costs for customers – early warnings of impending energy crises. Analysts expect about a €400 billion investment by 2020 in power distribution across Europe. They predict that this investment will span 2,400 distribution companies and 260 million connected customers (80% smart metered), drawing approximately 2,700 TWh per year through power lines covering nearly 10 million kilometers.

Across geographies, integrated models covering generation, transmission, and distribution are becoming increasingly unbundled, fueling stronger competition and renewed focus on traditional operational excellence goals. Some of the top priorities include:
• Improved asset-related business processes
• Technology investments that match consumer behaviors
• Reduced complexity in energy trading risks and balanced energy demand-side management (DSM)
• Integration of information, operational, and geospatial technologies
• Closer alignment with government-promoted smart grids, RES, and DG, as well as other environmental compliances and regulatory measures

Electric power distribution companies like yours are looking for deeper and sharper insights into their customers, markets, and operations, as well as the macroeconomic environment.
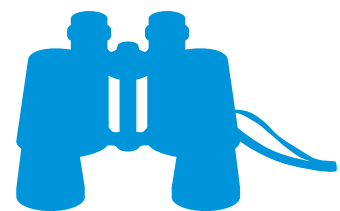
THE NEED TO TRANSFORM DATA INTO INSIGHT

Electric power distribution companies like yours are looking for deeper and sharper insights into their customers, markets, and operations, as well as the macroeconomic environment. This requires the analysis of heterogeneous data across business and field systems and visualization against a backdrop of spatial frameworks to provide meaningful analysis. Yet this huge volume of data is often trapped in individual department silos throughout the enterprise. With numerous disparate information technology (IT) as well as operational technology (OT) software systems, changes to one system are often not adequately reflected in the others. This disparate environment causes inconsistencies and often requires manual intervention to be able to derive meaningful business information from the data.

To achieve excellence, you must explore new strategies, processes, and solutions. Intelligent processes, along with smarter IT solutions, help support the drive to sustainable results. Defining processes and making decisions based on real facts and hard evidence help set your organization on a path to operational excellence. The right software can help power distribution companies achieve this integrated insight across all areas of the business. What is needed is a comprehensive solution that gathers and consolidates data from a variety of sources and displays it in a timely and meaningful way to the executives and decision makers responsible for driving operational excellence. Better still is a solution that also correlates the information to key performance indicators (KPIs) and enables analytics that provide immediately actionable insight.

"Clearly, Rolta OneView™ is an enterprise-class solution that can bring significant benefits and savings to process and power corporations."

Sid Snitkin, Vice President, ARC Advisory Group

Introducing Rolta OneView™

BREAKING DOWN THE BARRIERS TO OPERATIONAL AND BUSINESS EXCELLENCE

The Rolta OneView™ solution is an enterprise intelligence solution that enables role-based, actionable insight and correlated operational and business intelligence (BI). Available from Rolta, an SAP software solution and technology partner, the solution has been developed by BI technology experts working closely with power industry specialists who have firsthand experience with the challenges of the electric power distribution industry.

The data models and KPIs of Rolta OneView™ are specific to the electric power distribution industry and have been built using Rolta's deep domain expertise. The software combines the core functionalities of information technology with engineering and geospatial information systems.
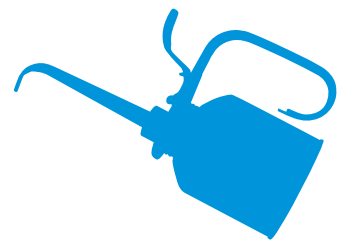
Rolta OneView™ breaks down the fundamental barriers to achieving operational and business excellence, such as silos across operational networks, business networks, safety and sustainability networks, and enterprise social networks. It provides a 360-degree view of the enterprise and touches the nerve center of all critical functions, quickly adapting to existing systems, instilling best practices, and accelerating process improvement.

With Rolta OneView™, your management team can access a single version of data from all systems that manage and operate the business. The software extracts key information from the functional and operational systems in each business area and aggregates it to an industry-standard data model.

SOLUTION AT A GLANCE

Rolta OneView™, along with SAP software, supports the drive to operational excellence. The Rolta OneView™ software gathers data from various asset and operations monitoring systems and devices, seamlessly interfacing with smart grids. It applies data to a preconfigured and integrated data model, based upon accepted industry standards, and combines it with cross-functional KPIs for the electric power distribution industry.

The solution enables management to view diverse functions as a fully integrated set of processes and KPIs spanning the whole enterprise, with actionable analytics and reporting. These capabilities allow executives to drive operational, reliability, and performance improvements via corporate initiatives such as balanced scorecards, Six Sigma initiatives, and total quality management.

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The Rolta OneView™ solution includes three rapid-deployment solution modules that cover:
• Operational insights
• Asset insights
• Maintenance and reliability insights

These modules combine SAP software and content with software and services from Rolta for a preconfigured solution that enables sophisticated business intelligence capabilities. Rolta installs the modules within a predetermined time, cost, and service scope and then verifies the integrity of the information. The solution presents the assimilated information in reports and dashboards designed to meet the requirements of individual managers based on their roles in your business. When something requires attention, the software generates alerts allowing managers to drill down through the data to identify root causes.

With access to this information, your company can improve operations by identifying and correcting process problems, increasing the safety of operations, and providing information about current and future performance.

A COMPREHENSIVE AND SCALABLE SOLUTION ARCHITECTURE

Rolta OneView™ fulfills the acute enterprise-wide need to harness legacy investments and creates an all-encompassing cross-functional BI and analytics platform spanning the integration of IT with operational technology, with descriptive, real-time, spatial, Big Data, predictive, and prescriptive analytics. It leverages rapidly evolving technologies including cloud, social, and mobile that are fostering a paradigm shift in business environments. The solution features full BI lifecycle components that leverage synergistic world-class Rolta and SAP software frameworks to:
• Discover data
• Define the information landscape
• Establish the information model
• Standardize and consolidate the information platform
• Integrate Big Data, cloud, social, and mobile initiatives
• Analyze, predict, and deliver actionable insights for business outcomes

Rolta OneView™ features complex computation engines that enable real-time and predictive analytics on Big Data and is compatible with the SAP HANA platform and predictive environments such as SAP Predictive Analysis software.

It features powerful integration capabilities across various types of systems from diverse vendors, through more than 60 out-of-the-box prebuilt connectors (real-time, batch ETL, and corresponding work processes). It has prebuilt connectivity to most business IT systems, including:
• Enterprise resource planning (ERP)
• Enterprise asset management (EAM)
• Supply chain management (SCM)
• Outage management systems (OMS)
• Incident management systems (IMS)
• Maintenance operations center (MOC)

Rolta OneView™ also connects with OT systems such as data historians, supervisory control and data acquisition (SCADA), and so on, allowing it to seamlessly interface with smart grid elements. IT and OT fusion becomes a reality.

Rolta OneView™ features complex computation engines that enable real-time and predictive analytics on Big Data and is compatible with the SAP HANA® platform and predictive environments such as SAP Predictive Analysis software. Rolta OneView™ is geared to handle large volumes of data from structured, semistructured, and unstructured sources, at a very high frequency of updates.

Geospatial fusion allows close-knit integration of popular map services from leading providers such as Google and Microsoft, and customers'

existing geospatial technologies, to unleash powerful spatially enabled BI and analytics in a business context. Rolta OneView™ leverages geographic information systems (GIS), GPS, and rich visualization technologies to promote spatially enabled, disconnected work management with support on all popular mobile platforms such as iOS, Android, and Windows Mobile. Using Rolta OneView™ with SAP Mobile Platform, the SAP Afaria® mobile device management solution, SAP Workforce Performance Builder software, and the SAP Jam social software platform enables an electric power distribution company to execute a wide variety of functions. These include:
• Track and locate assets and faults
• Track customer locations and consumption data
• Carry out the configuration management of assets including linear asset management
• Plan geographic resource and optimize routes
• Analyze the relationship between different visual layers for planning and failure prediction
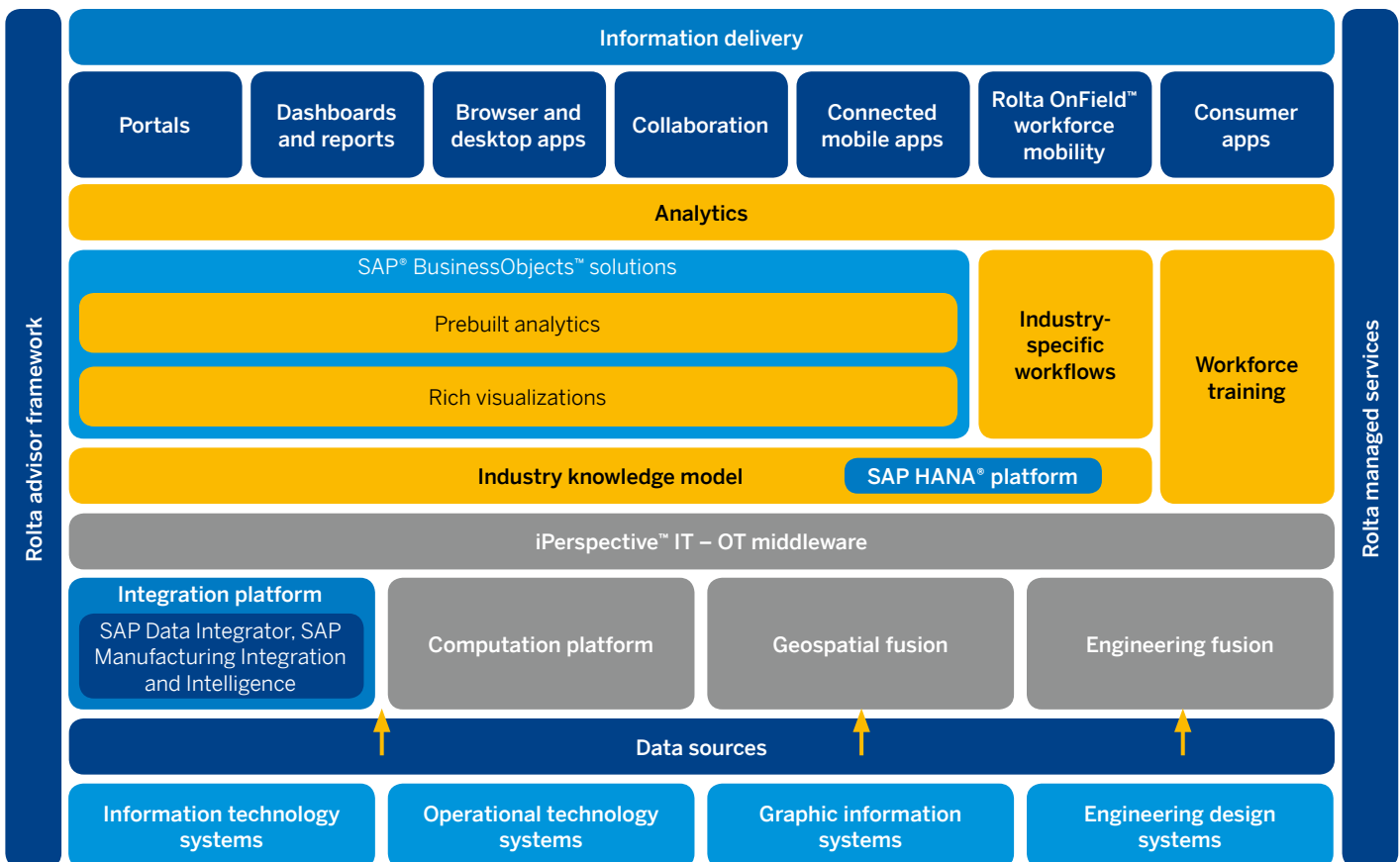• Trigger business processes such as work orders from the geospatial map itself

Prebuilt analytics deliver more than 300 industry-specific KPIs, dashboards, and workflows. This gets customers up and running from day one, leveraging Rolta's core domain skills and the experience accumulated by Rolta's expert consultants over the past two decades. Built-in analytics and KPIs include reliability analytics, preventive maintenance compliance, efficiency of operations, and many others.

Your organization can pace its adoption of pervasive business intelligence with the Rolta OneView™ enterprise architecture. Built on the SAP BusinessObjects™ Business Intelligence platform, the architecture has a robust, reliable, maintainable, and scalable foundation. The overall architecture, including performance analytics and real-time intelligence, is illustrated in the figure below.

As the figure indicates, Rolta OneView™ features comprehensive analytic functionality that enables historical, real-time, geospatial, Big Data, and predictive analytics on large and distributed data sets on a single platform. For example, the software integrates with engineering design systems, enabling business users to assess assets more easily. They can interact with the plant model, view operational parameters, and compare them with their design parameters on a single dashboard.

Figure: Rolta OneView™ Solution Architecture

Rolta advisor framework	Information delivery							Rolta managed services
	Portals	Dashboards and reports	Browser and desktop apps	Collaboration	Connected mobile apps	Rolta OnField™ workforce mobility	Consumer apps	
	Analytics							
	SAP® BusinessObjects™ solutions / Prebuilt analytics / Rich visualizations				Industry-specific workflows	Workforce training		
	Industry knowledge model / SAP HANA® platform							
	iPerspective™ IT – OT middleware							
	Integration platform / SAP Data Integrator, SAP Manufacturing Integration and Intelligence	Computation platform		Geospatial fusion		Engineering fusion		
	Data sources							
	Information technology systems	Operational technology systems		Graphic information systems		Engineering design systems		

SAP SOFTWARE POWERS THE PERFORMANCE

Rolta OneView™ leverages various SAP software solutions to connect to multiple data sources and consolidate the data. These include SAP solutions for enterprise information management (EIM), the SAP HANA platform, and SAP Data Integrator software. Each of these SAP solutions is specifically designed to support the collection, analysis, presentation, and integration of data to enable process improvements as follows.

SAP Solutions for Enterprise Information Management

SAP solutions for EIM focus on three data-related processes: data integration, data quality management, and master data management.

Data integration software enables a faster way for business users to access information locked in your enterprise applications. It leverages a wide range of data delivery options to integrate, replicate, or migrate data from various data sources into one consolidated view of the information.

USE CASE: BIG DATA ANALYTICS FOR ELECTRIC POWER DISTRIBUTION COMPANIES

Electric power distribution companies can struggle to move to the next level of automation because of the infrastructure, volume, and handling of the huge quantities of data. For example, the state of electricity transmissions through grids can be verified manually only monthly or quarterly, using sample data. Or customers' meter data can be read only once a month, just for billing purposes.

By leveraging leading-edge technology such as the SAP HANA® platform, the Big Data enablement with Rolta OneView™ provides the power to process huge volumes of data at a very high speed. For example, with the smart grid units, data can be monitored for grid locations minute by minute and can be stored in the database for further analysis. Such analysis could support detection of losses such as thefts or other problems. Another example is related to smart meters, where Rolta OneView™ enables the processing of huge volumes of data from the meters of millions of customers at regular frequency. With social media integration, Rolta OneView™ analyzes market sentiments and supports corrective actions, especially in deregulated markets where there is typically more freedom to respond. Such enablement also supports the impact analysis of planned and unplanned downtimes on a community or consumers, helping to manage customer satisfaction.

Rolta's solution provides the integrated insights using the GIS-enabled location analytics, grid, and meter data patterns, enabling the real-time monitoring of the quality of the electricity shown on the map with real-time representation. Companies can achieve higher returns by reducing their costs while improving customer satisfaction.

Data quality management software helps increase confidence in the validity of integrated data by strengthening qualification processes.

Master data management software helps consolidate, cleanse, and synchronize master data that is resident in your multiple disparate solutions. It addresses both enterprise-wide and application-centric scenarios and supports improvement processes, governance, and decision making – all vital to achieving operational excellence.

SAP HANA Platform

SAP HANA is a modern platform for real-time analytics and applications. It enables organizations to analyze business operations based on a large volume and variety of detailed data in real time. Deployments of SAP applications on SAP HANA have shown that business users can act on sub-second system response times. This opens the door to application possibilities that may not yet have been imagined, such as what's possible when combining operational data with detailed analytics using Rolta OneView™.

SAP Data Integrator

SAP Data Integrator software allows organizations to extract, transform, and load any type of data from applications, databases, and other data stores, at any frequency. With SAP Data Integrator, you can:
- Integrate data from any data source for a more complete view of enterprise information
- Share timely, integrated, and trusted data across the enterprise

- Improve the efficiency of loading large volumes of data into SAP HANA
- Access a variety of data sources, both structured and unstructured
- Enable enterprise-class data integration performance

INTEGRATION OF ROLTA ONEVIEW™ AND SAP SOFTWARE

Large amounts of data from a variety of data sources can be fed into Rolta OneView™ for analysis. Data integration and cleansing functionalities that are inherent in SAP solutions for EIM facilitate this process. Rolta OneView™ has been engineered for use with SAP HANA to handle Big Data and enable lightning-fast analytics. The software exploits the use of technologies, such as in-memory computing, columnar databases, analytical visualization, and query optimization, that SAP HANA utilizes.

SAP solutions are a major source of data for the Rolta OneView™ modules, so there are many integration points between Rolta OneView™ and SAP software. The data resides in various applications such as the SAP ERP application, where data can be found to support numerous processes, operations, and applications including:
- The SAP Enterprise Asset Management solution
- Planning, quality management, financials, and controlling software in SAP ERP
- The SAP ERP Human Capital Management solution

Rolta OneView™ has been engineered for use with SAP HANA to handle Big Data and enable lightning-fast analytics.

Further data sources include (but are not restricted to) the following:
- SAP Environment, Health, and Safety Management application for incidents and emissions data
- Cloud solutions from SuccessFactors, an SAP company, for human resource information
- SAP Risk Management application for risk exposures
- SAP Recycling Administration application for accurate tracking of packaging, covered products, and batteries
- SAP Work Clearance Management application for data related to operational risks and mitigating factors
- SAP Management of Change application for data related to the control and monitoring of operational changes

Data from these SAP solutions provides a strong foundation for the analytics enabled by Rolta OneView™.

You can further enhance the insight gained from these analytics by including additional non-SAP data in the analysis. For example, data from data historians, smart grid elements, digital control systems, geospatial systems, and engineering design systems can be married with the SAP data to provide deeper insights into current operational conditions. Further, bringing these software solutions together within SAP Jam enables collaboration. Ideas and solutions to problems can be shared and discussed before being implemented.

Such structured and well-planned initiatives based on Rolta OneView™ and SAP technologies allow you to leverage meter data analytics based on automated meter infrastructure (AMI), using regular frequent updates about temperature, consumption, conservation voltage regulation (CVR), and so on. In addition, you can leverage intelligent end devices, robust communication systems, IT-OT-geospatial systems integration, and historic or real-time predictive analytics for grid optimization.

Gain the insight needed to strengthen profit margins, identify operational problems, improve the safety of operations, and attain greater clarity about current and future performance.

Gaining the Benefits in Less Time with Rapid Deployment

GET UP AND RUNNING FASTER AND MORE EFFICIENTLY

To help companies quickly realize the benefits of comprehensive business insight, Rolta has created three rapid-deployment solution (RDS) modules of the Rolta OneView™ solution:
- Rolta OneView™ RDS for operational insights
- Rolta OneView™ RDS for asset insights
- Rolta OneView™ RDS for maintenance and reliability insights

The modules effectively combine SAP software and content with Rolta software and services. They are preconfigured solutions that deliver sophisticated BI functionalities quickly and affordably in each area of operation.

Rolta installs the rapid-deployment modules within a predetermined time frame, cost, and service scope. Each Rolta OneView™ RDS module integrates SAP and non-SAP data sources and, when used with the SAP HANA platform, provides operational data insight previously unavailable due to an enterprise's vast data volumes. The average time frame for a typical deployment is 12 weeks or less. This can help electric power distribution companies lower the cost of implementation and speed the time to value while retaining the flexibility to extend the solution, if required.

The Rolta OneView™ RDS modules help you leverage your technology investments for a consolidated view of SAP and non-SAP operational systems as well as your enterprise IT systems. They support operational benefits in the areas of increased asset availability and safety, and reduced energy and maintenance costs, while tracking and coordinating operations and inventory for better customer service levels.

Rolta OneView™ RDS for operational insights helps companies:
- Gain visibility into distribution operations
- Support optimized network planning to improve quality of distribution reliability
- Lower operational costs and improve utilization
- Monitor in real time to minimize losses
- Enhance outage management strategies
- Achieve predictable performance

Rolta OneView™ RDS for asset insights helps companies:
- Analyze and manage underperforming assets
- Minimize asset downtime
- Analyze asset performance and compare with engineering data and design documents
- Gain locational intelligence for an asset
- Increase asset utilization and reliability
- Improve asset cost analysis and reduce cost of ownership

Rolta OneView™ RDS for maintenance and reliability insights helps companies:
- Maximize asset availability
- Minimize unplanned maintenance
- Improve field maintenance compliance
- Optimize cost of ownership
- Achieve predictable performance and improve reliability
- Attain higher workforce utilization

All the rapid-deployment modules can be implemented separately or in any combination, depending on the area of focus you desire.

While the potential business benefits are dependent on the modules that have been installed and implemented, Rolta has observed the following benefits based on various deployments of Rolta OneView™:
- Improvement in asset efficiency of 5% to 15%
- Increase in asset availability of 3% to 5%
- Increase in savings with improved reliability project performance of 2% to 10%
- Decrease in operational costs of 15% to 25%
- Reduction in downtime of 5% to 10%
- Improvement in schedule adherence of 15% to 30%
- Increase in specification throughput of 10% to 15%

BEGIN YOUR JOURNEY TODAY

Accelerate your journey toward achieving operational excellence with Rolta OneView™. By improving your ability to analyze enterprise-wide data, the solution supports better and faster decisions to help you improve operational processes and performance. Gain the insight needed to strengthen profit margins, identify operational problems, improve the safety of operations, and attain greater clarity about current and future performance. With Rolta OneView™ and SAP software, you can improve the synergy across people, technology, and business processes to help your enterprise realize the full benefits of operational excellence.

For Further Information

To learn more about how Rolta OneView™ and SAP software can help your business achieve operational excellence, visit Rolta at **www.rolta.com** or SAP at **www.sap.com**.

HOW ROLTA ONEVIEW™ MEETS BUSINESS NEEDS

Case Study: A Power Transmission Company in the U.S.

Business need: Operational intelligence for enhancing cross-functional monitoring of key performance data and responding faster to business situations

Rolta OneView™ solution:
- Safety, financial insights, reliability, maintenance and infrastructure, encroachment management, and mitigation of impact of outages on customers
- Aggregation, correlation, and contextualizing of key operational data

Business benefits:
- Improved timeliness and visibility of operational data
- Better budget planning
- Better workforce planning and issue resolution
- Work culture and process improvements
- Compliance with regulatory requirements

The Best-Run Businesses Run SAP™