![Rolta logo] ROLTA
INSIGHTS. INNOVATION. IMPACT

Rolta OneView™ 6.0 for Utilities

DRIVING OPERATIONAL EXCELLENCE

Through IT-OT Integration and Pre-Built Big Data Analytics

Changing Paradigm

IEA predicts new investment cycles, for a cleaner & more efficient generation portfolio to significantly impact energy sector and environment for next 40-50 years. Massive investments have taken place in the recent past in improving the power plant and infrastructure across the globe. Investments of such a scale for a utility industry means the assets are to be monitored and maintained to ensure maximum uptime and productivity. With the rising energy prices impacting generation plants, utilities companies are exploring new avenues for controlling costs by increasing operational efficiency. Leveraging analytics will significantly reduce costs and improve top line performance. To achieve this, there is clearly an increasing need for visibility and getting the right information to the right person at the right time in the right format for better decisions.

Cost effective power generation, transmission and distribution, inter alia, depends upon optimum resource utilization, seamless process integration and effective risk mitigation. With global trends of discouraging coal based power plants and compensating through environment friendly non-conventional capacity augmentation on one hand and gas based power generation on the other, there is a need for increased visibility into asset performance and comprehensive asset analytics. Digital technologies are seen to play a crucial role in providing intelligence to utility majors in aggregating data, generating key performance metrics and monitoring the same on near real time basis.

With the utilities industry fraught with conflicting priorities and isolated technology standards that undermine the capacity to discover and implement improved operating practices, the need of the hour is to have a seamless system for monitoring the key metrics, that help in reducing downtime and improving recovery from unplanned events and to unlock value from the existing assets.

Industry Challenges

Utility companies operating in global markets continue to leverage technology to address business improvement needs to run, grow and transform their operations. Some of the challenges that are encountered, in the current volatile environment include: -

- New technologies, new regulations and ongoing cost pressures are some of the forces causing to new thinking and action.

- Lack of end to end visibility from Power Generation, Transmission, Distribution, and Customer care. Business models which can support end to end integration are still evolving, leading to uncertain markets and tariff.

- New entrants in power generation are gradually moving away from coal-fired to renewable energy, with solar and wind generation playing a key role. Retiring some of the old coal fired assets, leads to new cost dynamics and ROI.

- Unpredictable weather impact power transmission and distribution that in turn is aligned to network down time, ultimately denting customer satisfaction.

- Growing concern on energy efficiency and Smart Grid, requires setting up new infrastructure and integration among systems supporting end to end visibility.

Rolta's out-of-the-box solution

Rolta OneView™ 6.0 Enterprise Suite is a comprehensive solution that brings unique business value through role-based actionable insights and correlated operational & business intelligence. This helps drive organizational strategy across the value chain, through informed decisions resulting in desired business transformation.

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.
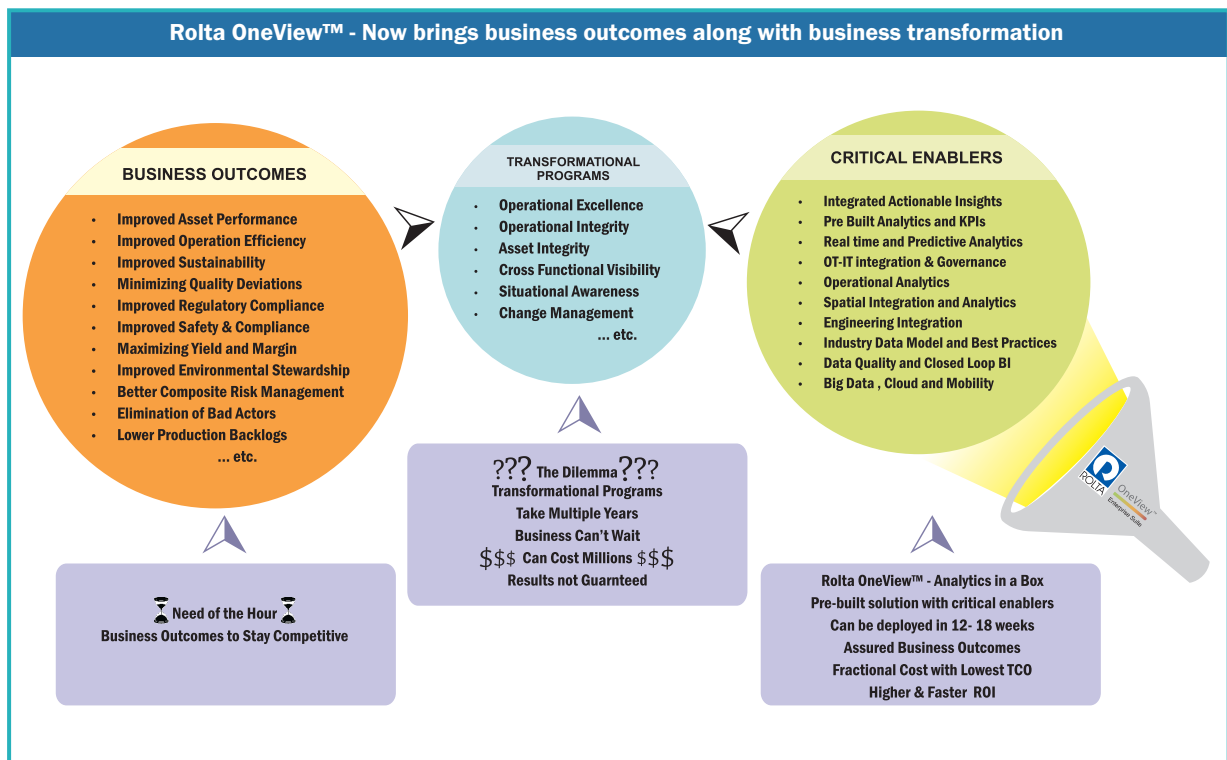

The enterprise solution provides role based KPIs and actionable insights to empower every role to achieve its individual and organizational objectives while ensuring that there is a 'single version of truth' across all those levels. Rolta

OneView™ simplifies the information complexity in the enterprise by providing loosely coupled, yet comprehensive integration across the operation and business systems with "Integrate-Analyze-Deliver" approach built by leveraging best of breed platforms.

Rolta OneView™ rich knowledge model provides enterprise wide multi-site as well as cross function visibility across areas such as Operations, Assets, Maintenance and Reliability, Supply Chain, Health Safety and Environment, Projects and Business for effective decision making. Each of these modules is fine-tuned for the specific industry suite that it caters to, providing domain-specific KPIs. Different modules focus on industry-specific key processes across the value chain, allowing seamless integration and cross-functional visibility. Rolta OneView™ thereby effectively delivers deep insights to facilitate tactical, operational and strategic decision-making and in-turn effectively supports a variety of enterprise initiatives such as Operational Integrity, Asset Integrity, Operational Excellence, Change Management, Risk Mitigation etc.

Rolta OneView™ 6.0 Enterprise Suite is engineered and certified on SAP HANA. It exploits the power of SAP HANA and provides in-memory computing, high performance, real time and predictive analytics capabilities. Rolta OneView™ Enterprise Suite has been architected and designed for multisite, multi-tenancy operations and can be deployed as a single server instance either in an organization's private, hybrid or a public cloud environment to support multiple geographically dispersed sites across the globe. Rolta OneView™ on Cloud helps the LOBs to see the benefits without any CAPEX investments.

Rolta OneView™ - Now brings business outcomes along with business transformation

BUSINESS OUTCOMES
- Improved Asset Performance
- Improved Operation Efficiency
- Improved Sustainability
- Minimizing Quality Deviations
- Improved Regulatory Compliance
- Improved Safety & Compliance
- Maximizing Yield and Margin
- Improved Environmental Stewardship
- Better Composite Risk Management
- Elimination of Bad Actors
- Lower Production Backlogs
  ... etc.

TRANSFORMATIONAL PROGRAMS
- Operational Excellence
- Operational Integrity
- Asset Integrity
- Cross Functional Visibility
- Situational Awareness
- Change Management
  ... etc.

CRITICAL ENABLERS
- Integrated Actionable Insights
- Pre Built Analytics and KPIs
- Real time and Predictive Analytics
- OT-IT integration & Governance
- Operational Analytics
- Spatial Integration and Analytics
- Engineering Integration
- Industry Data Model and Best Practices
- Data Quality and Closed Loop BI
- Big Data , Cloud and Mobility

??? The Dilemma ???
Transformational Programs
Take Multiple Years
Business Can't Wait
$$$ Can Cost Millions $$$
Results not Guarnteed

Need of the Hour
Business Outcomes to Stay Competitive

Rolta OneView™ - Analytics in a Box
Pre-built solution with critical enablers
Can be deployed in 12- 18 weeks
Assured Business Outcomes
Fractional Cost with Lowest TCO
Higher & Faster ROI

Pre-Built Industry Value Scenarios for Utilities - Illustrative Examples

Some Salient Pre-Built Industry Value Scenarios

Utility companies operating in global markets continue to leverage technology to address business improvement needs to run, grow and transform their operations. Rolta OneView™ provides close to 200 value scenarios based on 400 KPIs. Some of the prominent key value scenarios and KPIs that can be monitored on a continuous basis, leveraging a proprietary industry specific data model and pre-built analytics, are given below. Each of the value driving scenarios can be monitored and supported by KPIs providing cross functional insights at operational, tactical and strategic levels.
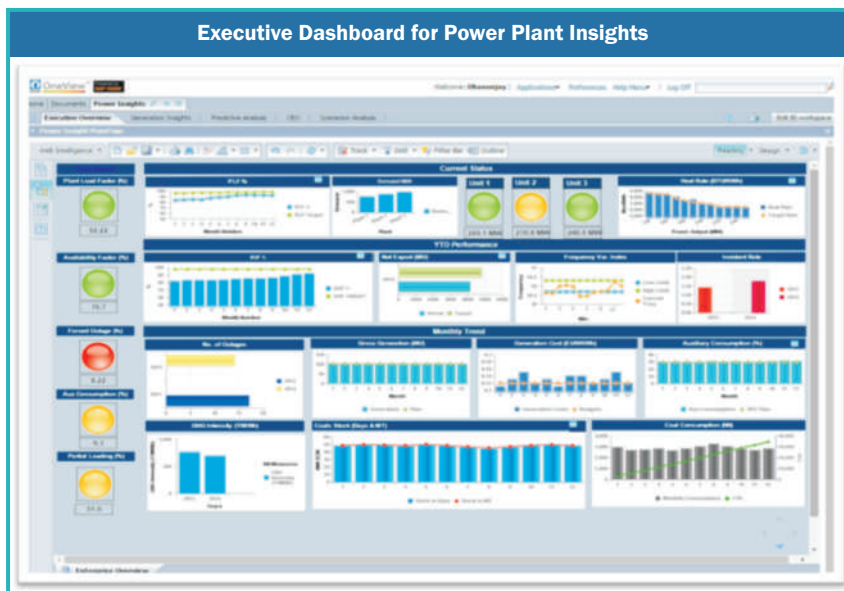
Key value scenarios and KPIs that can be monitored on a continuous basis, leveraging industry specific data model and pre-built analytics, are given below. Each of the value driving scenarios can be monitored and supported by KPIs providing cross functional insights at operational, tactical and strategic levels.

Operational Excellence

In increasingly globally competitive markets, utility companies are looking towards Operational Excellence (OpX) as the key to drive long term success. OpX programs tend to require cross-functional visibility by drawing information from multiple functions like Operations, Assets, Maintenance & Reliability, Health Safety & Environment, Projects, Supply Chain, Finance, Human Capital, etc. The key benefits of OpX value scenario provided by Rolta OneView™ include

The key benefits of this value scenario include:

- Sustain entrepreneurial spirit amongst departments and business functions with clear understanding of productivity targets by all stakeholders

- Measuring operational and maintenance metrics accurately and sweating assets through appropriate operational levers, driven by data

- Aligning equipment non-availability at a micro level to top line impact at a macro level

- Integrated view of operations for people to collaborate, +discuss and examine data together

Executive Dashboard for Power Plant Insights

At the top decision making enterprise level, an integrated view of operational excellence performance is provided based on organization-specific focus areas. Various elements shown in this view can be drilled down further at different levels to understand specific aspects across user-selectable time periods. Rolta OneView™ provides rich intuitive graphical representation of this information, to aid analysis and decision making. It provides enterprise level overview of power generation for key metrics of business functions and departments. This includes Plant Load Factor (PLF) and trends, Grid Demand, Heat Rate, Forced Outage, Availability Factor, Auxiliary Consumption, Loading, Fuel stock, Gross Generation, Cost of generation, Net export to grid etc. The intuitive insights help business managers to focus efforts on metrics that drive profitability.

Drilldown View of a KPI - Heat Rate
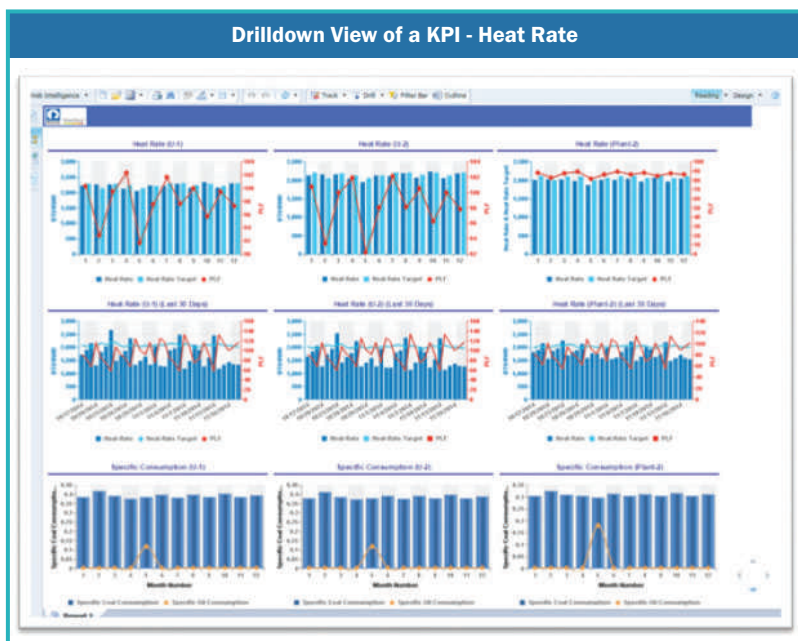
To analyze further users can drill down of heat rate to the next level, so as to understand fuel consumption by each unit, calorific value of fuel supplied, unit's generation etc.
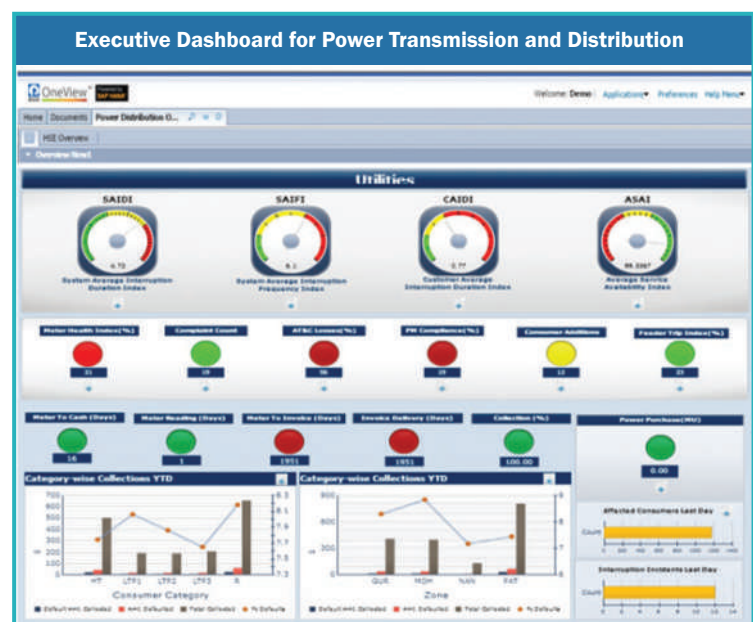
Note : The above dashboard views contain mock data and are shown for illustrative purposes only.

Operations Dashboard for Power Generation Insights

Leveraging the above, operations manager can take more informed decisions based on near real time data that provides insights into Generation loss, Average loading, Power load patterns, Loss due to equipment outage etc.

Drill down and Trend Charts for Critical Parameters
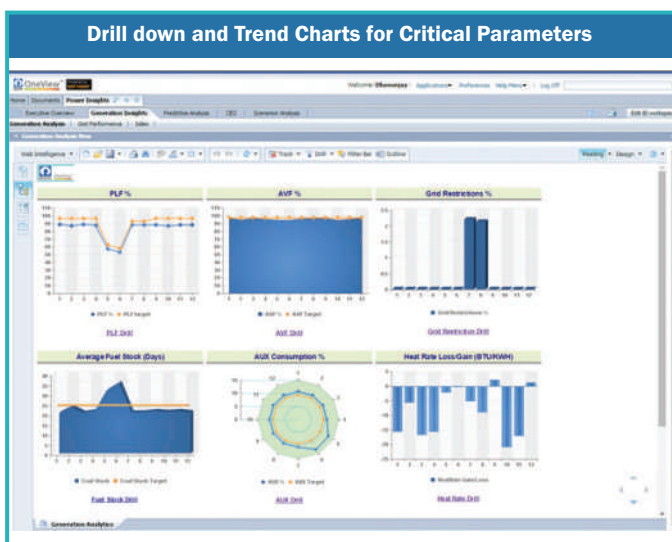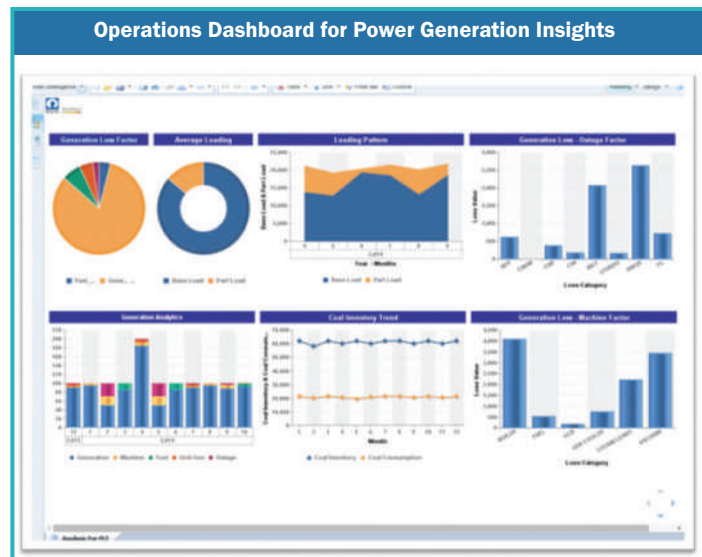
Drilldown and Trend charts available for critical operational and performance factors like Average load factor, Plant load factor, Aux. consumption, Heat rate etc., can help managers and analysts quickly isolate outliers, which can be investigated further for root cause analysis.

Executive Dashboard for Power Transmission and Distribution

As recommended by IEEE, Power transmission and distribution reliability indices like System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI), Customer Average Interruption Duration Index (CAIDI), Customer Average Duration Interruption Frequency Index (CAIFI) and Average Service Availability Index (ASAI) are calculated on real time basis to monitor performance.

Note : The above dashboard views contain mock data and are shown for illustrative purposes only.

Drill down to the root cause of emergency outage
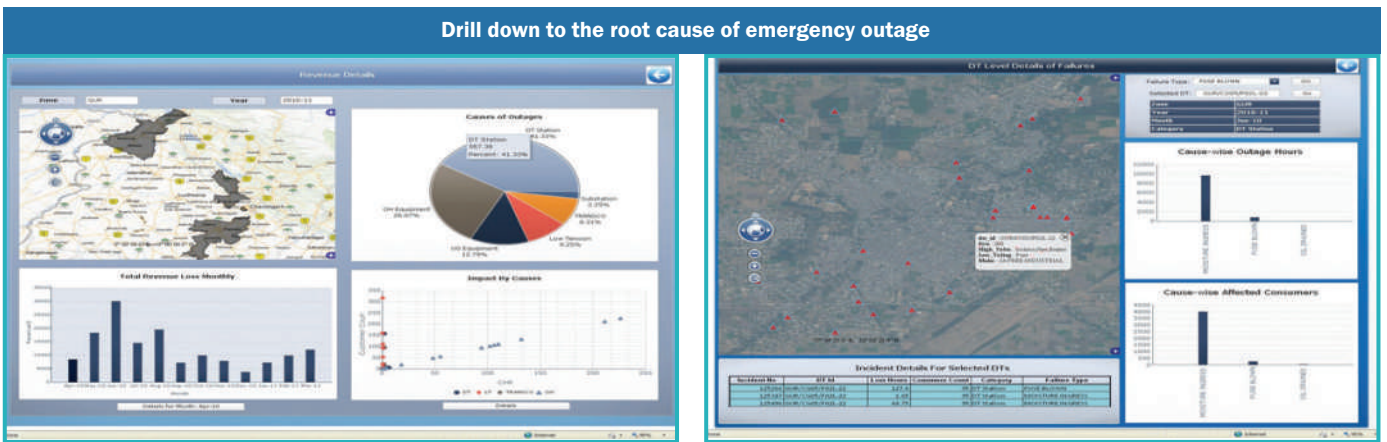
Emergency outage is one of the major concerns in any electric utility which occurs mainly due to uncertain factors like weather, fault on the running equipment, fault on overhead equipment etc. Drilling down to the root cause and isolating the major actors will definitely help in the improvement of reliability indices like SAIDI, SAIFI etc.

Asset Integrity

Asset Integrity Management (AIM) is a crucial function in asset intensive industries, with significant impact on production, costs and profitability. Rolta OneView™ helps companies gain greater contextual visibility into their asset integrity programs.

- Adequate visibility into asset performance and reporting operational & maintenance costs

- Aligning asset performance to corporate objectives with clarity of ownership

- Establishing baseline capacity for maintenance & ensure assets are not over-maintained

- Maintenance efforts to be accountable, coordinated, condition based and proactive

- Leveraging systems perspective to know inter-connectedness of multiple business functions

- Monitoring wrench time for crews with scientific tool time analysis & productivity metrics

Executive Dashboard on operational performance for a Utilities Major
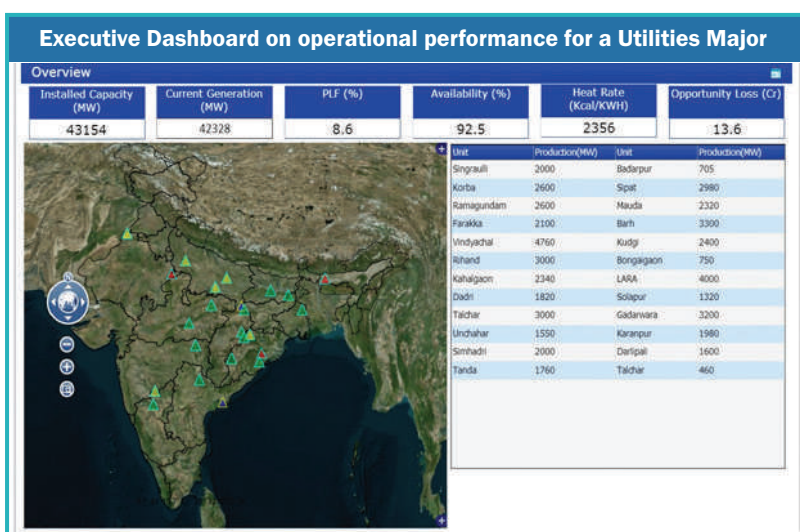
Geospatially enabled view provides visibility on various KPIs like current generation, PLF, availability, heat rate, and opportunity loss with geospatial integration across the various power plants. Facility to drill down exists to view the asset level details and ensure that users get relevant contextual information required for their role.

Note : The above dashboard views contain mock data and are shown for illustrative purposes only.

Drilling down on this provides visibility on inspection of critical equipment like Boilers in a plant, with breakdown and planned maintenance cost reports along with root cause for failures


Critical Asset Operations & Performance Monitoring Dashboard

Predictive Maintenance

While descriptive and diagnostic maintenance analytics help drill into past performance, it is critical for companies to leverage past learning's, analyze real-time data, and proactively identify potential hazards and execute preventive maintenance activities to avoid costly failures. Predictive Maintenance benefits supported by Rolta OneView™ include:

- Monitoring real time performance of hundreds of critical assets with thousands of variables

- Reduce unscheduled failures and interruptions that affect topline, people and process safety

- Proactively identify incipient events before they grow in proportion & impact performance

- Leverage enterprise data landscape for developing insights and generating alarms as needed

- Balancing corrective and preventive maintenance tasks to reduce backlogs

Real time monitoring with smart alerts for a captive power plant with various systems
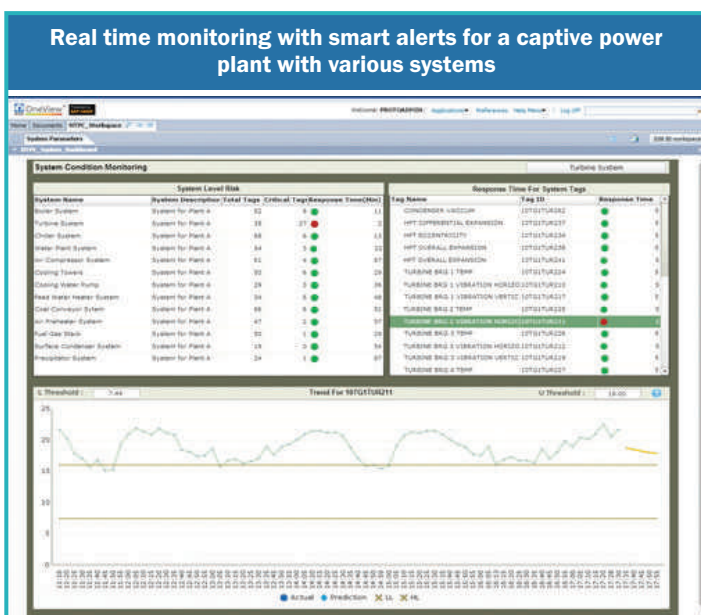
Further drill down provides risk status of the systems on a real time basis using predictive models for multiple systems like boiler feed water system, DM water system, Turbine system, Cooling water system, Fuel handling system etc. The insights provide actuals versus predicted performance for the selected system, with drill down provision.

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To enable more elaborate analysis, this view provides drill down and visibility on system parameters for the selected system with alarms that are generated on real time basis for early warning, leveraging statistical diagnostic and predictive models. Risk status is shown on a real time basis in the event of the parameters breaching thresholds.

Predicting the critical parameter in a Boiler feed water pump
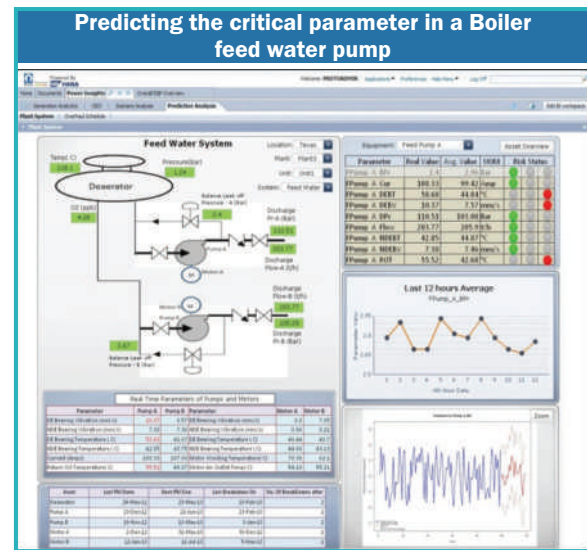
Real time alerts on process and operational parameters for a steam turbine

Rolta OneView™ can provide snapshot of various critical parameters for detailed analysis - for example, bearings vibration measurements for a steam turbine. The trend charts are helpful to depict possible changes in vibration patterns and proactively alert and alarm the operations personnel for corrective actions. An early warning system based on predictive analytics for critical parameters with further drill down provides root cause analysis that can be both data driven as well as SME defined.

Adverse Weather Impact on Utilities Assets and Crew safety

Rolta's innovative solution on predicting severe weather impact on Power transmission and distribution assets addresses the following business challenges:

- Impact of severe weather conditions like high wind speed, floods, tornados, storms etc. Assets coverage includes high voltage transmission lines, substations, transformers, switch gear, HV underground cables, Customer networks

- Ability to integrate with weather feeds and provide storm prediction analytics forecast

- GIS based dashboard which includes visualization of impacted assets on a map
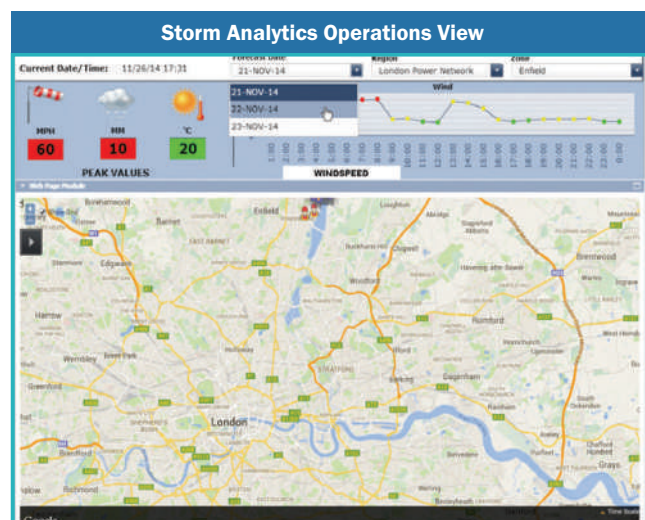
Provides comprehensive visualization of weather on the distribution network. Weather indices like wind speed, temperature, rain fall are measured for any severities for a given forecast period and trend charts are provided.

Storm Analytics Operations View

Storm Analytics GIS View

Provides GIS view of severe weather impact on assets along with impact details and list of customers for whom possible power outage is predicted. This would help to take preventive and proactive steps to avoid or minimize network outage and also alert crew and customers.
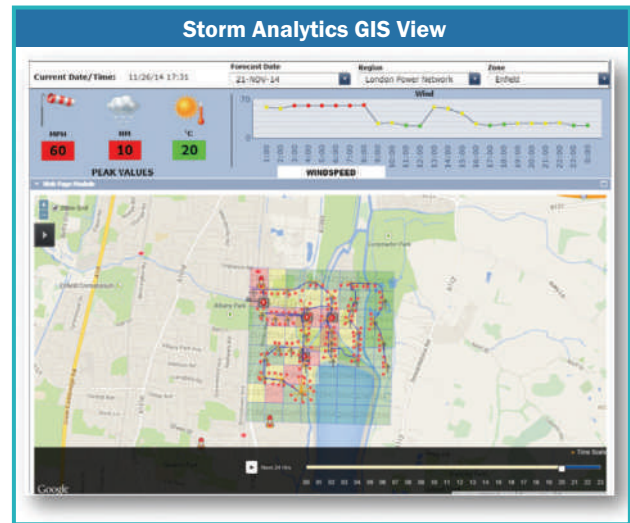
Cost Containment

Reducing costs are the key to improving business profitability. The key benefits of this value scenario include:
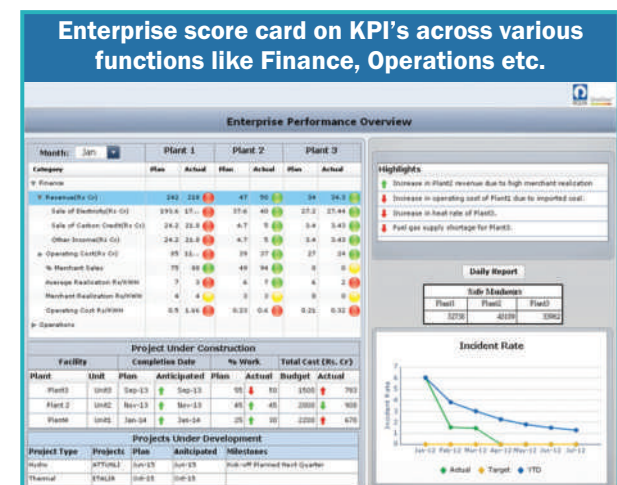
- Critical Repair vs Replace decisions for assets based on lifecycle costs

- Monitoring Planned vs Actual expenditure on near real time basis

- Seamless alignment between finance and operations metrics for work prioritization and optimization

- Transparency and awareness on specific production costs

Enterprise view of activity based costing and variance analysis for maintenance

Using Rolta OneView™, authorized user gains enterprise level visibility into various costs incurred under different heads. In-built collaboration and workflow notification engine generates alarms for cost items exceeding plan values, and allows users to quickly drill down to finer level of granularity to understand underlying causes.

Users can leverage this enterprise level dashboard, to quickly measure and monitor various KPIs across the functions of the organization. Specifically, the above dashboard consists of KPIs like Plan vs. Actuals for sale of electricity, sale of carbon credit, % merchant sales, average realization in Rs/KWH, merchant realization, operating cost etc. This view also provides the trend line for incident rate with target vs. actual over the past several months.

Enterprise score card on KPI's across various functions like Finance, Operations etc.

Note : The above dashboard views contain mock data and are shown for illustrative purposes only.

Managing Critical Projects

In large asset intensive and complex utility environments fraught with several risks, managing projects is always challenging. Rolta OneView™ supports such value scenarios providing:

- Visibility into project progress on near real time basis and controlling overruns - CPI and SPI

- Enabling macro levels re-planning aligned to field challenges and developing alternate schedules

Provides enterprise level visibility into the fund allocation, status of funds availability, number of approved projects and list of high value projects. Drill downs allow understanding project request status, projects processing time, most delayed projects, project distribution by department, function, company, etc., with further drill downs to finer details.

Corporate view of project fund allocation and performance
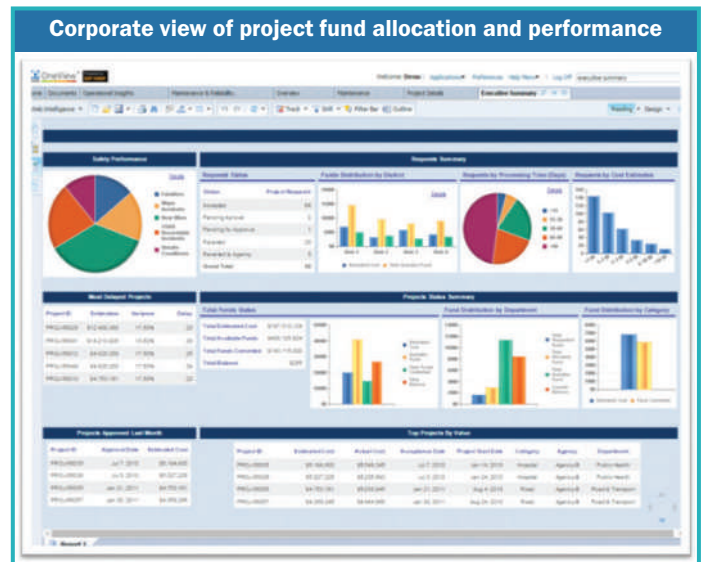
Detailed project level performance analytics with location integration

Detailed analysis is enabled by views that provide enterprise level visibility into project performance indicators, of the selected project like CPI, SPI, order placements summary, geospatial view of project location with different milestones like acceptance date, initiation date etc.

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Energy Efficiency

For utilities it is critical to optimize energy efficiency. Rolta OneView™ features energy efficiency scenarios that help:

- Understanding energy generation and consumption actors and their efficiencies

- Leveraging margin pricing, wherever appropriate for augmenting power generation

- Monitoring critical factors that contribute to energy inefficiencies and excess consumptions

Provides visibility on the energy consumption patterns for different types like steam energy, fuel energy, electrical energy. Analysis of plant energy consumption as a function of feed throughput is provided, as also the economic loss due to ineffective operation is captured on a daily basis with drill down provision.

Enterprise level view of energy consumption with custom analytics on electrical energy
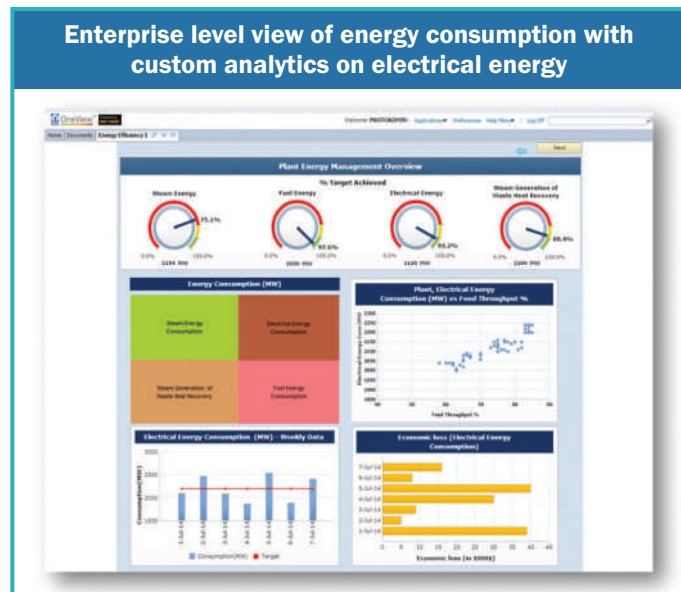
Safety and Regulatory Compliance

In increasingly regulatory and environmental pressures, companies can benefit from

- Ability to compute the carbon footprint due to various activities within the company

- Ability to compute energy efficiency and be able to drill down to fuels and types of energies consumed, in order to optimize their usage

Carbon footprint analytics at Enterprise, Plant and Fuel level
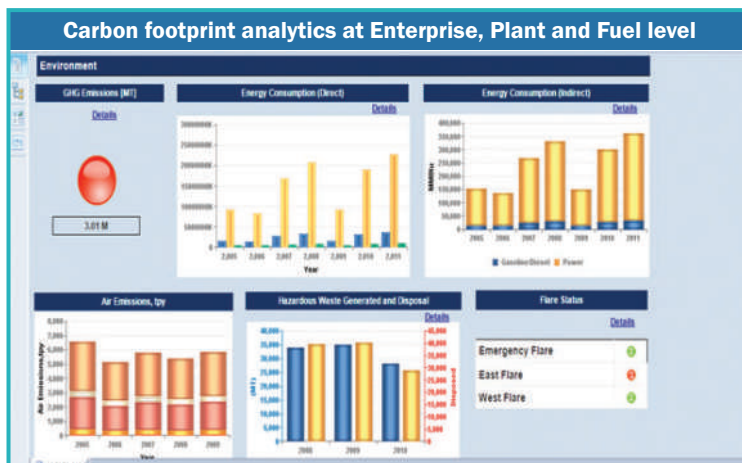
Various KPIs pertaining to sustainability are computed on an as need basis and highlighted. These include KPIs like: overall carbon footprint in MT, overall GHG summary, plant wise GHG summary, GHG intensity overall through years. This view can be drilled down to plant and year wise summaries. The final drill down provides a view into the consumption of electricity, natural gas, energy efficiency, and purchased steam.

Enterprise Scorecard for Business Performance

From the overall business perspective, it is important to ensure synergy between various functional areas and drive the organization excellence strategy. Rolta OneView™ can help:

- Provide an enterprise level view for various corporate level KPI's covering areas like HR, Finance, Sales and Marketing

- Set targets for various supporting functions of the enterprise and track the performance against the targets

Note : The above dashboard views contain mock data and are shown for illustrative purposes only.

Rolta OneView™ 6.0 - Unique Value Proposition
Key Business Value Differentiators

Pre-built, rapidly deployable industry rich **Big Data Analytics** solution, rapidly deployable in 12- 18 weeks, brings faster ROI and lower TCO

Deeper and broader coverage across all the key business functions for each industry vertical - Oil & Gas Upstream/Midstream, Refineries, Petrochemicals, Chemicals & Utilities

Role based dashboards providing actionable insights - right information at the right time to the right users as a single source of truth

Seamless integration and tracking of **enterprise balanced scorecard** and strategy maps to **operational and role based KPIs**

Modular solution with unified performance integrity model designed for business priorities driven phase wise roll out – Operations, Maintenance & Reliability, Assets, Sustainability, Supply Chain, Projects, Business and HSE

Pre-built **business process driven knowledge model** providing cross functional visibility across **OT / IT / Spatial / Engineering systems**

3000+ Pre-built KPIs across verticals **[400+ for each industry]** bringing real time and diagnostic analytics which are rapidly deployable & customizable

Rich diagnostic analytics with intuitive and granular drill downs

200+ Pre-built business value scenarios which are rapidly deployable & customizable

Pre-built predictive analytics scenarios across areas including Assets, Operations, Maintenance, Supply Chain and Projects

Pre-built work processes for event based alerts and capturing remediation

Self service BI - business user friendly to customize and extend existing and new KPIs

Industry taxonomy based semantic model with 8000+ objects & 1300 classes to provide **self-service BI**

Built-in **contextual collaboration** enabling to take the right decisions quickly

Adoption of **industry standards** ISA 95, PPDM, CIM, OPC, MIMOSA

Rolta OneView™ 6.0 - Unique Value Proposition
Key Technology Solution Differentiators

Cloud ready enterprise intelligence solution with **multi-site / multi-tenant** support

Pre-built industry rich knowledge model providing optimized persistence of data from varied data sources for high performance analytics and cohesive view

Real time & Predictive Analytics with knowledge driven **recommendations**

Built-in **comprehensive OT-IT Fusion** [patented] platform with unique capabilities of OT security, asset junction, real-time Big Data integration, centralized job scheduling, source system diagnostics and more

Engineered for **in-memory computing.** Exploits the power of **SAP HANA**

Logical data warehouse support for **Big Data**

Out of the box support for Hadoop & "R"

200+ Pre-built real time and ETL based connectors across business, operations, geospatial, engineering & other IOT systems for optimal performance & payload with and over 400 data flows

Universal Connector Framework to develop and plug in new connectors quickly

Built-in **rich spatial analytics**

User-friendly configuration and monitoring of operation parameters for **easy mapping and monitoring of assets and systems**

Easy configuration of **integrity limits** and automated alerts

Built–in collaboration & recommendations

Work process automation application framework to facilitate manual data capture and improve data quality

Multi-channel presentation support with mobile friendly user interface including globalization and localization support

Rolta OneView™ 6.0 Solution - Deep Dive

Rolta OneView™ 6.0 brings a pre-built, rapidly deployable industry-rich Big Data Analytics solution that provides "Industry Analytics in a Box". While its core platform has significant common components across verticals, it has been pre-built for specific-industry verticals starting from its integration layer. It includes vertical specific source system connectivity, industry-specific knowledge model with the respective industry standards and business processes, industry semantical layer, industry-specific work processes, industry-specific analytics and role-based actionable insights. The solution has 400+ Pre-built KPIs and 200+ scenarios. It has a deep and broad coverage across all the key business functions for each industry vertical - Oil & Gas Upstream/Midstream, Refineries, Petrochemicals, Chemicals and Utilities.

Rolta OneView™ - Analytics in A Box

Rolta OneView™ 6.0 - Cloud Ready Analytics Solution

Rolta OneView™ has been architected and designed for multi-site, multi-tenancy operations and can be deployed as a single server instance either in an organization's private, hybrid or public cloud environment to support multiple, geographically dispersed sites across the globe including built-in globalization and localization support. Rolta OneView ™ on Cloud helps the LOBs see the benefits without any Capex investments. It simplifies achievement of business outcomes quickly while allowing organisations to focus on their core business priorities with lowest TCO.

Rolta OneView™ is cloud enabled at all its integrate-analyze-deliver layers with its Multi-site Enterprise Server architecture. Its multi-site OT-IT Fusion manager ensures real-time contextual fusion of data across sites for ETL integration while also adhering to data security and governance. The Rolta OneView™ multi-site performance integrity model stores, processes and derives cross functional insights both within a geographical site as well as across the geographical sites. Additionally, the multi-site semantic and analytics model provides the necessary meta-data layer and analytics for site specific cross-functional and cross-site analytics for various role-based insights with security and auditing. Its cloud security layer provides data security over analytics privileges, tenant level & plant level restrictions, and a secure channel for data extraction from on premise systems. It supports cloud metering to monitor, measure and report the granular level of usage by tenants. The cloud strategy Rolta OneView™ is well aligned to SAP's cloud strategy and supported to provide a comprehensive solution .


Rolta OneView™ - Cloud Ready

Rolta OneView™ Solution Architecture At A Glance
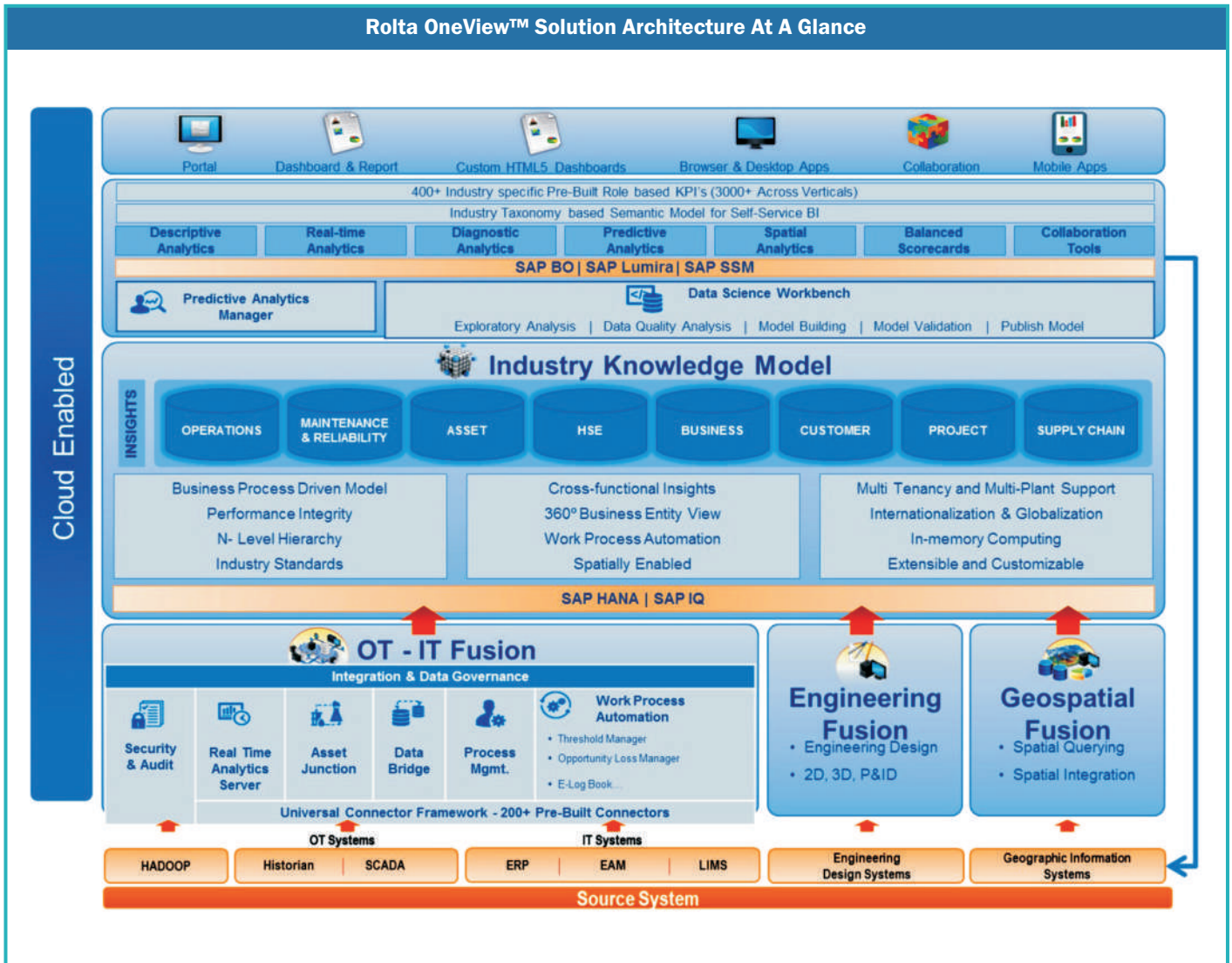
Rolta OneView 6.0 - Big Data Ready

Rolta OneView™ is a unique pre-built, rapidly deployable industry rich Big Data Analytics solution. By combining the IT - transactional, unstructured and OT data landscape, Rolta OneView™ brings 100X value of Big Data in an enterprise.

Big Data Analytics addresses the need of collating all the relevant data within the data landscape and expands the power of the information and actionable insights of the organization. Rolta OneView™ natively supports the Logical Data Warehouse model, which is critical to bring the variety of data in real-time to correlate at semantic layer and not necessarily to enforce on the physical data model. It provides optimized persistence and federated data integration to achieve a cohesive model of all the eight types of Big Data including transactional data, operational data, dark data,

spatial data, enterprise social data, structured & unstructured benchmark data, external social data and public data on the cloud. Its comprehensive OT-IT platform provides optimized design for high volume, high velocity, time-series and streaming data. It permits evaluation of real-time data against user-defined business rules, augmenting the data streams.

Rolta OneView™ 6.0 is engineered to exploit the high performance in-memory computing capabilities of SAP HANA. It is built using HANA columnar structure for high performance in-memory analytics with its pre-built optimized information views which include analytical, calculation and attribute views. It also effectively leverages SAP HANA's spatial capability and predictive analytics libraries.

Rolta OneView™ - Exploiting Big Data Power 100x

Rolta OneView™ - unified Knowledge Model Leveraging In-Memory Computing
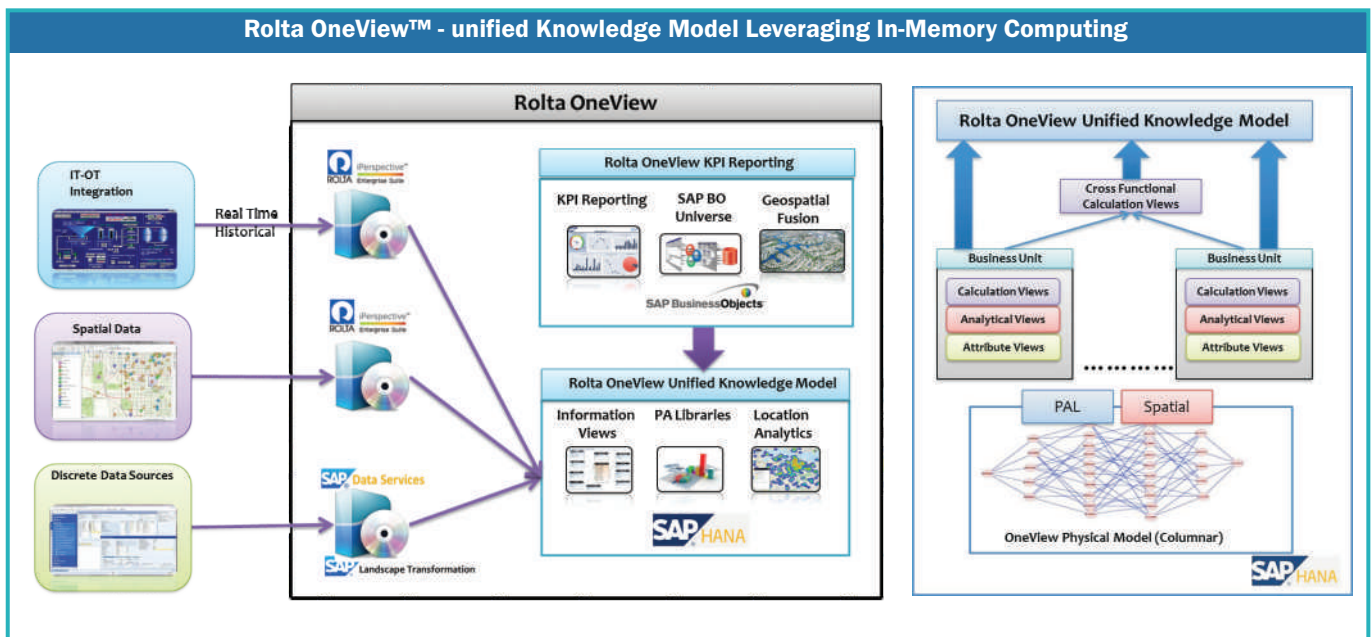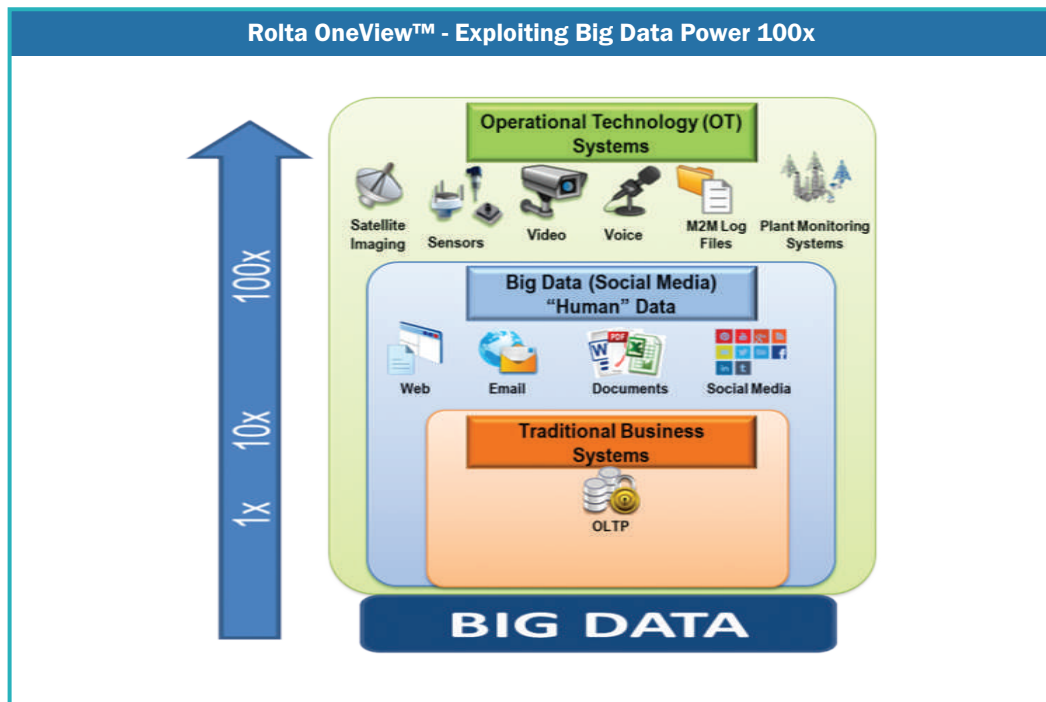
Predictive Analytics adds a new dimension to Big Data, allowing enterprises to leverage its benefits across the different levels. Rolta OneView™ simplifies these key capabilities and provides a simplified model leveraging the best of variety of a predictive engines including R, SAP HANA PAL, SAP infinite Insights, etc. With its in-built knowledge model it derives the most relevant predictive analytics uses cases in a specific industry vertical. Additionally, its flexible architecture allows ease of customization and modifications of existing predictive analytics models as well as addition of new models tailored to suit the organizational requirements.

Globalization and Localization Support

Rolta OneView™ 6.0 provides complete globalization and localization support which means that users can view the KPIs/Reports/Dashboards in their language of choice. It supports all the Unicode languages and provides a flexible way to leverage and customize the dashboards with pluggable, external translation files. A single centralized Rolta OneView™ instance can host multi-tenants with different languages and localization such as unit of measures, time zones, currency, etc. A few of its unique features include display base and preferred currency in-context. Rolta OneView™ automates unit of measure conversions and local time conversions which can be customized by business users.

Rolta OneView™ - Globalization & Localization Support
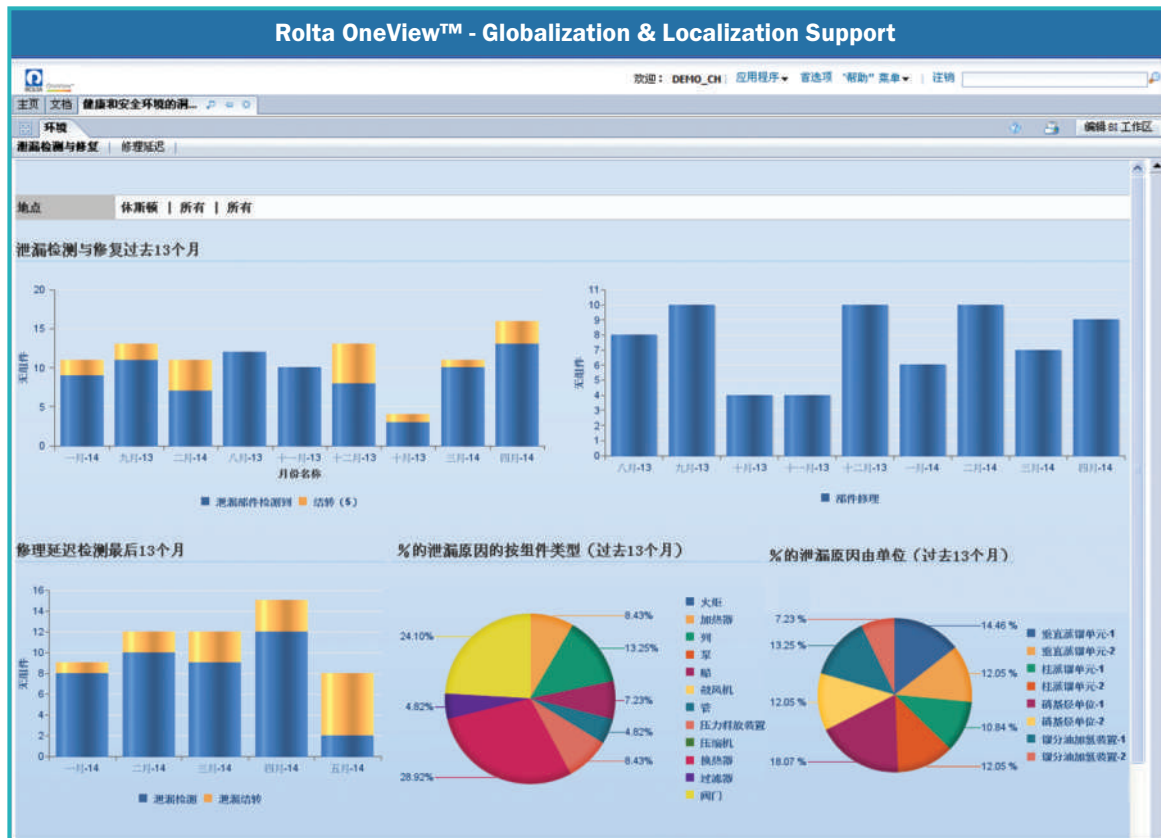
Rolta OneView™ Integration Layer

Comprehensive IT-OT Fusion™ Platform

The Rolta OneView™ IT-OT Platform enables the retrieval of data from heterogeneous business and operational systems. It provides the ability to bring in historical data in bulk, incremental bulk data as well as near real-time data points as per the required frequency. The meta-data driven architecture enables easy configuration to meet customized requirements resulting in quick implementation. IT-OT Security ensures, 2-way SSL communication between IT and OT environments, supporting the latest UA security specifications. It has a high performance Audit Engine to track access to OT data. Uptime of the OT network is highly critical for production. Hence the communication between the IT and OT network is secured. It provides confidentiality and integrity of the messages exchanged between the OT and IT networks.

Rolta OneView™ - IT/OT Integration
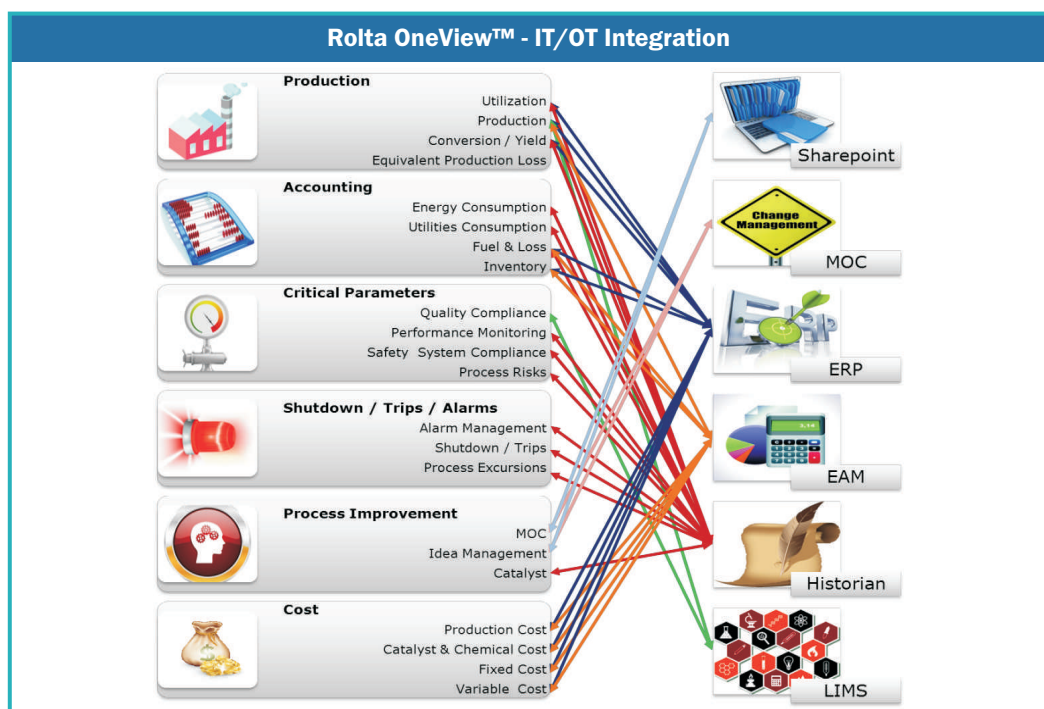
Pre-built Connector for Real-time & ETL

Rolta IT-OT Fusion™ Platform has 200+ Pre-built real time and ETL based connectors across business, operations, geospatial, engineering & other IoT systems for optimal performance & payload with over 400 data flows. The pre-built connectors include IT systems such as ERP, CRM, EAM, SCM and Operational Technology (OT) systems such as historians (OSI-PI, GE Proficy, Honeywell PHD, Aspen IP21 etc.), SCADA, LIMS, etc. Data from these source systems can be extracted and collated both in batch mode as well as real-time to enable both historic as well as real time analytics of the current operating parameters. The connectors provide secured connectivity to the systems and adopt change data capture mechanism to ensure minimum network payload. Connectors for operational systems are compliant with OPC-UA standards and also provide connectivity through native APIs / services. It provides lineage of the data received from the system including the status of the source system and data retrieval jobs.

Rolta OneView™ - 200+ Out Of The Box Connectors
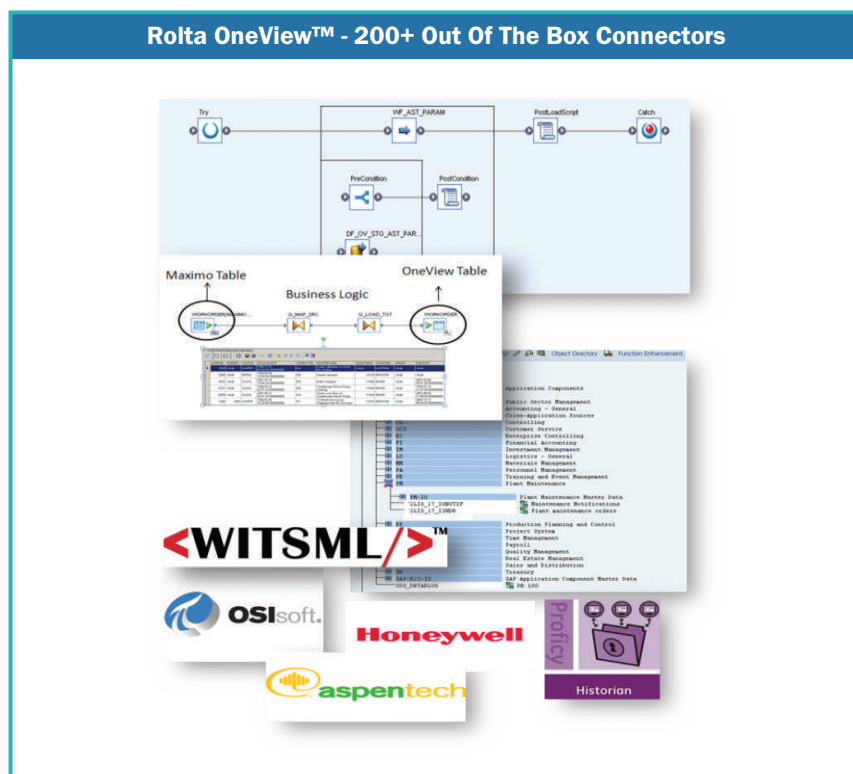
The Universal Connector Framework allows for easy configuration / customization of extraction and transformation of the data retrieved. It enables rapid development and plugging in of new connectors quickly.

ETL Framework flow for audit checks
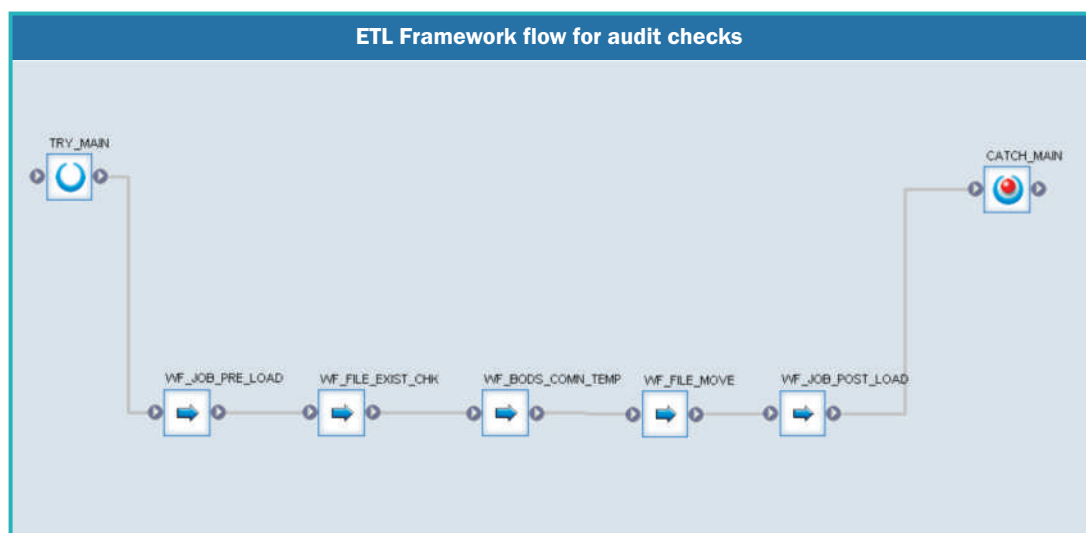
Asset Registry

The Asset registry provides a user-friendly console to configure parameters of individual equipment, systems and processes that need to be monitored. It allows for monitoring performance trends and critical parameters in near real time. The registry aligns with the asset hierarchy maintained within the EAM system to facilitate the configuration of monitoring equipment and processes.

It helps to map defined tags to their asset. This facilitates association of an asset with OT systems tags when re-commissioning an asset or commissioning a new asset and thereby provides rapid access to operational data for an asset / process. It provides an easy way to associate the process schematics with corresponding tags and the ability to gather data from multiple OT systems for an asset or a process. It supports N-level Plant Hierarchy Model with Multi-Tenancy. It provides easy tag browsing and editing. This facilitates monitoring and quickly identifying deviations.
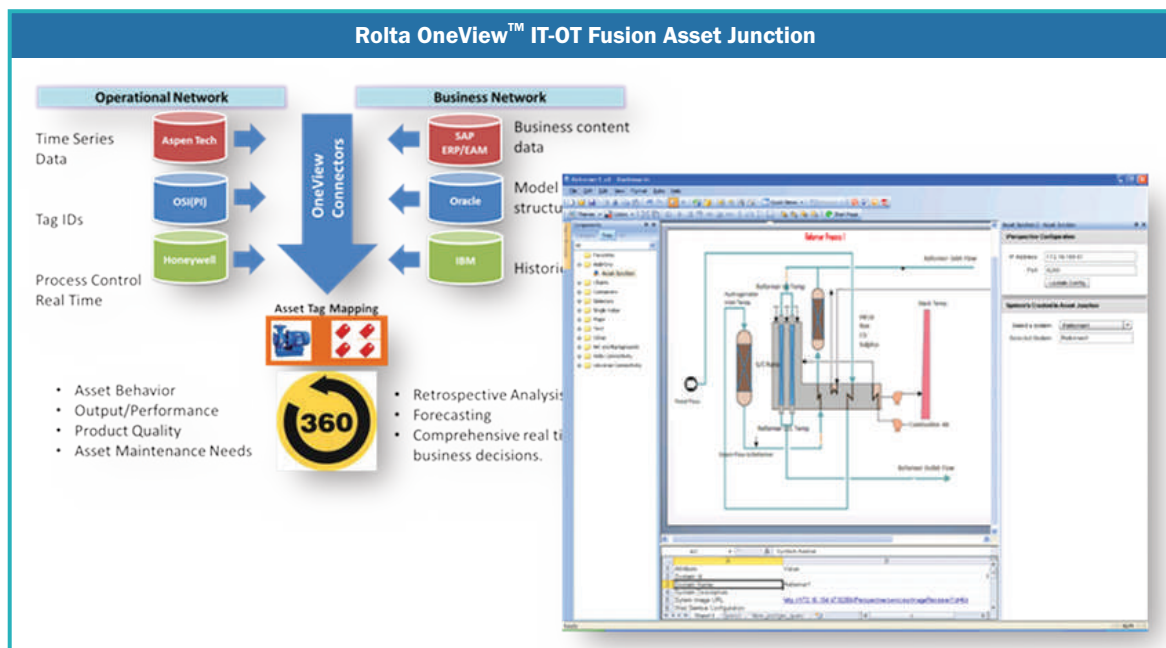
Geospatial Fusion

Any analytics system would be incomplete without the provision for locational intelligence. Rolta OneView™ integrates Rolta Geospatial Fusion™ to provide the much needed locational intelligence, out-of-the-box. Rolta Geospatial Fusion™ helps to populate the integrated geo-enriched knowledge model and as a result facilitates comprehensive business view of geographically distributed assets and supply chain. Fusion of spatial data with heterogeneous data sources and business systems enables Rolta OneView™ to provide complex spatial queries and drill downs for contextual analytics with bidirectional interaction capabilities. The ability to visualize the business and GIS data in a single dashboard with thematic mapping, heat maps and cluster maps helps enterprises take quick and effective decisions. The bi-directional communication between the dashboard charts and the maps facilitates analyzing asset performance using maps and data. It provides a unified, seamless geospatial view of enterprise KPIs and data.

Rolta OneView™ IT-OT Fusion - Critical Imperative
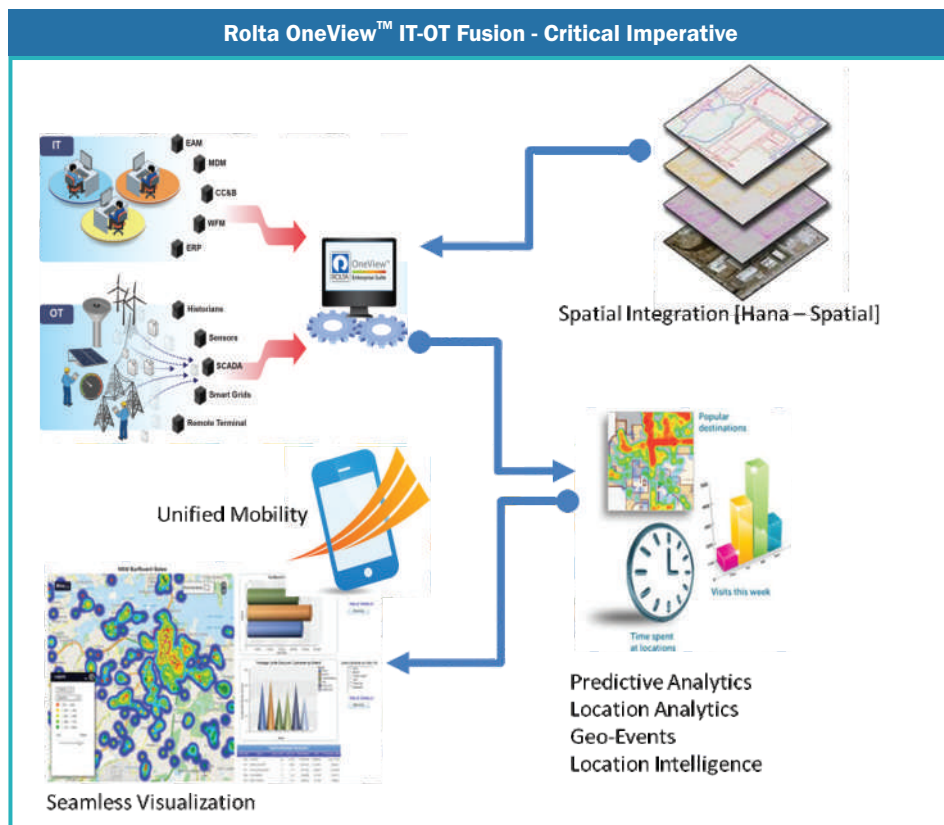
Engineering Fusion

Asset maintenance and availability constitute a good percentage of the operational cost. This makes risk identification and mitigation one of the most focused objectives of an enterprise. While most asset analytics are based on historical trends, engineering fusion allows monitoring of asset performance alongside its design specifications and manufacturer's recommended operating limits.

A vast amount of data is generated about assets from the initial design through its commissioning, operations till its final retirement. Rolta Engineering Fusion™ is an integral part of Rolta OneView™ 6.0 Enterprise Suite and provides an early insight on asset risks by viewing equipment actual operating range against the recommended design parameters. It provides automated notification on operating parameters crossing thresholds. As a result it facilitates implementation of design integrity practices, reducing asset maintenance and failures. Rolta OneView™ with its integrated 2D and 3D model viewer ensures easy navigation to asset using bidirectional interaction capabilities between asset dashboard and the plant model.

Rolta OneView™ - Integration with Engineering Design System
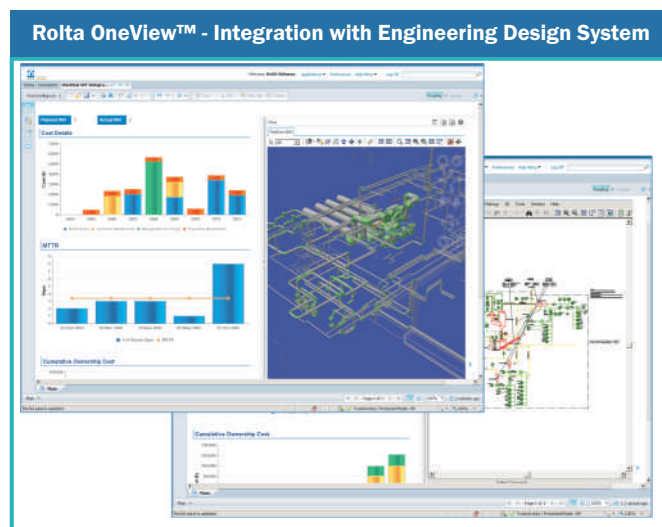
Pre-Built Work Processes

Pre-built Industry-specific workflows and Workflow Automation Framework

Rolta OneView™ provides some key Pre-built industry workflows that fill the gap generally observed in the industry. These workflows also help in alleviating the need for manual data creation that companies end up with when trying to fill those business process gaps and thus enhance the data quality. Rolta OneView™ also provides an extensible workflow framework to build customized workflows for specific needs. The framework provides functionalities to manage thresholds and targets along with its history. Alerts can be defined on these thresholds and notifications sent via multiple channels – emails, dashboards, mobile devices. Additionally, one can configure system driven actions to close the loop by invoking web services and 3rd party applications, etc.

Rolta OneView™ does not merely stop at providing the visual business insights to individuals but also facilitates collaborative BI through workflows. The Pre-built work processes allow capture of data, enhancement of data quality and facilitate timely actions by allowing users to interact with each other for corrective actions. The workflow framework enables the creation of records in a knowledge repository for future reference with powerful search capabilities to overcoming loss of expertise due to an ageing workforce. A few examples of pre-built workflows cover areas such as Opportunity Loss Management, Greenhouse Gas Emission Monitoring, Tracking Worst Actors, Permit Management, Temporary Leak Repair Management, Risk Register, etc
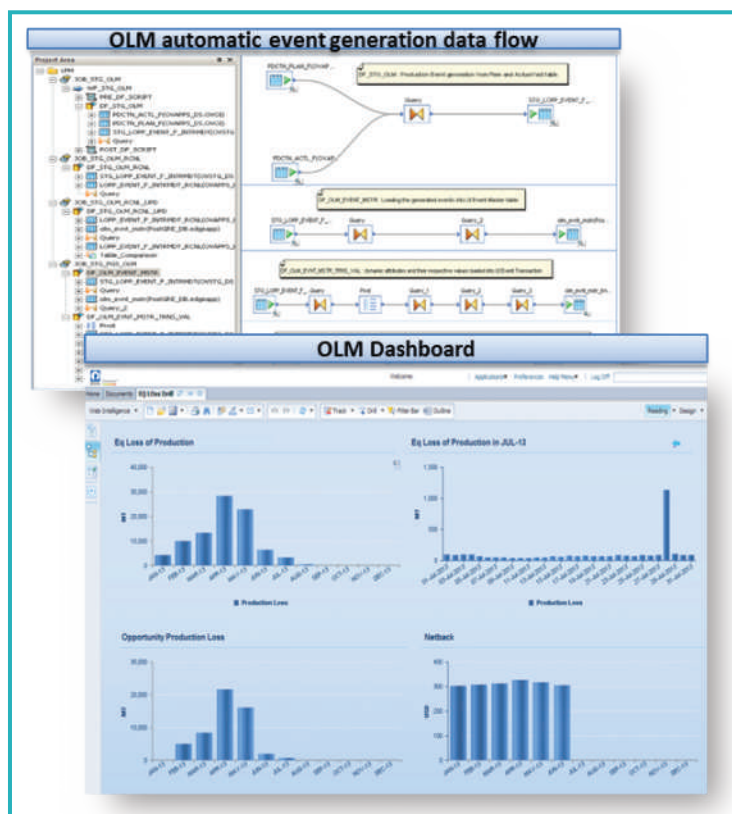
Rolta OneView ™ Knowledge Model Layer

Business Process Driven Knowledge Model

Rolta OneView™ includes Pre-built business process driven knowledge models which are industry-specific, based on years of domain expertise and best practices. It is a highly optimized persistence of data from the heterogeneous business and operational systems to enable high performance analytics and a cohesive view of information across business functions. It provides 360° business view of

all the business critical areas providing cross functional visibility across OT / IT / Spatial / Engineering systems. It provides a deeper and broader coverage across all the key business functions for each industry vertical Oil & Gas Upstream/Midstream, Refineries Petrochemicals, Chemicals and Utilities.

Rolta OneView™ pre-built Knowledge Model and KPIs are tailored to each specific vertical and have has been derived

from Rolta's deep domain insights and best practices. This knowledge model extends the Enterprise Data Warehouse (EDW) with other Logical Data Warehouses (LDW) and is capable of handling humongous amounts of heterogeneous data at extremely high frequencies. One of the key distinguishing features is that it is built on a platform agnostic architecture for supporting Big Data including streaming data from OT systems, sensors etc. and is supported on leading technology providers like SAP, Oracle and IBM. The knowledge model is also designed and certified to leverage in memory data analytics capabilities while also integrating with other traditional open source Big Data technologies such as Hadoop, NoSQL, etc.

This comprehensive knowledge model not only provides deep insights with multi-level drill downs in all the different business functions but also acts as a 'Single Source of Truth'. This also ensure's standardization across the different entities within the enterprise.

The knowledge model maintains the cross-functional information collated from varied data sources thereby enabling performance management and analytics, including trends, 'slice and dice' analysis, drill-down, forecasting, variance analysis, root cause identification, scenario planning and what-if modeling.

Comprehensive Performance Integrity Model

Operations Insights	• Real Time Monitoring • Energy Utilization • Fuel & Loss Accounting	• Reliability Clock • Lost Profit Opportunity • Operating Cost
Assets Insights	• Asset Historian • Failure Analysis • Asset Explorer	• Asset Utilization • Asset Integrity • Lifecycle Cost
Maintenance & Reliability Insights	• Availability • PM Compliance • Worst Actor Analysis	• Maintenance Cost • MTBF • Outage Analysis
Health, Safety & Environment Insights	• Health • Environment • Safety	• Process Safety Management • Regulatory Compliance • Security
Supply Chain Insights	• Procurement • Vendor Performance • Logistics	• Inventory • Long Term Contracts • Demand Analysis
Projects Insights	• Portfolio Management • Project Plan & Schedule • Turnaround Management	• Project Execution • Budget • Cost Tracking
Sustainability Insights	• Carbon Footprint • Market Share • Customer Satisfaction Index	• Water Consumption • CSR Activities • Stakeholder Value
Business Insights	• Fixed Cost Analysis • Human Resources • CAPEX	• Financial Performance • Marketing • Netback Analysis

ROLTA OneView™ Enterprise Suite

The process driven knowledge model design with a focus on performance integrity allows for broader and deeper coverage of each business function as well as extensive cross functional analytics. Further, the adoption of industry specific standards such as ISA-95, MIMOSA, PPDM, CIM, etc. ensures that the data elements persisted are in alignment with industry requirements.

The Knowledge model design scales to manage multi-site implementations across geographies. It is able to manage

data from the sources specific to each site maintaining the lineage of each and provides support for globalization and localization. It allows for viewing aggregated and summary information as well as drilling down to the lowest granularity. It includes n-level hierarchies, parameterized data structures, flex attributes and custom schemas to allow for easy customization.

Standars Based Data Model
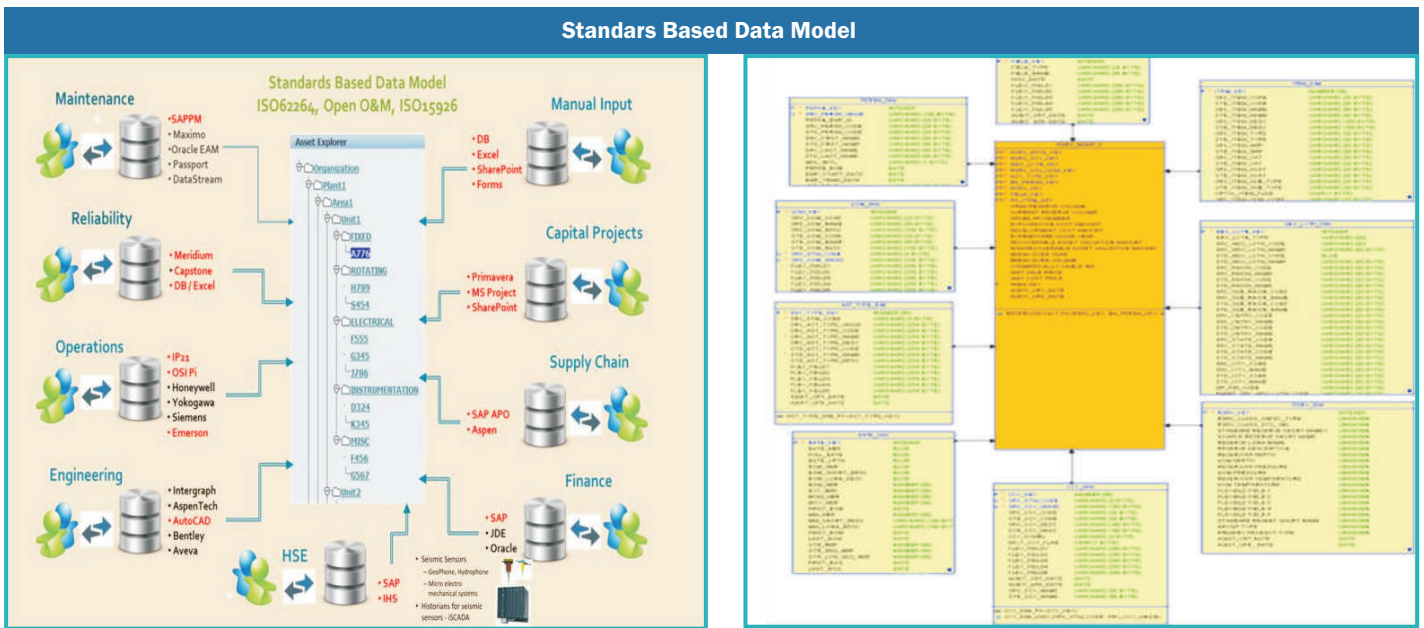
Unified Performance Integrity Model
bringing cross functional visibility and modularity

Rolta OneView™ provides modularity across its layers powered by its unified performance integrity model designed for business priorities driven phase wise roll out– operations, maintenance & reliability, assets, sustainability, supply chain, projects, business, HSE.

Some of the unique features and benefits it provides include:

- Drives insights across these various functions in a meaningfully correlated manner in the context of the business process, thus enabling meaningful cross-functional situational awareness and actionable role-based insights.

- While the information is aggregated and rolled up as it goes up the hierarchy, one can drill down to any lower level details to get detailed visibility from a single source of truth.

- Integrity of the data attributes across the process functions

- Ability to get 360° of an entity across the business function

- Maintains the integrity even when the solution is deployed as individual modules in a phased manner or as an integrated solution.
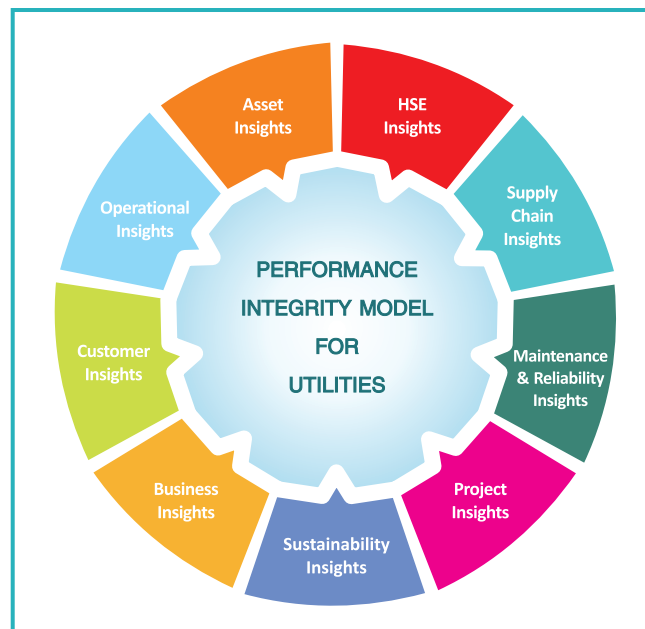
Extensibility

Rolta OneView™ is architected to be able to extend and easily customize for specific (and evolving) needs.

Some of the unique features and benefits include:

- Ability to build new KPIs by extending and/or customizing the entities through a documented process to ensure of compromising of the data integrity and normalization

- Empower the roles to be self-sufficient to manage the solution

- Compatibility to customer specific processes and practices

- N-Level hierarchy for functional location / organization

- Flex fields to accommodate custom requirements. formula constant factors are parameterized

- Parameterized asset structure to manage varying attributes for different asset types

- Parameterized material attributes for varied materials used across O&G, Petrochemicals, Chemicals, Power Utilities and Water Utilities

- Patches and upgrade support without impacting customizations, based on guidelines
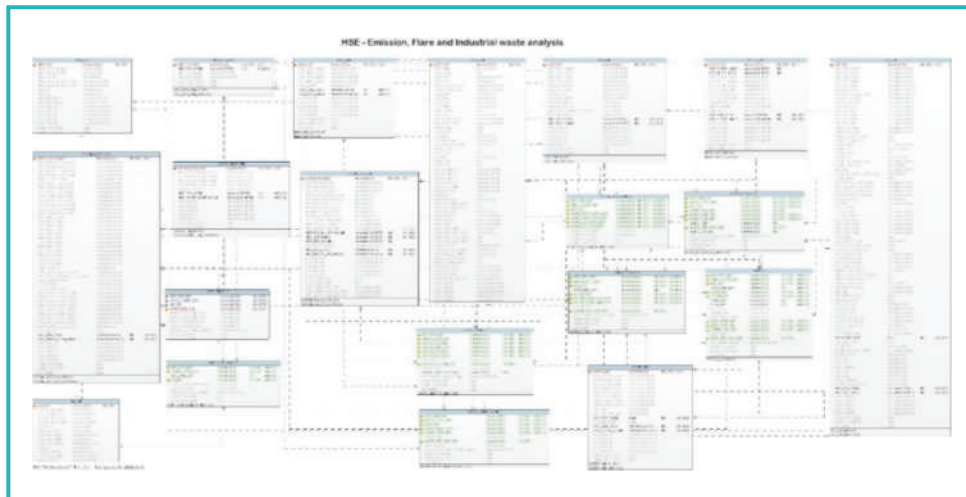
Semantic Layer

Industry Taxonomy Based Semantic Model

The semantic model transforms the knowledge model into business functions and processes based objects. The industry taxonomy used to define the objects provide ease of use to quickly build new KPIs reports or dashboards thereby facilitating self-service BI and making the enterprise self-reliant. The semantic model facilitates in extending the solution to define a logical data warehouse to federate data from external data sources. Users can therefore work from a variety of preconfigured and customized dashboards, or slice and dice through data using multi-dimensional analysis, automated data cubes, ranking and alerting, condition monitoring with intelligent drill-down. Additionally, the rich Rolta OneView™ semantic model with 8000+ objects enables Self-Service BI and thereby eliminates the user's dependency on their IT team, empowering users to build their own reports/dashboards to meet their evolving requirements.

Some of the Key features and benefits that enable Self Service BI include

- Comprehensive star schema based semantic model with over 8000 objects and over 1300 classes

- Semantic model by each business function and defined guidelines to extend them

- Adopts industry based taxonomy

- Enables cross functional KPI creation business users are easily able to customize and extend existing and new KPIs

- Formula constant factors are parameterized

- Flex fields to accommodate custom requirements

Analytics Layer

Pre-Built Analytics / KPIs

Rolta OneView™ Enterprise Suite for tilities has over 400 pre-built industry specific KPIs bringing rich real-time and diagnostic analytics which are rapidly deployable and are also highly configurable and customizable by users. As a result, it is able to support over 200 pre-built business value scenarios relevant to the industry. The solution has been designed to provide rich analytics covering real-time, descriptive, diagnostic, predictive, prescriptive as well as spatial analytics to support intuitive decision-making.

Real-time Analytics

Real-time analytics is an essential feature to enable users to monitor critical parameters and critical equipment in near real time. With this capability, users can forecast process and equipment performance, leveraging near real-time and historical data to take timely actions. Real-time data capture from OT and IT systems are managed separately to minimize load on production systems.
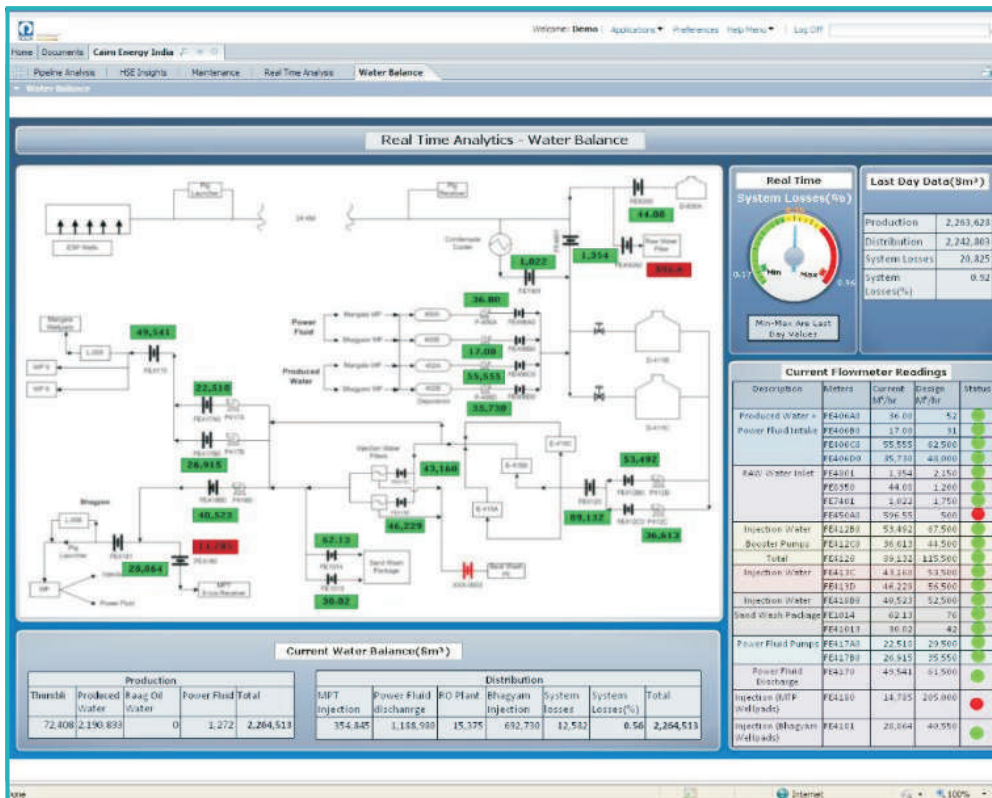
Diagnostic Analytics

Rolta OneView™ provides feature-rich diagnostic analytics with intuitive contextual dashboard and multi-level drill downs to easily analyze a variety of scenarios and thereby facilitate root cause analysis.
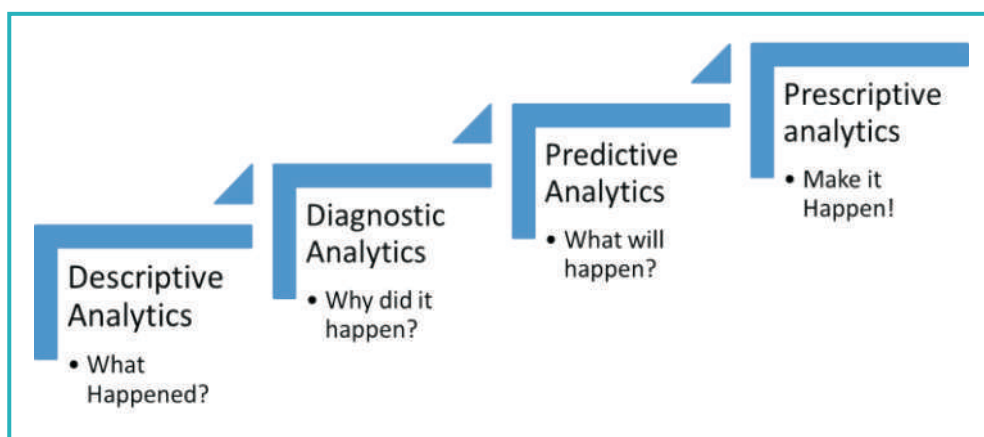
Predictive Analytics

Rolta OneView™ brings built-in predictive analytics capabilities allowing users to forecast on performance of different equipment and processes to enable early identification of possible deviations and bad actors. Timely actions can thereby minimize the impact and result in significant cost savings. The solution provides the capability to use the best model suited for a scenario and achieve realistic results for appropriate actions. It leverages leading industry predictive analytics and Big Data engines such as "R", Hadoop, SAP HANA, PAL, SAP Infinite Insights, etc. Rolta OneView™ has several out-of-the-box predictive analytics models covering a range of areas such as assets, operations, maintenance, supply chain and projects. Examples include:

- Forecasts on performances of equipment and processes

- Early identification of possible deviations and bad actors to minimize the impact and save on costs

- Capability to use the best model suited for a scenario and achieve realistic results for appropriate actions

Spatial Analytics

Any analytics system would be incomplete without the provision of locational intelligence. Spatial Analytics provides the users with the ability to visualize the business and g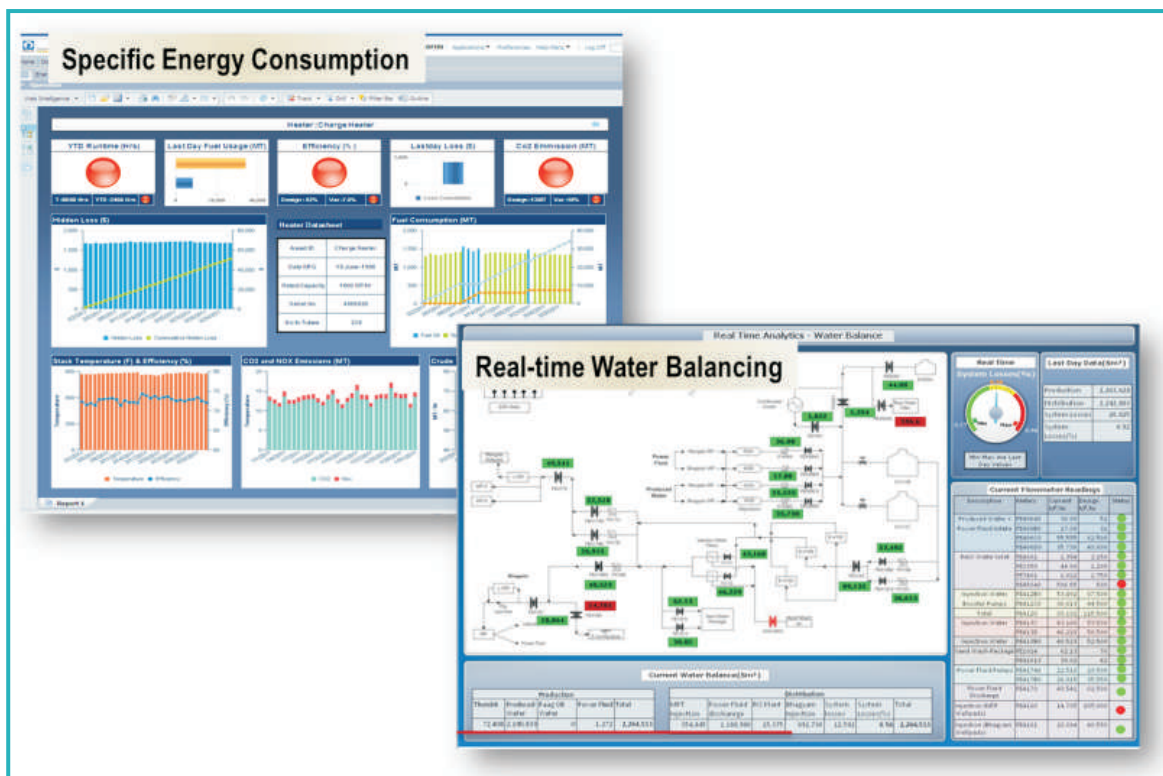eographically dispersed asset data in a single dashboard with thematic mapping, heat maps and cluster maps helps enterprises to take quick and effective decisions.

Pre-Built Scenarios

Rolta OneView™ has 200+ Pre-built business value scenarios which are rapidly deployable & customizable. A sampling of these was already covered in the earlier section. These enable deeper insights into scenarios that require complex calculations and accessing data from multiple systems cutting across cross functional boundaries

A small sample of such scenarios include:

- Asset life cycle Analysis

- Opportunity loss analysis

- Composite risk

- Safety instrumented system performance

- Fire prevention

- Backlog purchase order analysis

- Procurement cycle optimization

- Safety prevention expenses

- Incidents, waste and emission reporting

- Root cause analysis of deviations


Visualization Layer

Role Based Dashboards

Rolta OneView™ provides role-based actionable insights to its users through seamless aggregation and information dissemination across information landscape ensuring only relevant cross-functional KPIs are seen by an individual that are relevant to their function. This ensure users can take actions effectively as they are not distracted by data which isn't in their ambit of responsibility while also ensuring data confidentiality. Rolta OneView™ integrates seamlessly with the organization's Active directory / LDAP infrastructure to determine the user's role and security. Rolta OneView™'s

analytical and decision making capabilities are role-based covering all levels from CxO to functional users. At the CxO level, Rolta OneView™ provides strategy maps and scorecards that can be linked and monitored across the enterprise. Functional specialists have predictive and prescriptive analytics to take corrective action. Pre-defined KPIs aligned to departmental line managers provide them with deeper insights addressing their departmental responsibilities while also providing cross-functional visibility for better alignment. Operational staff can make real-time

operational decisions and take corrective actions through the real-time operational dashboards. As a result, Rolta OneView™ is able to provide capabilities for performance monitoring and performance improvement through root cause analysis, better corporate governance through benchmarking, modeling and scorecards. Rolta OneView™ provides role based dashboards enabling actionable insights - right information, right time to right users as a single source of truth. Some of the key features and benefits includes, guided navigations, root cause analysis, scenario analysis, rich, intuitive user experience, usage auditing, secure access via SSL, ability to easily customize and extend.
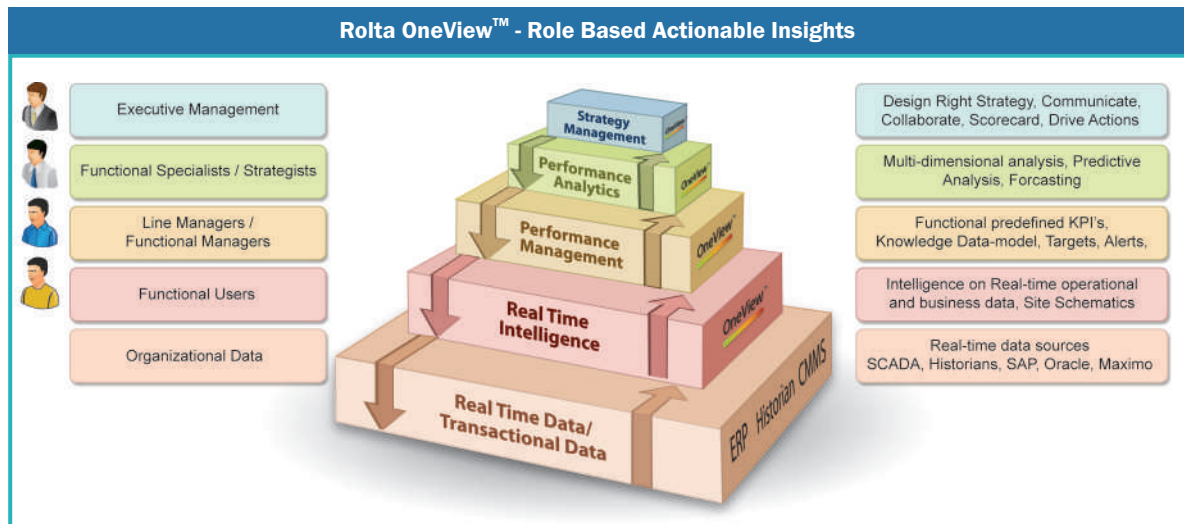
Built-in Collaboration and Recommendations

Rolta OneView™ does not merely stop at providing the visual business insights to individuals but also facilitates collaborative BI through workflows. These pre-built collaboration processes allow capture of data, announcements, discussion boards, document collaboration, task assignment, notifications tracking and alerts to facilitate timely actions by allowing users to interact with each other. The collaboration tools allow discussion threads to be initiated based on snapshot of a dashboard thereby maintaining the context of the discussion. It allows tasks to be assigned specific to a scenario / situation observed on the dashboard. The workflow framework enables the creation of records in a knowledge repository for future reference with powerful search capabilities to overcoming loss of expertise due to an ageing workforce.

Balanced Scorecard

Rolta OneView™ Enterprise Suite provides seamless management of the organization's balanced scorecard and strategy maps by tying together functional scorecards with Enterprise KPI as well as operational and role based individual KPIs. The tool is compliant with the Kaplan–Norton strategy management model. As a result, Rolta OneView™ allows defining of scorecards from the enterprise level down to the business owners / function owners thereby promoting the institutionalization of business goals and objectives.

Multichannel Presentation

Usability and user friendly visualization is a key pillar of a BI and analytics solution such as Rolta OneView™ to accelerate adoption by non-IT business users, and to support efficient workflows that ultimately enable them to accomplish their business goals more effectively. Rolta's Certified Practice in Usability has been assessed at the highest Level 5 by Human Factors International, a global leader in user experience design. Rolta OneView™ has been designed keeping usability and end-users in mind. The business dynamics across industries require information to be exhaustive, complete and be accessible everywhere.

As a web enabled application Rolta OneView™ analytics and dashboards can be accessed through various devices including desktops, notebooks tablets and smart phones. Some of the features include pre-built KPI widgets and dashboards by business functions, summarized and aggregated views with drill-down and drill-to-detail capabilities, publishing to collaboration tools and portals etc. Further, automated alerts and notifications based on defined thresholds and targets are delivered on e-mail and SMS to enable timely decisions.
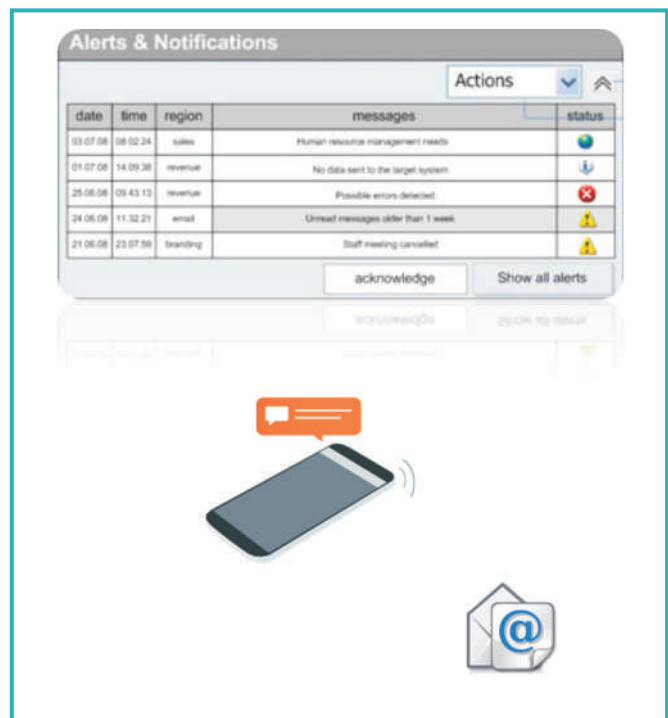
Alerts and Notifications

Rolta OneView™ provides a comprehensive alerts and notifications system as a critical enabler for proactive data driven actions.

Some of the key features and benefits include - Multi-level alerts for threshold deviations for timely decision-making, status notifications for scheduled jobs alerts for scheduled

job failures, e-mailing of scheduled reports, visibility to the last update date & time of the KPIs & reports and which source system data update has not taken place, notifications of unavailable data sources, via data-lineage framework, customizable notification destinations and rules, etc.

Integrity Limits and Automated Alerts

Rolta OneView™ provides business user friendly configuration of various integrity limits and thresholds and automated alerts. Intuitive dashboards with guided insights for safe operating limits, various levels of integrity layers and outliners helps to make quicker and better decisions.
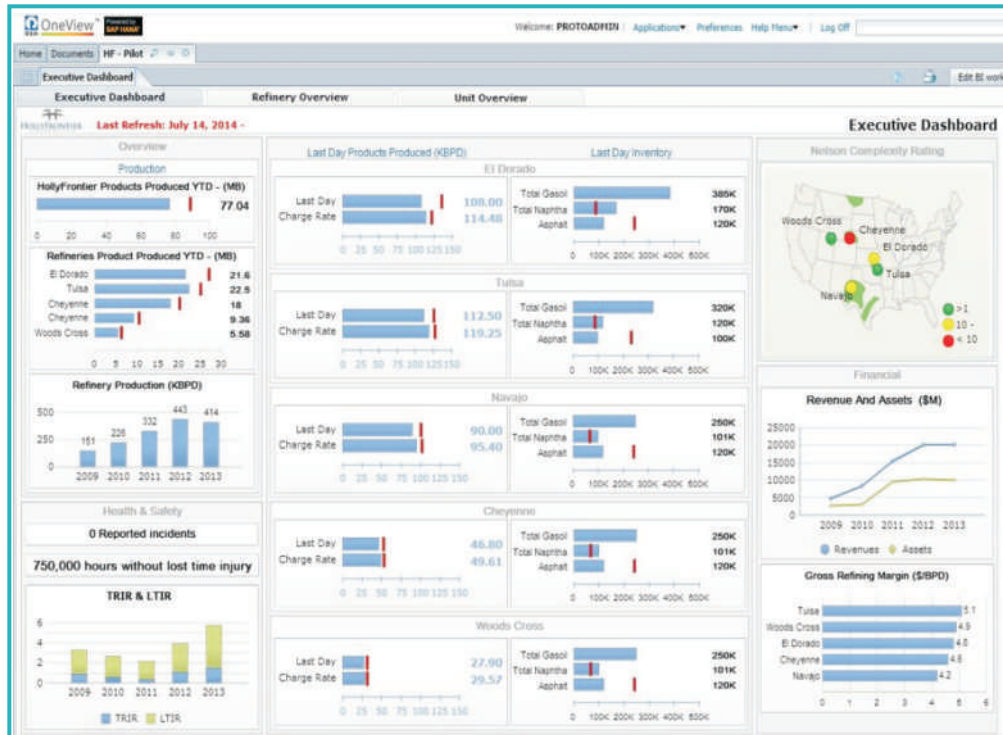
Continuous Improvement (6 Sigma)

Rolta OneView™ enables continuous process improvement by analyzing the deviations in the business process executions and provides prescriptions on process improvements and thereby facilitates initiatives such as 6 Sigma.
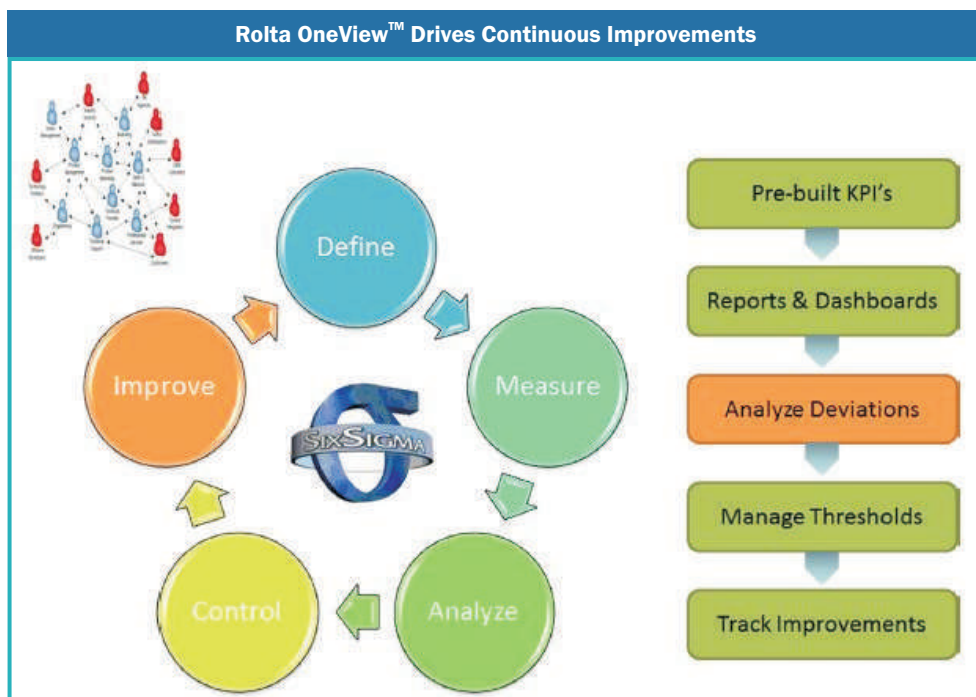
Closed loop BI provides a way to take the insights into action to the source systems thereby turning the power of analytics into process improvements.

Rolta OneView™ with its out-of-the-box industry-specific analytics clearly enables organizations to embark on their business transformation journey confidently, to achieve positive business outcomes. As a packaged solution, Rolta OneView™ can be rapidly deployed in 12-18 weeks and easily customized resulting in a higher and faster ROI.

Industry Recognition

Rolta OneView™ has been recognized by technology providers and industry analysts for its innovative approach and solution

Frost & Sullivan
"Solutions such as Rolta OneView™ will play a critical role in transforming plant management and drive growth" Frost & Sullivan Whitepaper, " Enabling Operational Excellence"

Gartner
A Recent Gartner Study Report in January 2014 " Competitive landscape: BI Platforms" named Rolta Oneview™ as a leading packaged analytics solution

ARC Advisory Group
Rolta OneView™ satisfies key AIM requirments at every level of the pyramid - Rolta OneView™ Helps Companies Overcome Key AIM Hurdles *Dr. Sid Snitkin, Vice President, ARC Advisory Group*

NASSCOM / Frost & Sullivan - Product Excellence Matrix
Rolta OneView™ - For the ability to convincingly articulate customer's BI and Big Data Analytics needs, improve decision making, cut costs, innovation, market trends and competitive forces

Rolta, SAP, Customer : Win-Win-Win

- Global Strategic OEM Partner
- SAP Pinnacle Partner of the year 2014
- Business value in weeks with Rolta's industry specific pre-built analytics solutions embedding SAP's technologies. Faster ROI
- Joint thought leadership on IT-OT integration & operational integrity
- Joint POVs for Oil & Gas, Chemicals and Utilities
- Preferred partner of Global Database Migration Factory Program

Case Studies

Many organizations have seen significant benefits with Rolta OneView™ solving their specific industry challenges and priorities across multiple industries including Oil & Gas Upstream, Refineries, Petrochemicals, Chemicals & Utilities.

Case Study – Operational Intelligence for Power Transmission

Business Challenges

A Power Transmission Company in USA had embarked on a program for operational intelligence to enhance the way it monitors and responds to operational functions that impact their Key Performance Indicators. Some of the challenges they faced included:

- Lack of access and visibility into key financial performance data, safety and incident reporting, maintenance and reliability data for cross functional analytics
- Numerous operational systems lacking integration making cross-subject area analysis difficult
- Heavy reliance on manual data collection and analysis processes

The Solution

Rolta could demonstrate its track record of delivering such solutions for enterprise-level integration and analytics. In order to address these challenges Rolta implemented the solution based on Rolta OneView™ framework covering - Safety, Financial Insights, Reliability, Maintenance & Infrastructure, Encroachment Management, and Customer Impact of Outages. This enabled aggregation, correlation and contextualizing of key operation data, achieved through the pre-configured data model and connectors to source systems.

The Benefits

Implementation of the solution resulted in several benefits:
- Improved quality and accuracy of data
- Enhanced timeliness and visibility of operational data for reporting & analysis
- Facilitated investments and created a positive impact on revenue
- Financials visibility provided actionable insight into budget adherence, project efficiency, up-to-the-month Budget vs. Actuals etc.
- Maintenance and Reliability metrics provides work-plan efficiency information, workforce planning insight and inspection identification details and resolution rates.
- Cost reduction in maintenance and labor
- Enhanced safety incident visibility for better compliance with regulatory guidelines

Here is what they had to say: "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."
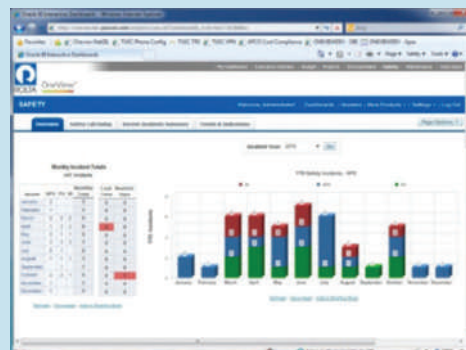
Case Study – GIS based Asset Management and Analytics

Business Challenges

A large electricity distribution company in UK wanted to overhaul its two decades old legacy systems with a view to modernize and solve the following challenges

- Major areas of concerns included diverse technology & data management built over years.
- Replace disparate asset & work register inspection systems
- Analyzing data from cross geographies and Ad-hoc sources
- Spatial data conversion & linking of over 12 million linear Assets
- Mobile enablement for the workforce

The Solution

Rolta could demonstrate its track record through its vast experience in Utilities, Geospatial expertise for managing geographically distributed assets and deep analytics capabilities. Rolta delivered a Rolta OneView™ based unified Data Model for Linear Assets, spatially enabled KPIs and Dashboards for analytics and management reporting including delivery through mobile handheld devices in online and disconnected mode. Additionally Rolta was also tasked with Geo-Referencing of all Asset Records together with end-to-end spatially enable Asset Management implementation.

The Benefits

Some of the benefits enjoyed by the customer include:

- Reduced operational complexity by rationalizing technologies.
- Improved core asset tracking and maintenance work management.
- Improved Process Efficiency and Performance Analysis capability.
- Maximize agility by delivering data to its field crew through mobility.
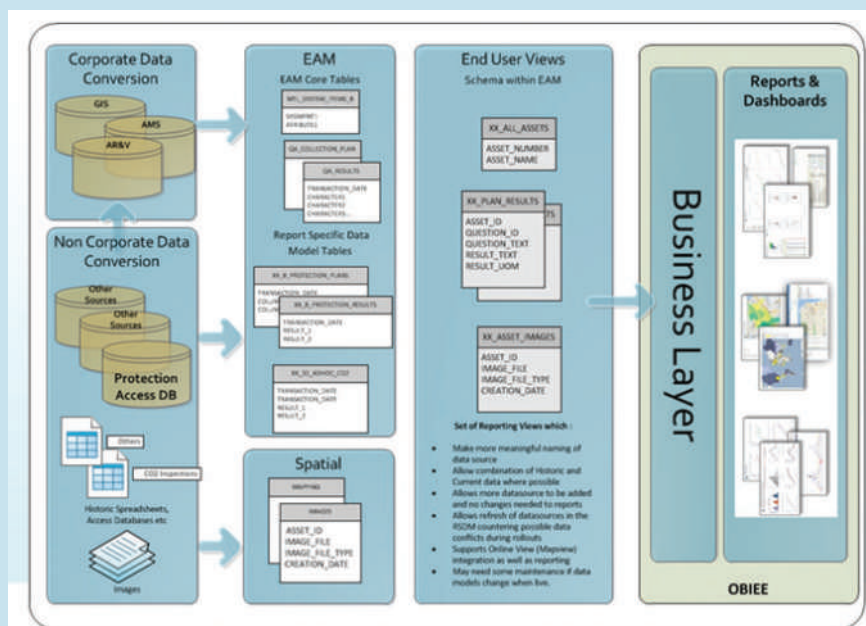
ABOUT ROLTA

Rolta is a leading provider of innovative IT solutions for many vertical segments, including Utilities, Oil & Gas, Manufacturing, Federal and State Governments, Defense, Homeland Security, Financial Services, Retail, and Healthcare. By uniquely combining its expertise in the IT, Engineering and Geospatial domains Rolta develops exceptional solutions for these segments. The Company leverages its industry-specific know-how, rich repository of field-proven intellectual property that spans photogrammetry, image processing, geospatial applications, Business Intelligence, Big Data analytics and Cloud computing for providing sophisticated enterprise-level integrated solutions. Rolta OneView™ Enterprise Suite is one such innovative Big Data Analytics solution for asset-intensive industries with field-proven benefits. It brings unique value through its IT-OT integration and Predictive Analytics capabilities using Rolta's patented technology. Rolta is a multinational organization headquartered in India with revenues exceeding US$ 600M and over 3500 people operating from 40 locations worldwide and has successfully executed projects in over 45 countries.

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