



ROLTA

INSIGHTS. INNOVATION. IMPACT

Striving for Operational Excellence through IT-OT Fusion

FUSION

A Whitepaper

Welcome!

In today's competitive marketplace, organizations are expected to be world-class and do better than the competition. Every organization is operating with an urgency to improve upon the current state of performance and create a competitive advantage by bringing excellence in everything they do thereby creating a better value proposition for the stakeholders. Organizations can achieve this by deploying continuous, reliable and scalable processes at an optimized cost; in other words, by achieving "Operational Excellence". Operational Excellence is the achievement of world class performance through the alignment of people, systems and tools to deliver safe, reliable and profitable production.

Studies have proven that more than 60% of such operational excellence programs don't achieve the desired results due to the lack of a well-defined and executed change management process. A paradigm shift towards a transparent information ecosystem across the landscape that empowers every role in the organization would be critical to achieve individual and collective objectives and thereby achieve operational excellence (OpX). A single version of truth that effectively leverages data and information regardless of its source will be a key differentiator for organizations moving forward in implementing OpX. Operational Excellence has become a necessity not just for profitability / margin purposes, but for sustained and long term success and growth. Cost optimization, quality and productivity improvement have now become key levers for gaining competitive advantage.

Knowing more about the business and knowing it faster than others is the best way to power innovation & stay ahead of competition. As much as the processes are critical for operational excellence, data is becoming paramount for decision making in a more confident way including prediction and optimization. While organizations have been traditionally using data for controlling performance, leading organizations exploit Big Data to excel. The information landscape in asset intensive industries such as Oil & Gas, Refineries, Petrochemicals, Utilities spawns across various networks - Business Network, IT Network, Operations Network, Safety network, Enterprise social network, GIS network, etc.

In this paper, we will discuss Rolta's point of view for achieving Operational Excellence. Rolta believes in 8 key elements of Operational Excellence which have a defined set of objectives and these objectives are having a set of Key Performance Indicators (KPIs). Rolta's Operational Excellence approach is based on a Balanced Scorecard framework which suggests that objectives be identified from 4 important perspectives and analyzed to achieve Operational Excellence. Rolta's unique value proposition through its Rolta OneView™ Enterprise Suite, which includes Rolta's patented Rolta IT-OT Fusion™, becomes a critical lever for enabling a prebuilt, rapidly deployable solution within weeks for achieving Operational Excellence.

Operational Excellence is based on the foundation of achieving cross functional visibility and actionable insights across the enterprise which necessitates the "Contextual Fusion of IT-OT Systems". Data from IT and OT systems needs to be structured into a logical data model, which is built on the foundation of core domain understanding of the business value chain. By leveraging this model, asset-rich companies can transform themselves from disconnected or minimally integrated IT and operational technology environments into integrated businesses. CIOs and other digital business leaders are increasingly looking for proven solutions to achieve IT/OT alignment and subsequent integration.

Organizations want to achieve business outcomes concurrently along with transformation programs. To ensure faster and higher ROI at lower TCO and less risk, prebuilt, ready-to-deploy highly flexible productized solutions built on proven industry-specific knowledge models, IT-OT Fusion & Big Data analytics are vital. Rolta OneView™ is an innovative, comprehensive and powerful technology-agnostic open-standards based solution that provides such transformative IT-OT Fusion. It is also a Big Data analytics solution that helps breaking down organizational barriers, driving 360-degree strategy percolation across the entire value chain and accelerating Operational Excellence. Rolta OneView™ is a proven solution used by organizations across the globe in various industries like Oil & Gas upstream, Refineries, Petrochemicals, Chemicals, Power Generation, Utilities – Electricity, Water & Gas, etc.

Leading industry analyst firms like Gartner, Forrester, Frost & Sullivan, ARC, WRc, etc., as well as industry associations, OEM providers like SAP, Oracle, IBM, etc., and worldwide customers have provided high accolades to this multiple award winning solution.

Operational Excellence

Operational Excellence is a systematic approach for attaining world-class performance in productivity, quality and delivery of services and/or goods. The goal is to achieve superior yields, lead time through-put with safety while eliminating waste.

Operational Excellence is not a destination, but a journey. There are no easy ways or short cuts in that journey.

Rolta's Operational Excellence approach

Rolta's innovative approach brings a paradigm shift on the convergence of business and technical perspectives. This involves keeping people at the core and empowering them on their roles at strategic-tactical-operational levels. This is done by providing role based actionable insights through a domain driven technology solution.

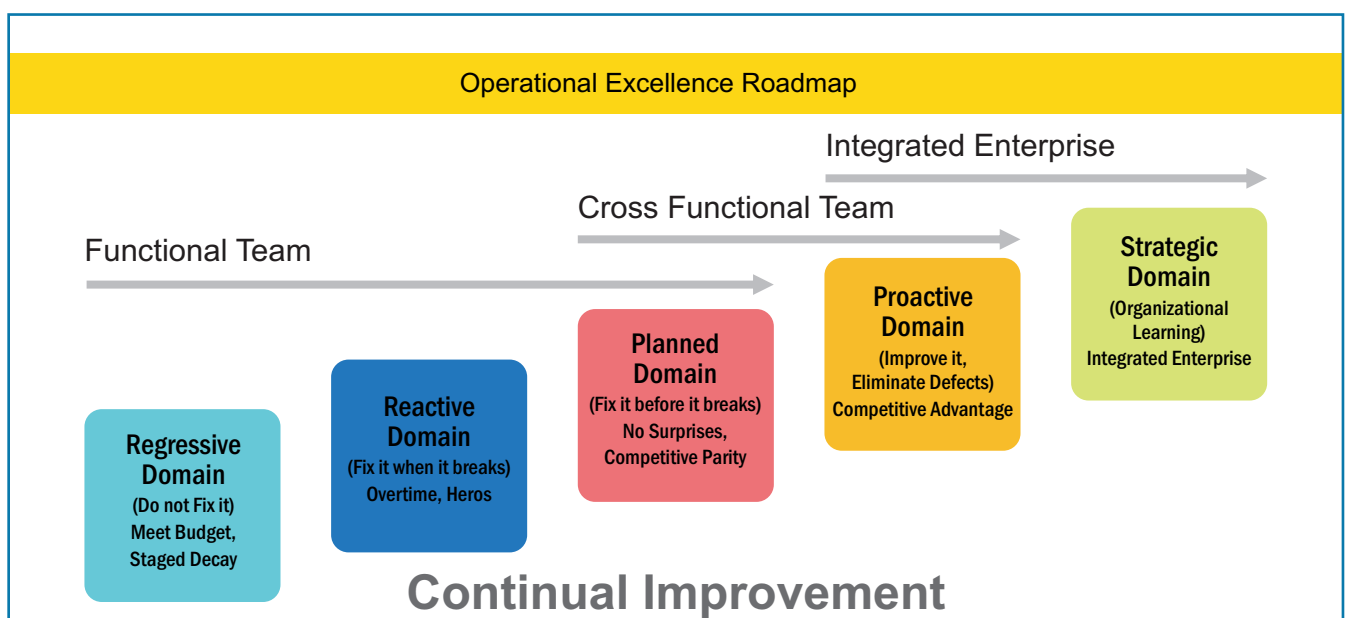
Rolta through its unique pre-built industry-specific analytics solution Rolta OneView™ has been helping organizations implement an "Integrated Enterprise Intelligence" in weeks.

Rolta's Operational Excellence approach is aligned to industry business processes and is based on cross-functional insights. It includes prebuilt business process driven key elements which are industry specific based on years of domain expertise and best practices. It is a highly optimized processing of data from the heterogeneous business and operational systems to enable high performance analytics and cohesive view of information across business functions.

Rolta's Operational Excellence approach adapts the Balanced Scorecard framework. Such a framework allows the company to excel operationally by creating value for customers and stakeholders, such as process efficiency, financial performance, and organizational capacity and readiness. A scorecard system links strategy to what must be done operationally to be successful.

Rolta's approach focuses on the critical few performance measures (KPIs) that provide real business intelligence and contribute to the achievement of operational excellence, employee excellence, and business success. But more importantly, it focuses on the elements of Operational Excellence that can be made as actionable objectives.

Rolta's approach is centered on 8 Key elements. This approach drives insights across these 8 elements in a meaningfully correlated manner in the context of the business process, thus enabling cross-functional situational awareness and actionable role based insights through a "Performance Integrity Model".



Integrated Enterprise Intelligence

OPERATIONAL EXCELLENCE

BUSINESS PERSPECTIVE

Better and Faster
Decision making
Defining right measures /
KPI's
Focus on Safety,
Reliability & Sustainability
Enhancing Strategy
Orientation
Benchmarking for setting
goals and Targets
Loss Preventions &
Waste Elimination
strategy

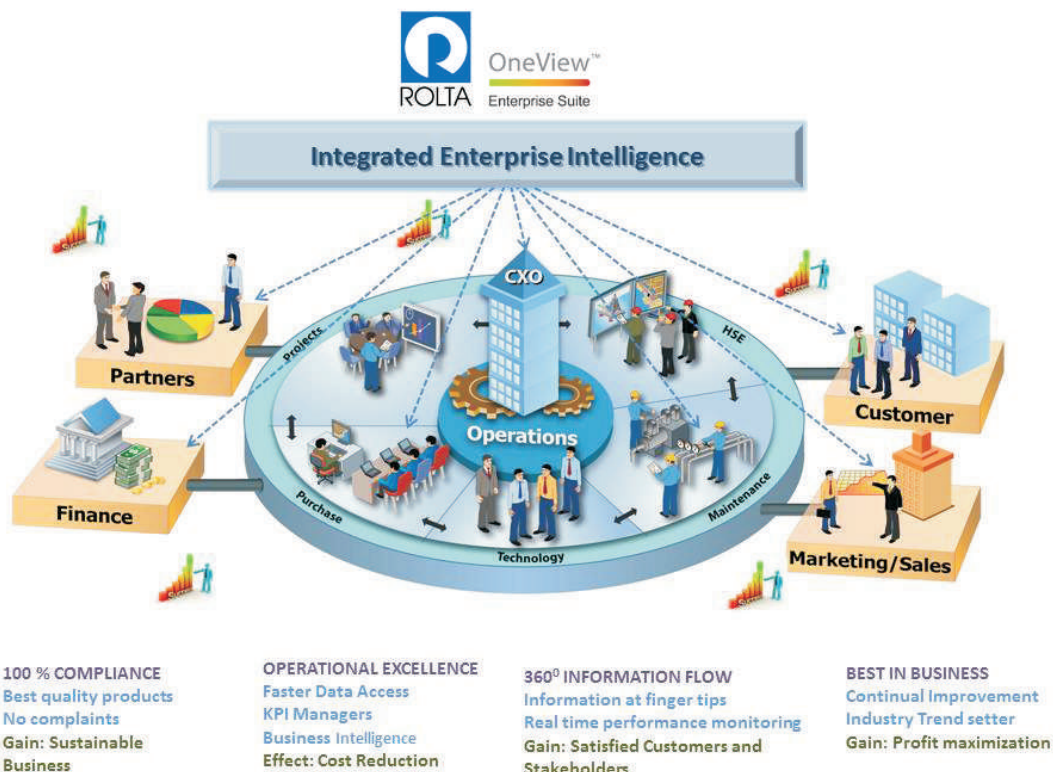


Breaking of silos of
information
A unified decision making
platform
Single version of truth
Collaborative decision
making
Dynamic Performance
Management
Information at right time
Forecasting and
Prediction
Empower user to create

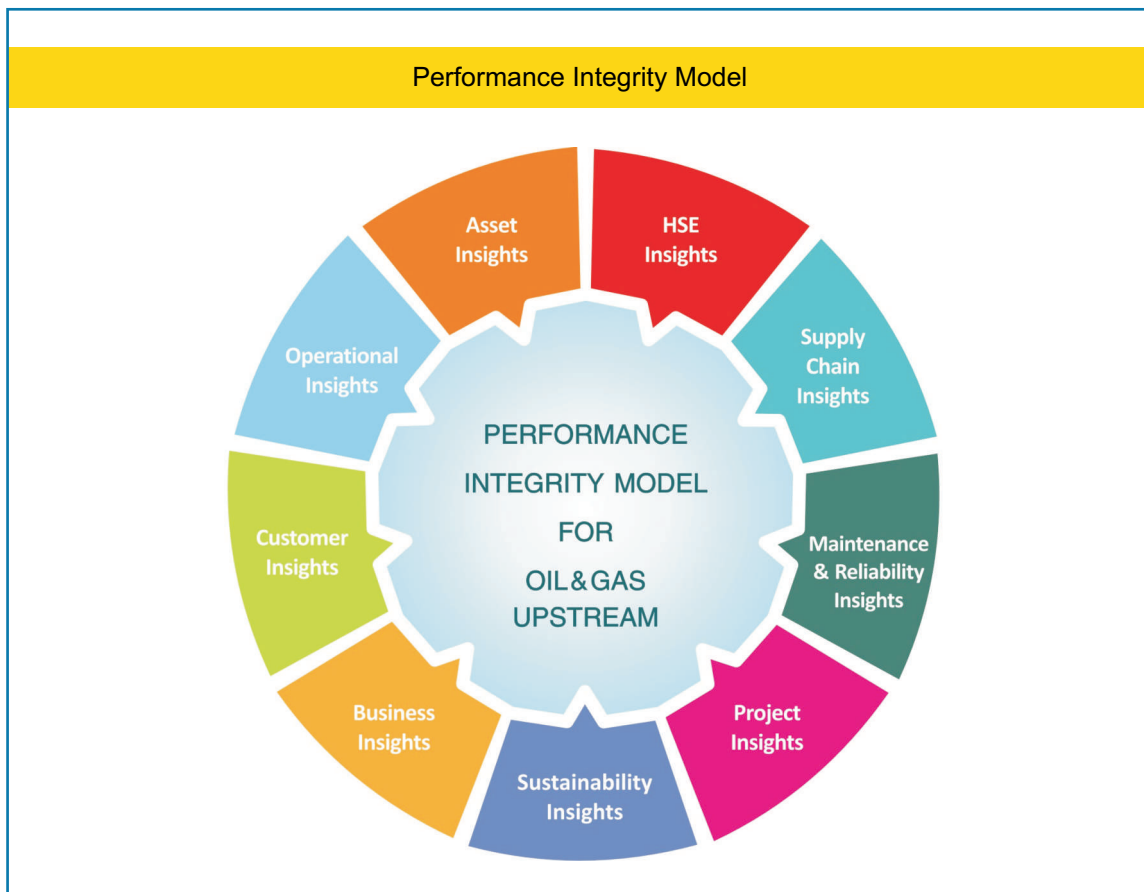
TECHNOLOGY PERSPECTIVE

WITH A PARADIGM SHIFT

Integrated Enterprise Intelligence



Operational Excellence can help CXOs maximize profits and improve stake holder value



Operations

A major challenge in any industry lies in tracking its operational parameters. Tracking and understanding the operational parameter is the key for any successful decision making. The objective of this element is to achieve design capacity without excursions, improve capacity utilization and provide better quality control with an improved reaction time.

Assets

Every industry has a wide variety of assets involved in their business process. These include physical assets and non-physical assets. Asset management is the systematic process of maintaining, upgrading and operating assets to deliver the desired level of services. This element drives the Asset Performance Management (APM) and focuses the organization more on optimized return of asset investments.

Maintenance and Reliability

Plant maintenance can be expensive and time-consuming. Proper maintenance practices are critical to reduce downtime and protect the bottom line. Improvement in equipment reliability, reduction in maintenance costs, and increased collaboration between manufacturing plant maintenance & reliability, operations, procurement and finance departments accelerates the journey towards

Operational Excellence. The objective of this element is to maintain the capability of the system while controlling costs.

Project

The project element delivers insights into project-based data so all team members can seamlessly track the lifecycle of a project with complete, timely information. Project analytics provide robust analyses of important project based data that includes budgets, cost, revenue, safety, commitments, profitability, etc. Information is personalized, relevant, and actionable, so as to improve project performance and profitability.

Supply Chain

Businesses collect large quantities of data in their day to day operations: data about orders, inventory, Distribution, logistics, etc. Being able to consolidate and analyze this data for better business decisions can often lead to a competitive advantage. The supply Chain element provides the capability to reveal opportunities to reduce cost, improve performance. This element takes a broader, multidimensional view of supply chain in which, using patterns and rules, meaningful information about the data can be discovered.

Health, Safety and Environment

Excellent HSE performance is an integral part of the profitable business management. Safety as per the globally accepted rules and regulations is further divided into process safety, occupational safety and behavioral safety. Environment management takes care of the impacts occurring to air, land, water as well as flora & fauna due to the products or services delivered by the organizations and implement mitigating programs to reduce these impacts.

Sustainability

The goal of sustainable development is to “meet the needs of the present without compromising the ability of future generations to meet their own needs.” Sustainability monitoring is the practice of measuring, disclosing and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development

Business

Business insights of Finance, Marketing and HR play an instrumental role in an organization in any domain. While financial insights provide a detailed analysis of the financial health of an organization, marketing analysis provide important details like marketing expense exposure and sales volume distribution for the organization. Human Resources insights on the other hand provide indispensable details regarding human capital in the firm.

Each of these elements focusses on achieving **Objectives** by measuring the business critical **Key Performance Indicators (KPIs)**.

Objectives are the results that we aim to achieve within a time frame and with available resources. Objectives are more specific and easier to measure. They are the basic tools that underline all planning and strategic activities. Objectives are expressed as continuous improvement actions that can be documented, measured, and made actionable through initiatives and projects. Once developed, objectives are linked to “Key Performance Indicators” (KPIs). Key Performance Indicators are identified to achieve objectives and work towards Operational Excellence.

Key Performance Indicators (KPIs) demonstrate how effectively an organization is achieving the key business Objectives KPIs show how the organization creates value for customers, stakeholders, and employees and evaluate an organizations success towards Operational Excellence.

The image below gives a graphic representation of sample high-level objectives identified for each of the 8 Elements



Rolta's approach to achieve Operational Excellence suggests that the objectives be first identified from four important perspectives of the balanced scorecard.

Financial Perspective

“To succeed financially, how should we appear to our shareholders?”

- Indicators related to profitability and financial goals

Customer Perspective

“To achieve Operational Excellence, How should we appear to our Customers?”

- Attraction of new customers, improving relations with customers, improving company image

Internal Business Process Perspective

“To satisfy our shareholders and customers, what business processes must we excel at?”

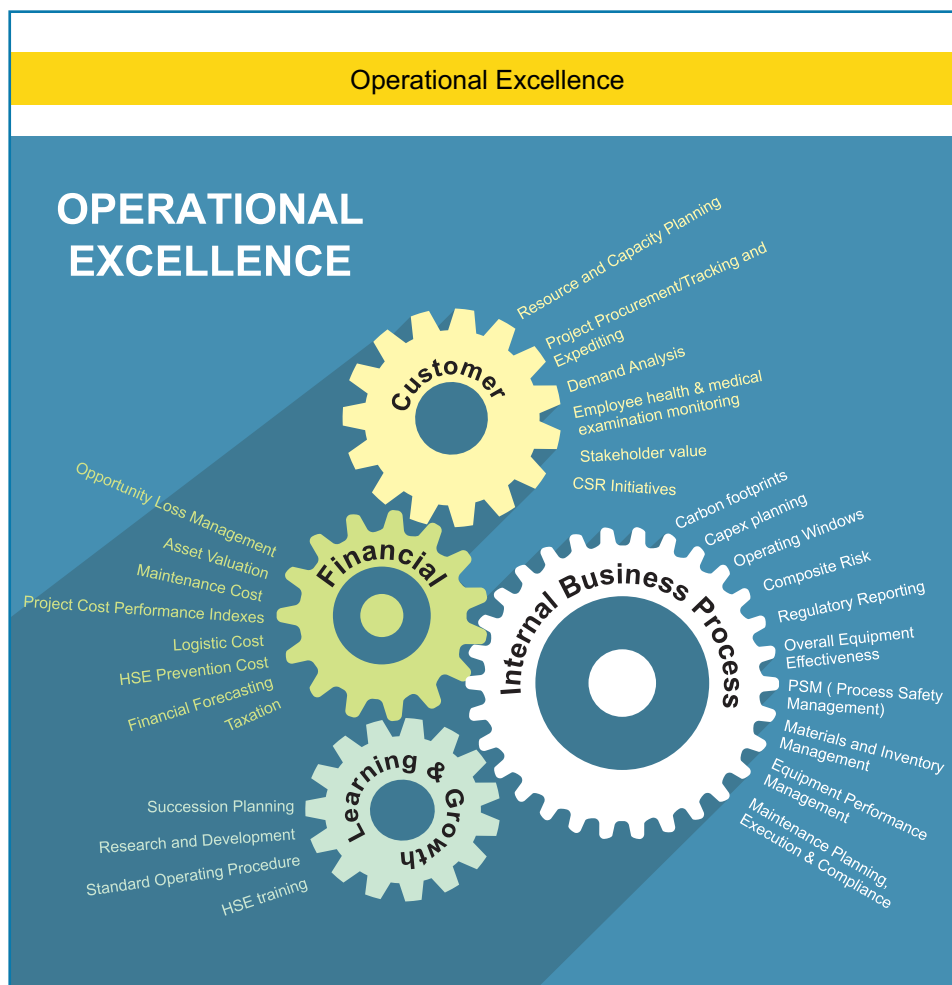
- Optimizing internal processes and improving performance

Learning & Growth Perspective

“To achieve Operational Excellence, how we will sustain our ability to change and improve?”

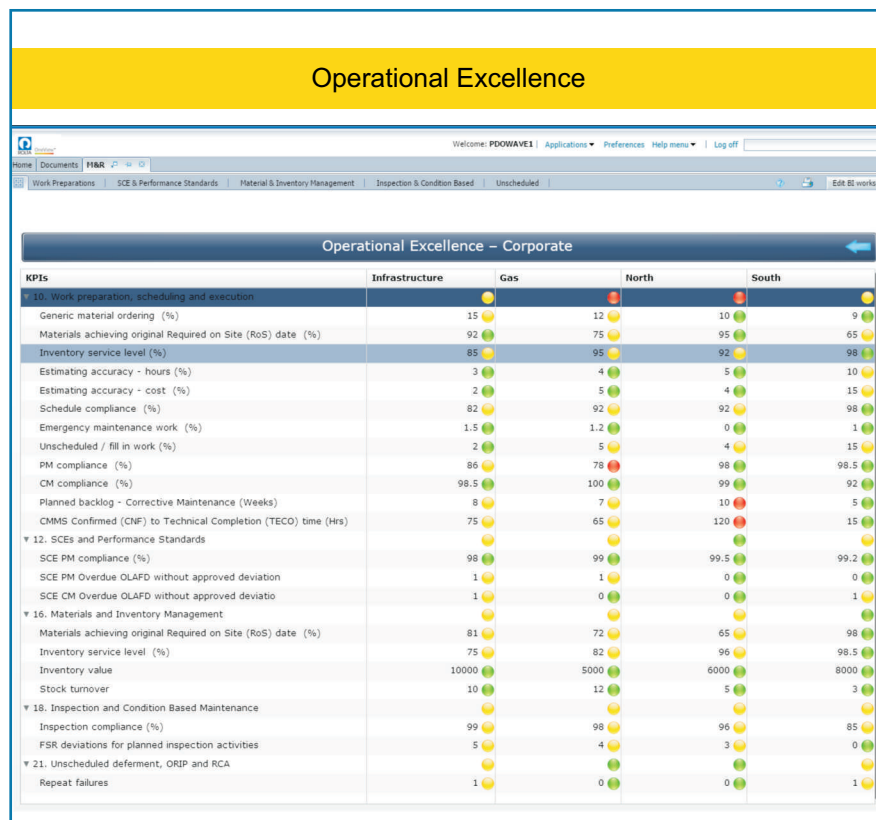
- Education of personnel, growth strategies

Objectives defined above for each elements can be further classified by **Perspective** as per the image below



Example: A Business Element has been elaborated below by defining the objectives identified from the four perspectives

Element	<ul style="list-style-type: none"> Business
Objective	<ul style="list-style-type: none"> Taxation Stake Holder Value Regulatory Reporting Succession Planning <p>Financial Perspective Customer Perspective Internal Business Process Perspective Learning and Growth Perspective</p>
KPIs	<p>Succession Planning Objective</p> <ul style="list-style-type: none"> Successor Pool Coverage Time-to-fill Key Positions Key Positions without ready successor Successor Placement Rate



Rolta's approach for IT-OT Fusion

Historically, seamless integration between IT and OT systems hasn't been successful not just because of the technologies, but also the executive mindset, need of transformation and change management.

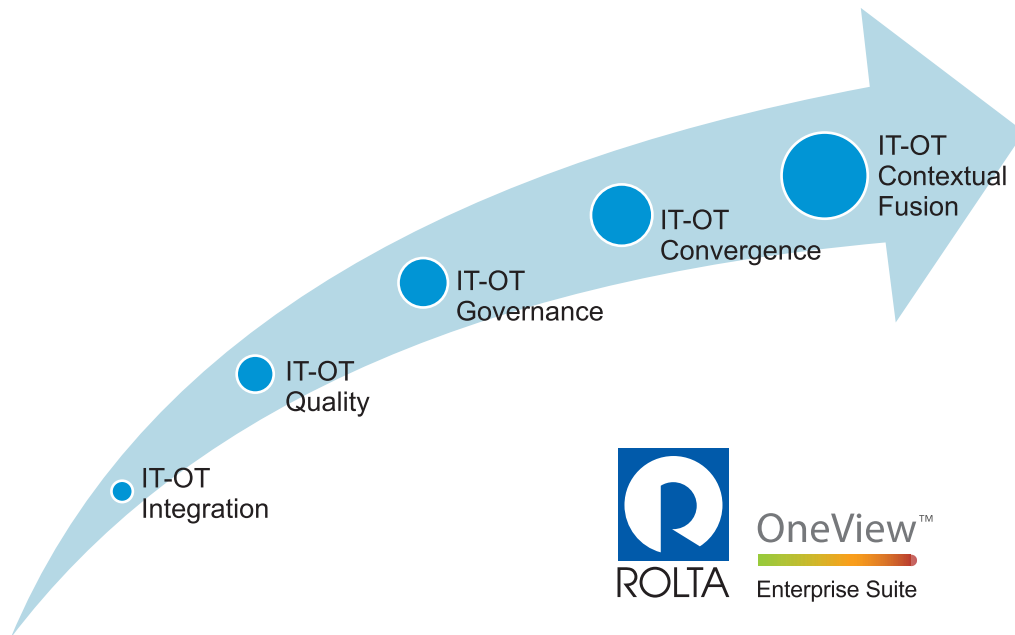
It is believed that by 2017, roughly half the organizations attempting to integrate IT and OT systems will either exceed their budget or fail to deliver expected benefits due to inadequate data integration tools and architecture for addressing new data types, legacy environments, higher velocities and volumes, lower latency requirements and different interface types in OT environments unless they approach in an innovative holistic way.

IT and OT Are Similar But Have Important Differences

IT and OT Are Similar But Have Important Differences

	IT	OT
Purpose	<ul style="list-style-type: none"> Managing Information, Automate Business Processes 	<ul style="list-style-type: none"> Managing Assets, Controlling Technology Processes
Architecture	<ul style="list-style-type: none"> Transactional, Publishing or Collaboration 	<ul style="list-style-type: none"> Event-driven, Real-time, Embedded Software, Rule Engines
Interfaces	<ul style="list-style-type: none"> Web Browser, Terminal and Keyboard 	<ul style="list-style-type: none"> Sensors, Coded Displays
Custodians	<ul style="list-style-type: none"> CIO, Infrastructure, Ops and Apps Professionals 	<ul style="list-style-type: none"> Engineers, Technicians and LOB Managers
Connectivity	<ul style="list-style-type: none"> Corporate Network, IP-Based. Web-Based, Mobile, Wireless 	<ul style="list-style-type: none"> Corporate Network (Increasingly IP-based and Wireless)
Examples	<ul style="list-style-type: none"> ERP, SCM, CRM, Email, EAM, Billing 	<ul style="list-style-type: none"> SCADA, PLCs, Modeling, Control Systems

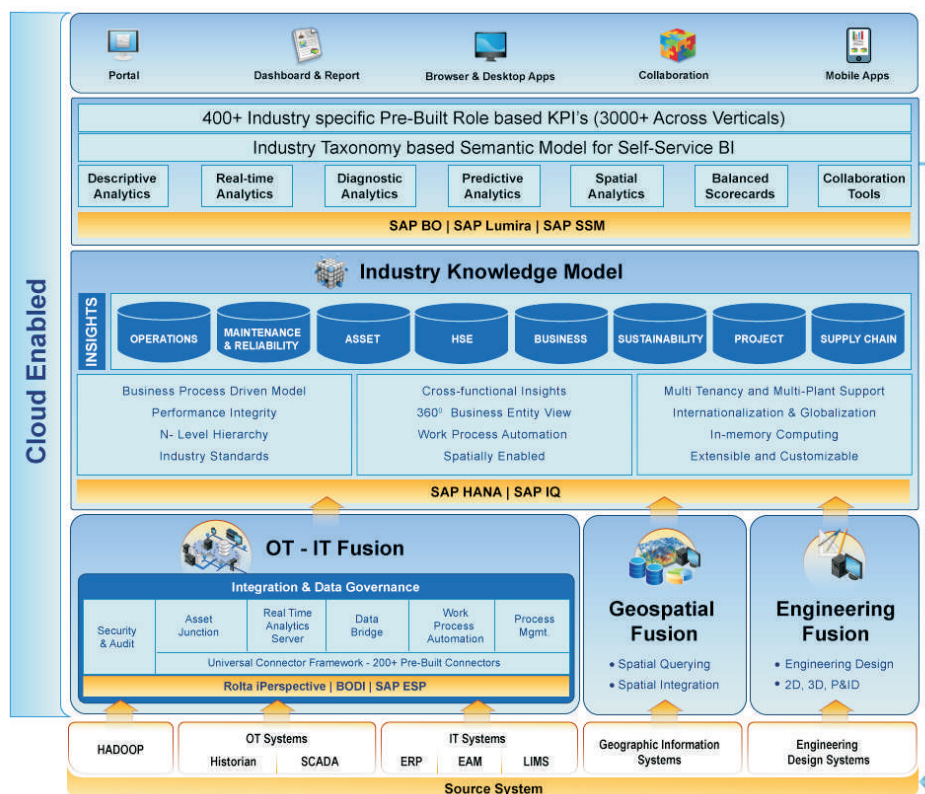
Holistic Approach to IT-OT Fusion



Rolta addresses the IT-OT integration with an innovative holistic approach. It doesn't stop with just "integration", but "contextual fusion" to ensure successful IT-OT integration.. Rolta OneView™ is the only solution endorsed with Gartner's Operational Intelligence (OI) architecture that addresses a holistic approach of IT-OT.

Rolta OneView™ brings the unique strengths of 3 decades of Rolta's expertise in Engineering, Geospatial, IT and Analytics . It combines a strong domain expertise and innovative technologies to bring differentiated industry rich solutions for asset intensive industries. Gartner has positioned Rolta OneView™ as the leading packaged analytics solution

Rolta OneView™ Solution Architecture at A Glance

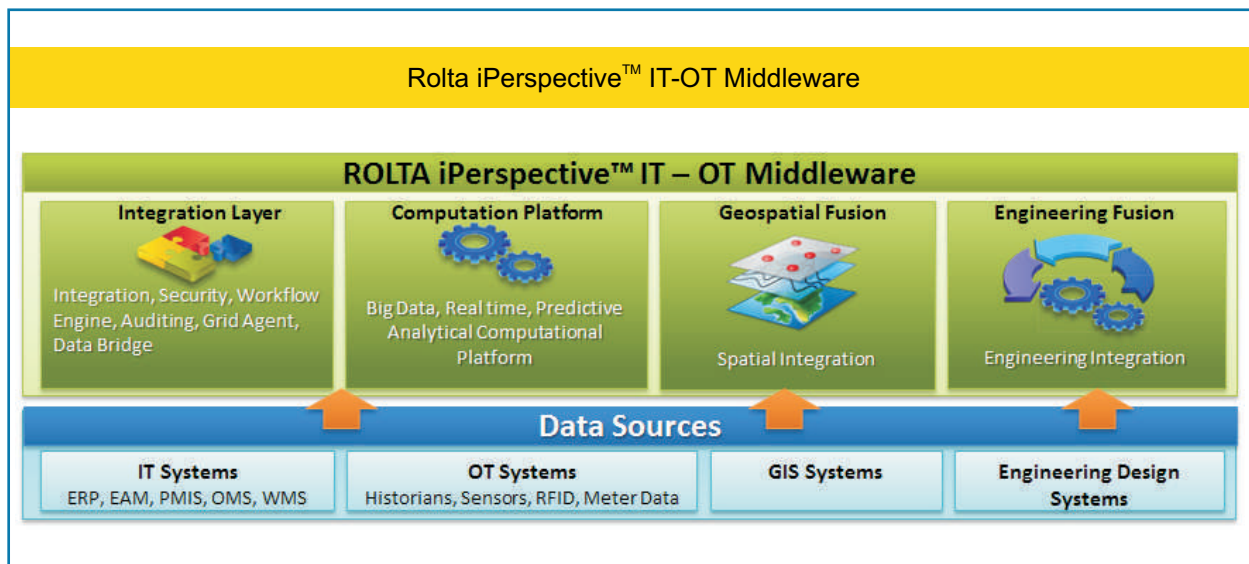


in the BI platform landscape, unleashing the power of IT-OT fusion driven analytics.

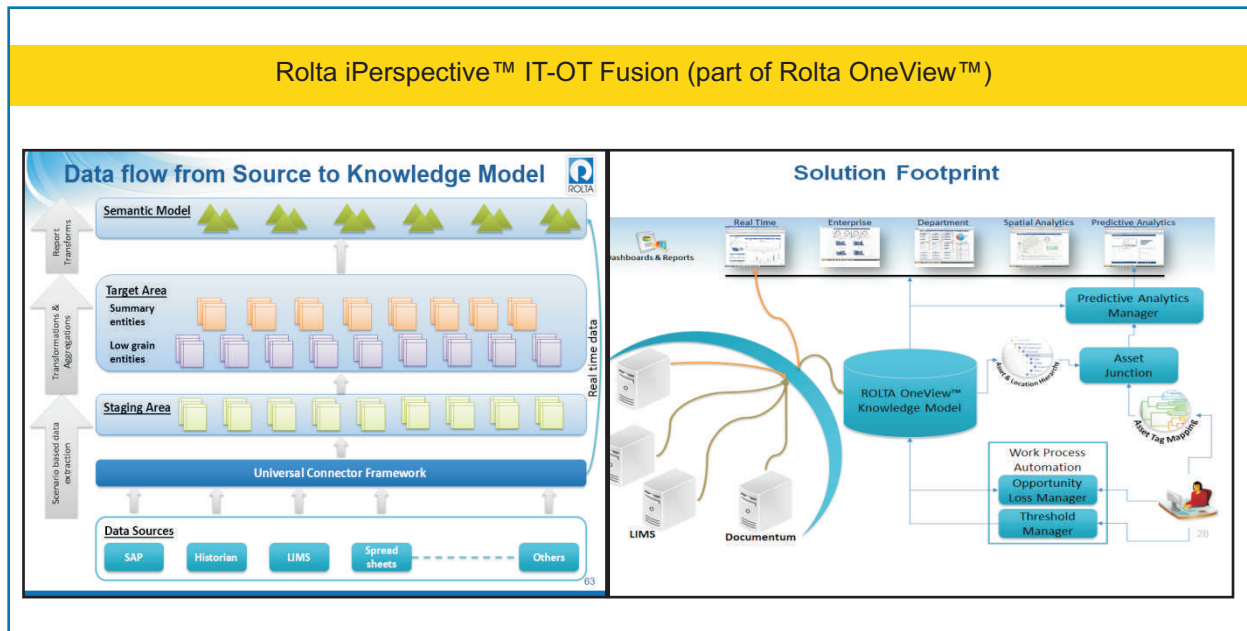
Rolta OneView™ with its patented IT-OT Fusion platform, 200+ prebuilt, rapidly deployable cross functional analytics business scenarios, 3000+ prebuilt role based actionable insights KPIs across all business functions within the verticals, industry standard based knowledge model (prebuilt data model with industry best practices), along with its real-time, predictive, prescriptive and locational analytics capabilities, rich visualizations and business user friendly self-service capabilities brings the holistic solution for the operational excellence. Rolta OneView™ is a unique pre-built industry-specific analytics solution that supports multi-site, multi-tenant. It is Cloud and Big Data ready thereby helping organizations implement an “Integrated Enterprise Intelligence” infrastructure in a predictable, fixed - cost & rapid deployment model.

Rolta OneView™ includes the patented IP, Rolta iPerspective IT-OT Fusion Suite™, which makes the contextual fusion of data of different types, and from disparate systems, possible. With more than 200 prebuilt connectors spanning across operational, business, geospatial, engineering design and Big Data (Hadoop) systems that are proven to handle the volume, velocity and variety of Big Data typically encountered in large to medium enterprises, the universal connector framework of Rolta iPerspective IT-OT Fusion Suite™ offers unparalleled power of

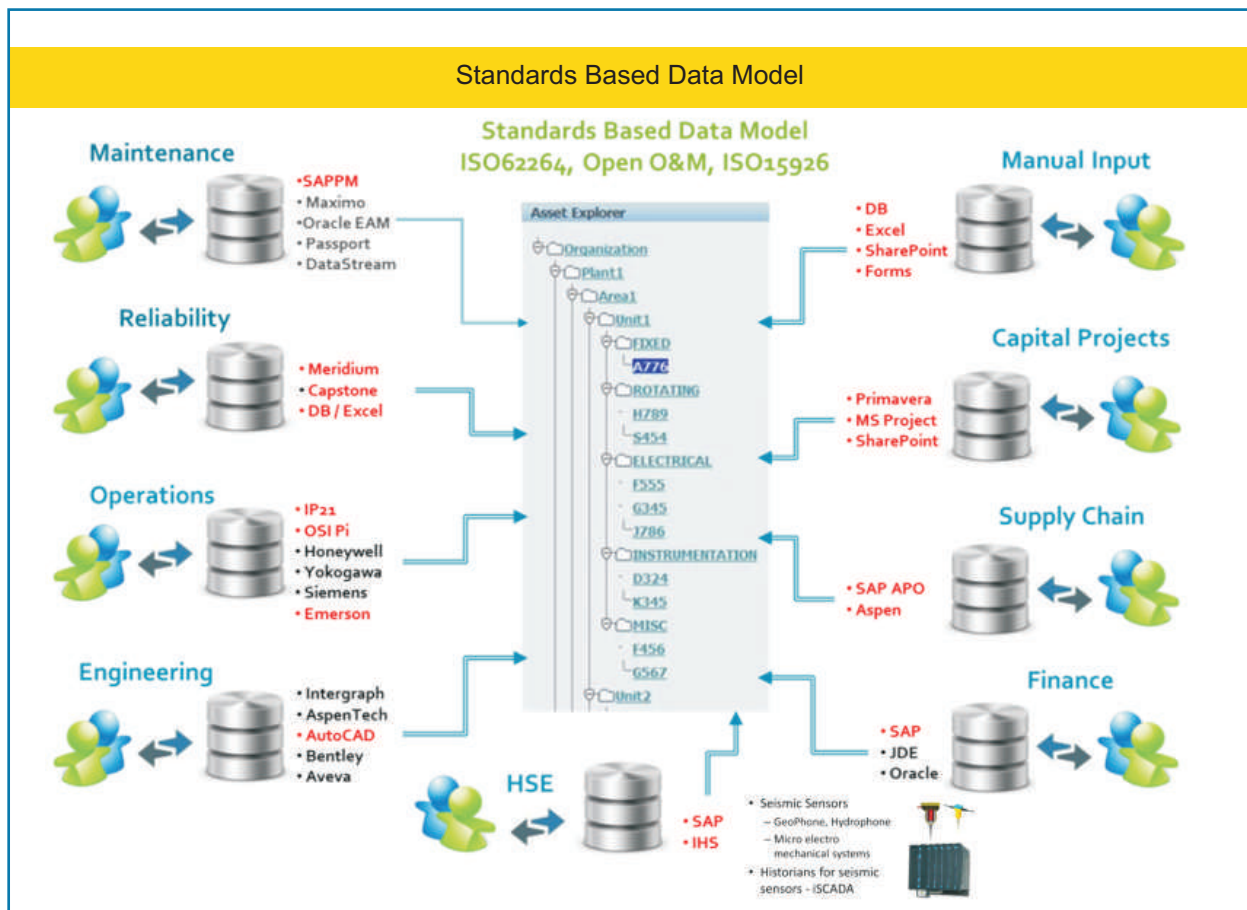
accelerated fusion of heterogeneous source systems. It is cloud enabled, which provides the highest degree of optimization of consuming data sources on cloud. Rolta iPerspective IT-OT Fusion™ brings a cross-functional paradigm shift by integrating data from heterogeneous business systems in the organizational eco system. It has pre-built connectivity to IT systems such as ERP, CRM, EAM, SCM and Operational technology (OT) systems such as Historians, SCADA, Distribution automation, Intelligent Meters, Remote terminal units, etc. based on standards suited to specific industry domain.



Rolta OneView™ Solution foot print, data flow from source to knowledge model can be described as below:

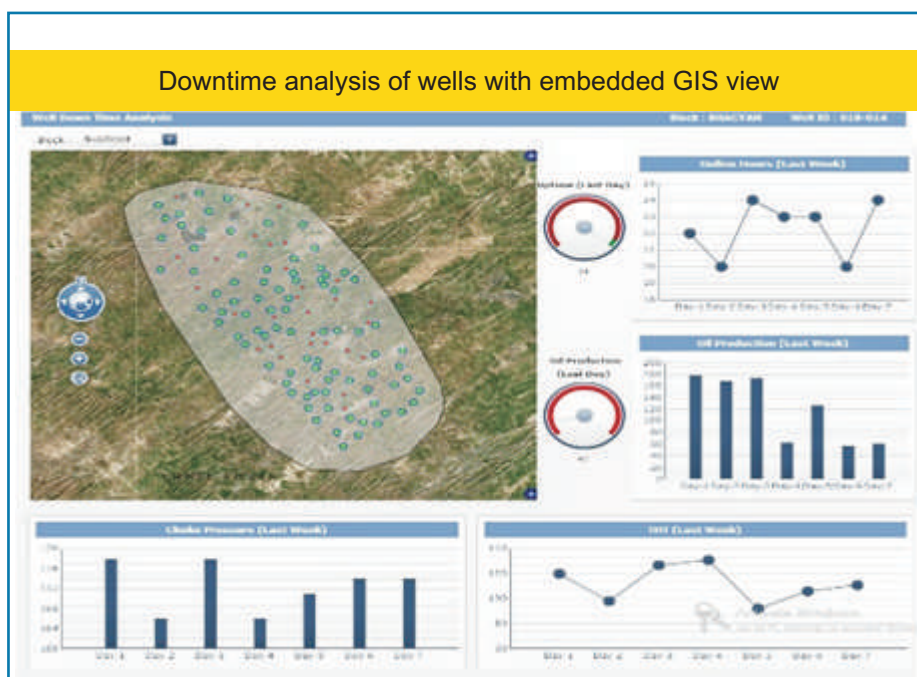
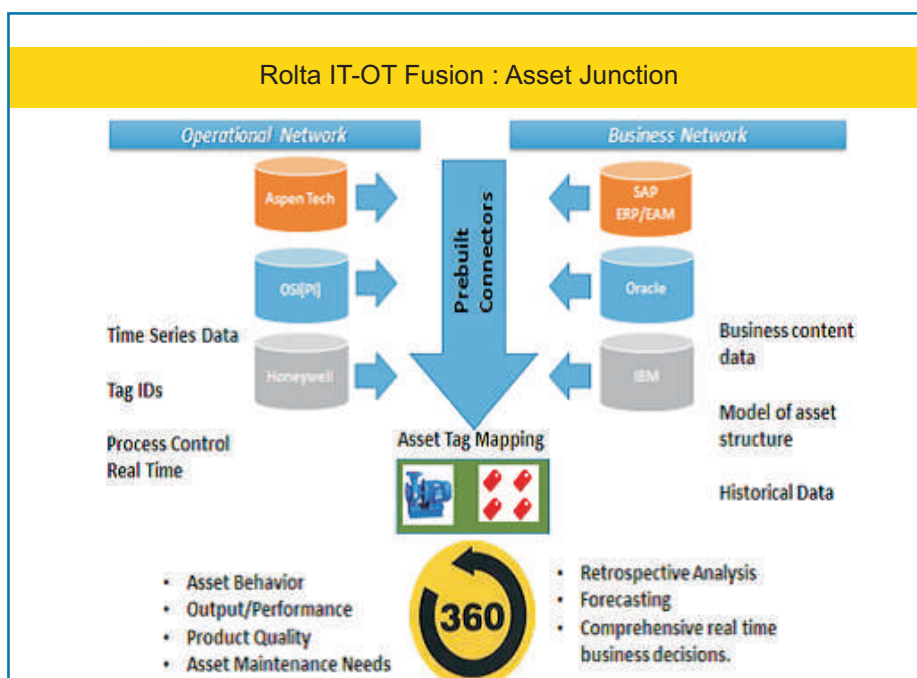


Rolta OneView™ Knowledge Model presents the IT-OT contextually fused data in a business process driven data model following the relevant industry standards.



Rolta iPerspective IT-OT Fusion™ brings assets data from the operations network such as Asset Tag ID, time series data and maps to the information from the business network such as business content data, asset models, historical data of the assets etc. and provides a comprehensive 360 degree view of the Assets including Asset behavior, output/performance, quality, asset maintenance needs. It also helps to do retrospective analysis, forecasting and enables comprehensive real time business decisions.

Rolta's patented iPerspective suite powers the IT-OT fusion and incorporates a security layer ensuring secure access while also enabling consistent security and data governance across IT / OT systems. Big Data represents potentially sensitive data and knowledge assimilated across multi-disciplinary organizational functions and value chains. In essence, it either fully or partially contains, an organization's secret recipes about the way it conducts business. Due care needs to be taken to ensure that only the relevant



information is visible to the authorized pairs of eyes, and at specified timeframes. The challenges are obviously due the humongous volume, rate and variety of data.

Spatial data itself is becoming Big Data in its own context. Rolta is a pioneer in the field of Geospatial Engineering & Analytics and has specialized compatible solutions to address niche requirements. Rolta's IT-OT Fusion™ fuses the spatial data with heterogeneous data sources and business systems and spatially enables the applications and provides contextual analytics. Enterprises can thus take quick and effective decisions based on the ability to visualize the business and GIS data in a single dashboard.

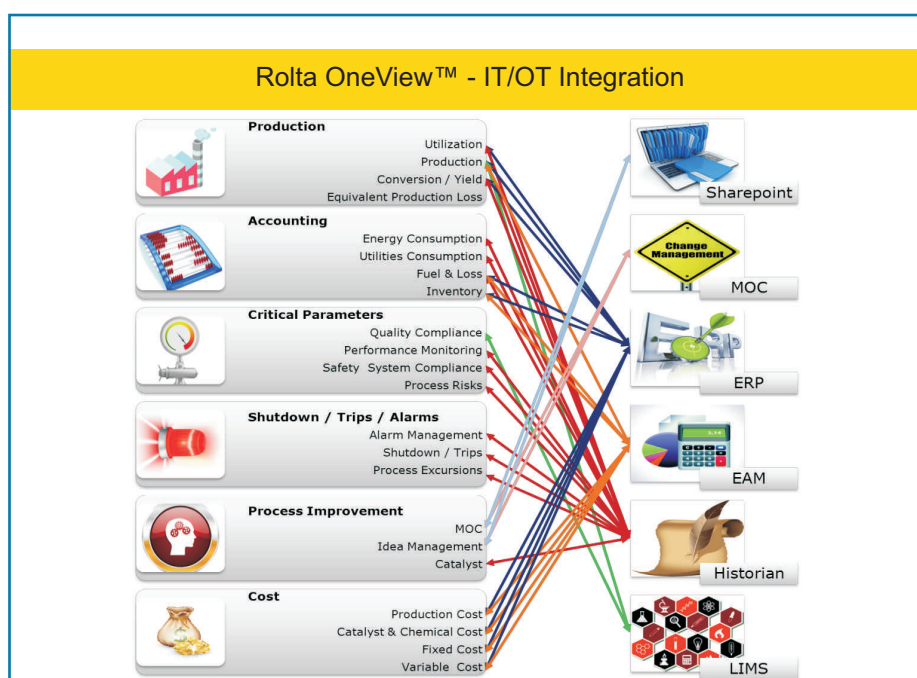
Rolta Engineering Fusion™ which is a part of Rolta OneView IT-OT Fusion Suite™ facilitates the ability to connect engineering design systems such as SmartPlant™ Foundation, thereby giving access to another category of Big Data – engineering information, design data, relevant documents and 3D models.

This helps bring design integrity while achieving real-time and predictive analytics for operational excellence which includes: Comparison of operating data with design data and necessary alerting, easy access to all design information and documents, abnormal situation management, reduce planning

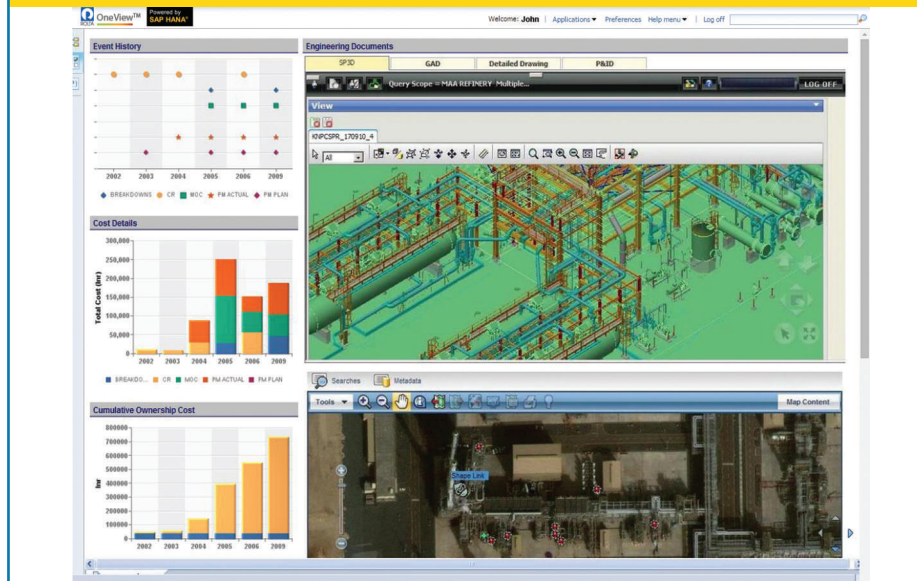
and scheduling effort, asset performance analytics, quicker response to enhance availability and increased uptime.

Rolta OneView IT-OT Fusion™ Suite is highly differentiated by its unique value on addressing all the key functional aspects of IT-OT integration, data quality, security and governance as well as convergence. Some of the key aspects include:

- Holistically addresses the needs of data integration, Data Quality, Data Convergence, data Governance to be able to achieve the true contextual IT-OT Fusion
- Pre-built Connectors for a variety of commonly used OT (Historians, SCADA, Intelligent Meters etc.), IT (ERP, EAM, SCM etc.) and Big Data (Hadoop) Systems
- GRC compliance to securely access data from OT System
- Integrate and aggregate information securely from a variety of sources
- Contextualize through a flexible framework – for e.g. the asset data in ERP and sensor data in the historians
- Deriving multiple tag values from the sensor data for calculation based real-time monitoring of parameters



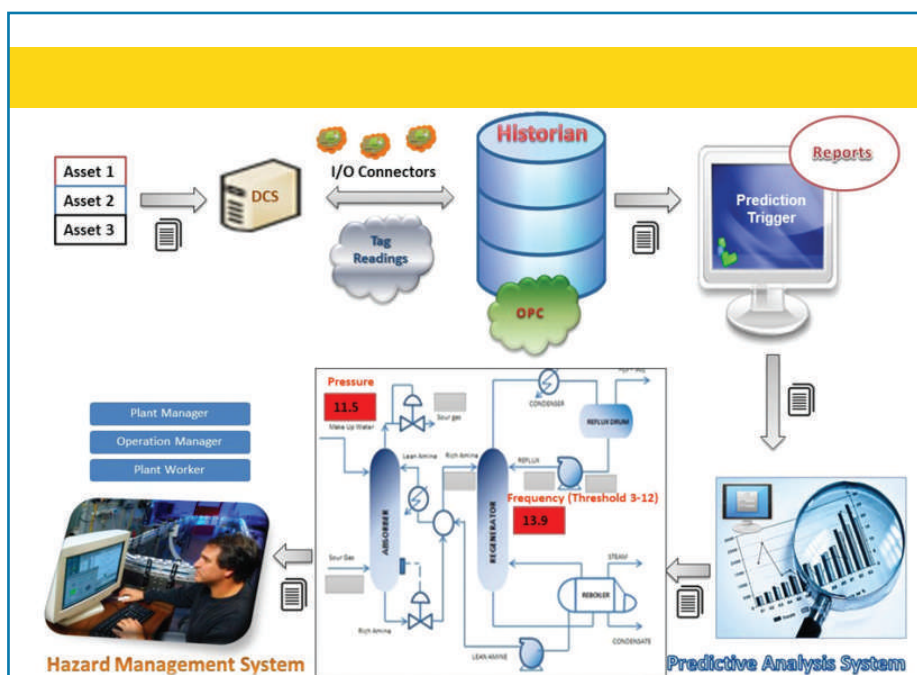
Asset/Plant level cost analytics integrated with 3D Engineering drawings



- Capability to address both real-time and batch data integration requirements
 - Attaching schematic process diagrams for tracking of real-time data against a specific scenario
 - Ability to view operating parameters in context with a process schematic for quickly monitoring and identifying deviations, if present
 - Ability to schedule and monitor high-volume, event-based transaction processes using a grid based distributed architecture
 - Provide a comprehensive 360-degree view of the assets including Asset behavior, Output/Performance, Quality, Asset Maintenance
- needs and enable retrospective analysis, forecasting and comprehensive real time business decisions
- Support embedded automated source system health checks and administration mechanism to monitor health of the OT and IT networks
 - Support multi-tenancy for multi-site / plant support
- ## Driving Actionable Insights with Predictive Analytics
- Rollta OneView™ brings the 100x value of the data from OT-IT Fusion through advanced analytics

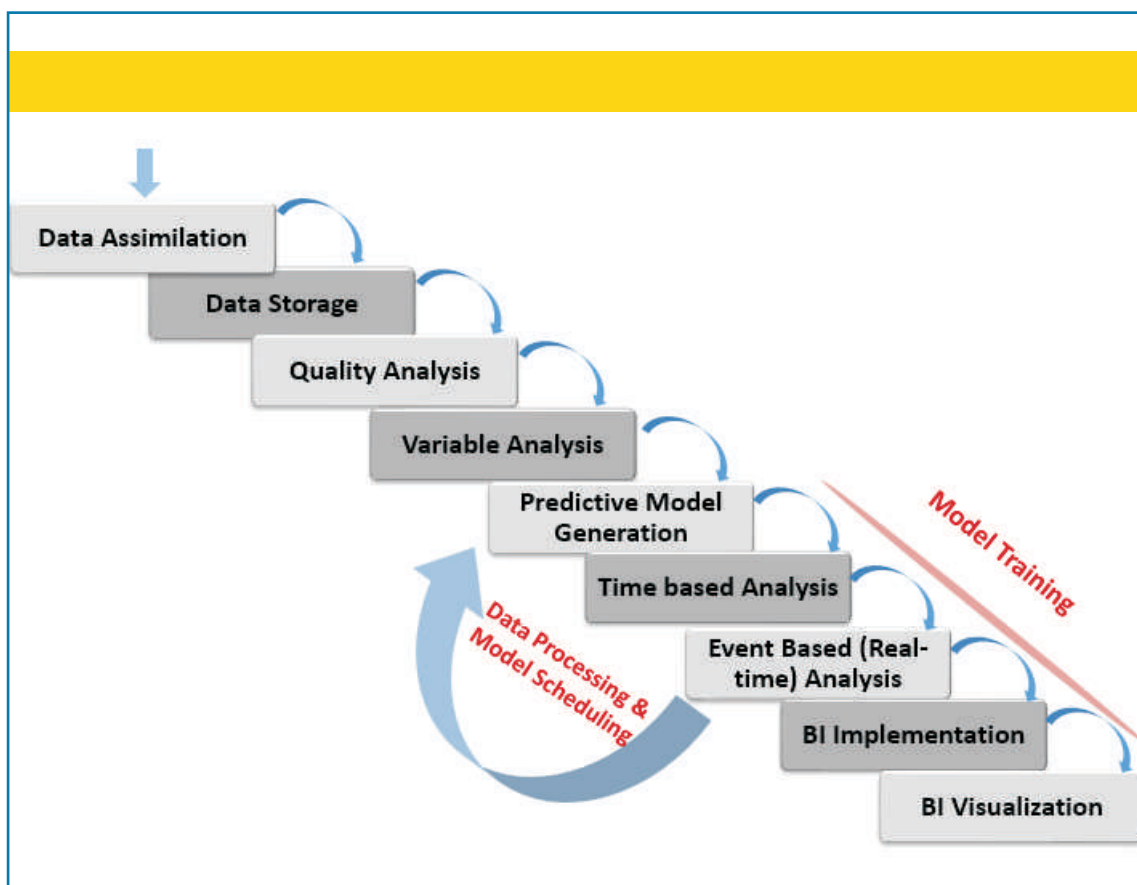
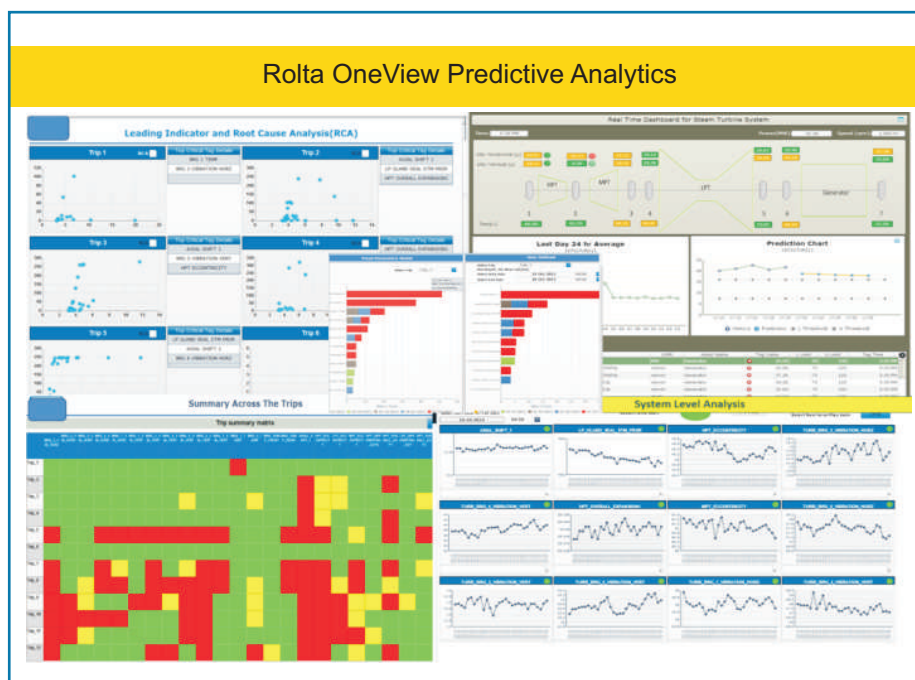
Driving Actionable Insights with Predictive Analytics

Rolta OneView™ brings the 100x value of the data from OT-IT Fusion through advanced analytics including predictive analytics and optimization.



With an embedded Data Science workbench [DSW] and Predictive Analytics Manager, Rolta OneView™ provides wide range of pre-built predictive and optimization models with the standard ISO 13374

approach along with pluggable architecture to seamlessly integrate and customize leading modeling platforms such as R, SAP Predictive Analytics, and MATLAB etc.



Summary

Operational excellence is a systematic approach for attaining world-class performance in productivity, quality and delivery of services and/or goods.




Rolta's approach focuses on the critical performance measures (KPIs) that contribute to the achievement of operational excellence, employee excellence, and business success. But more importantly, it focuses on the elements of Operational Excellence that can be converted into actionable objectives. These form the building blocks of Operational Excellence.

Operational Excellence is based on the foundation of achieving cross functional visibility and actionable insights across the enterprise which necessitates "Contextual Fusion of IT-OT Systems". Data from IT and OT systems needs to be structured into a logical data model, built on a foundation of core domain understanding of the business value chain.

Rolta through its unique pre-built industry-specific analytics solution Rolta OneView™ has been helping organizations implement an "Integrated Enterprise Intelligence" in weeks for realizing Operational Excellence.

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Rolta OneView™ with its patented IT-OT Fusion platform, 200+ prebuilt, rapidly deployable cross functional analytics business scenarios, 3000+ prebuilt role based actionable insights KPIs across all business functions within the verticals, industry standard based knowledge model (prebuilt data model with industry best practices), along with its real-time, predictive, prescriptive and locational analytics capabilities, rich visualizations and business user friendly self-service capabilities brings the holistic solution for the Operational Excellence.

	Vision	Values
 <p>Excellence in Performance</p>	<p>Integrating of the various functions within an organization on a single platform</p> <p>Assuring the best in class performance</p> <p>Provide Right Information to Right person at Right time</p>	<p>Collaborate across different functions within boundary and across boundary</p> <p>Maximize Reliability and Integrity</p> <p>Measure to Improve</p> <p>Apply Business Intelligence in Decision making</p>
 <p>Shape Best People</p>	<p>Everyone contributes to their best potential</p> <p>Goals are percolated across the organization hierarchy</p> <p>Knowledge drives the business</p> <p>Identify Leaders</p>	<p>Teamwork, innovation and openness</p> <p>Empowering personnel and decentralize decision making</p> <p>Setting Benchmarks, challenging trend setters</p> <p>Managing risks proactively</p>
 <p>Instill Best Practice</p>	<p>Maximize Overall Equipment Effectiveness</p> <p>Compliance to best in class practices</p> <p>Being a leader in Safety, Operation and Reliability performance</p>	<p>Transformation of process to achieve the best continuously</p> <p>Adapt to new development and upgrade</p> <p>Compliance to regulatory requirements</p>

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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