OneView™
Smart City Operations Suite

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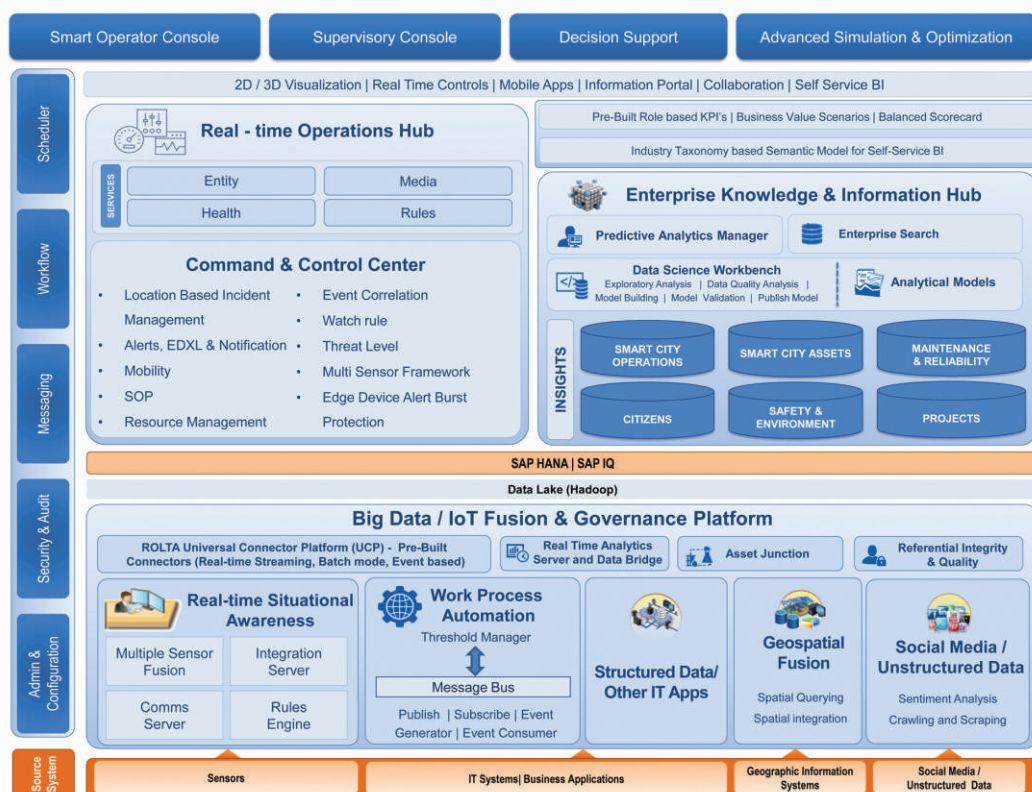
An integrated solution for managing city operations

Rolta OneView™ Smart City Operations Suite is an enterprise wide comprehensive solution that provides situational awareness of citywide infrastructure enabling diversified operations related to smart infrastructure monitoring, management of alerts / incidents received from multiple sensors and provide better living, safety and security to citizens. The IoT integration with Spatial Fusion along with a 360-degree view of the city wide infrastructure provides situational awareness and role based KPI's for actionable insights to empower every role to achieve its individual and organizational objectives while ensuring that there is a 'single version of truth' at various those levels. The industry standard Rolta Command & Control systems which is integral part of Smart city operation center enables visualization of Video surveillance and video analytics, locational awareness of incidents received from multiple sensors and collaborative SOP driven response to incidences.

Key features of this unified solution include:
- Integrated Platform for real time city operations, collaborative decision supports and advanced simulation and optimization – real-time operations hub and enterprise knowledge hub
- Unified Big Data Platform for structured, semi-structured and unstructured data with high volume and velocity
- Real time Situational Awareness and pre-built extendable SOPs
- 2D / 3D locational intelligence and analytics with time series analysis for Smart City Operations planning and management
- Embedded Data Lake that brings single source of truth from heterogeneous systems – provides flexibility to leverage data by various departments / stakeholders for Operational Excellence
- Prebuilt KPI Manager with role-based configurable / customizable Smart City Operations dashboards

Rolta OneView™ Smart City Operations Suite

Rolta OneView™ Smart City Operations Suite is an integrated solution featuring Real-time Operations Hub for fact-based decision making, leveraging the analytical power of Enterprise Knowledge Model & Information Hub. The solution builds on industry standards based architectural best practices and leverages innovative Rolta patented technologies to provide a seamless real-time IoT, Business, Social Media, GIS, advanced analytics integrated operational solution. It provides role-specific visualization through a seamlessly unified presentation layer. This integrated suite features closely coupled platform for Big Data IoT Fusion & Governance to capture and analyze structured / unstructured data. The solution features pre-built content and required collaboration, administration / monitoring mechanisms to provide the complete picture of smart city operations with role-based actionable intelligence.

Solution Details

1. Source Systems
   Rolta OneView™ Smart City Suite supports a wide range of source systems, including - IoT, Sensors, Business Applications, GIS, etc.

   1.1. Sensors

   - Supported Sensors: Perimeter Intrusion Detection System (PIDS), Gunshot Detection System, Fire system, Radar, Automatic Identification System (AIS), Radio Direction Finder (RDF), Emergency Calling Box (ECB), Public Announcement System (PAS), Meteorological & Hydrological Sensors, Sonar (Underwater Diver Detection System), Video Camera, Video Management Systems, Video Analytics System, Automatic Number Plate Recognition (ANPR) System, Red Light Violation Detection (RLVD) System and Access Control System etc.

   1.2. IT Systems / Applications Support for integrating data from a wide spectrum of IT systems or applications
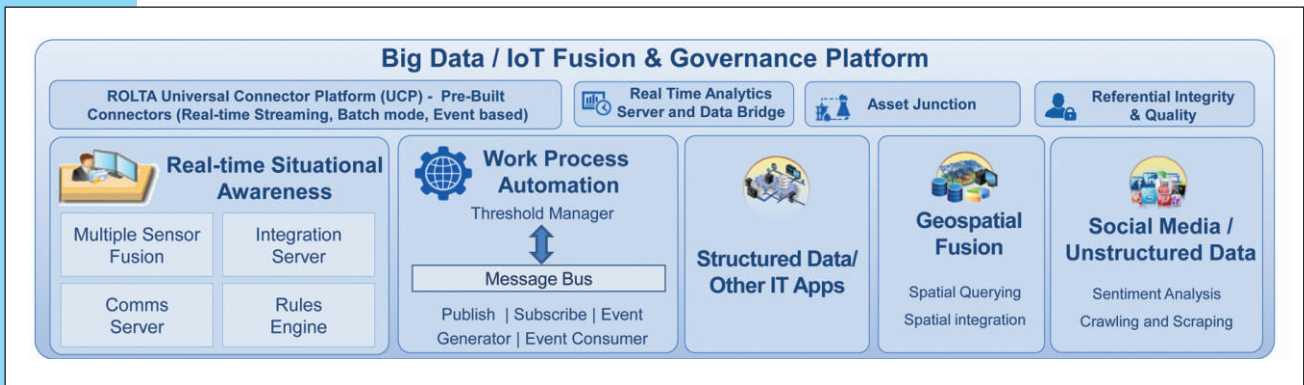
   1.3. GIS support covers almost all popular GIS SW available on the market.

   - Connects and Manages Data sources from Various Map Service Providers
   - Supported Map Service Providers: ArcGIS Server, Portal for ArcGIS, OGC, Google Map, Bing Map, Pictometery, Rolta Map Server
   - Supported Data: Oracle Spatial, ESRI ArcSDE, ESRI shape files, ESRI Personal Geodatabase, KML,GML, MapInfo Tab files, DGN, OGC services like WFS,WMS, TIFF, GeoTIFF, JPEG, MrSID
   - Support for 2D/3D GIS data

   1.4. Social Media / Unstructured data

   - Supports ingestion of social media feeds like Google+, Face Book, Twitter, etc. leveraging existing subscriptions
   - Allows integration of various unstructured data sources

2. Big Data IoT Fusion & Governance Platform

2.1. Real-time Situational Awareness

- Display unified view of incidents / alarms generated from multiple sensors
- Auto triggering of video wall and map display
- Geo-enabled incidence / alert notifications

2.2. Multi-sensor Fusion

- Interfaces with different sensors/smart elements
- Collection and correlation of alerts
- Support for sensor configuration, add and delete sensors
- Enables collection of alerts/incidents from sensors
- Support for Sensor Grouping and Correlation
- Scale to support multiple sensor types (Marine & Land based sensors)
- Supports Bi-Directional Communication to manage the sensors
- Management of sensor through operational control
- Health Monitoring
- Overload protection

2.3. Integration Server

- Enables integration with different systems such as Emergency response system, Municipal applications etc.
- Support EDXL-CAP standard for data sharing.

2.4. Communication Server

- Consumes data from sensors or databases, process the data and convert into suitable format to feed into Application server

2.5. Rules Engine

- Supports rules, facts, priority, mutual exclusion, preconditions, and other functions
- Business rules
- Filtering of alerts

2.6. Work Process Automation

- Allows integration of different systems through subscribe event model
- Compatible with popular enterprise platforms like WSO2, to provide integrated solution functionalities
- Supports business process standards
- Pre-built work processes for event based alerts
- Framework to facilitate manual data capture
- In-built Threshold Manager allows organizations to systematically set targets for different organizational objectives and levels of acceptable performance
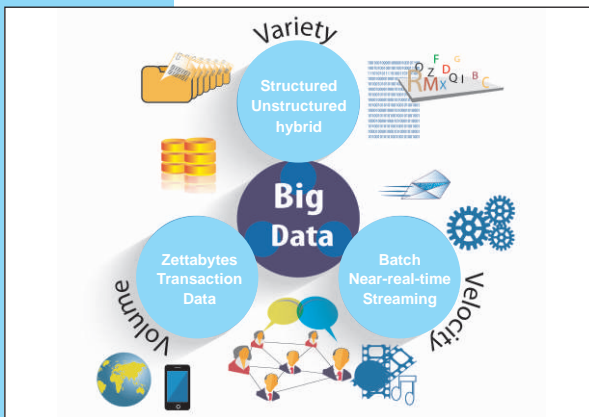
2.7. Structured Data / Other IT Apps

- Structured data ingestion from various departmental applications, databases and spreadsheets

2.8. Geospatial Fusion

- Specialized technologies to enable contextual geo intelligence and analyses
- Search
- Markup/Redlining
- Layer and Table Manager
- Routing
- Geospatial Analytics
  - Buffer tool to perform proximity analysis
  - Line of sight
  - What if analysis and modelling (e.g. Bomb blast, inundation model)
  - sunlight placement
- Data Import Export
- Multilingual Support
- BookMark
- Document manager
- Shape link
- URL Handler
- Web Editing
- Authentication and Membership
  - Share point server
  - Embeddable maps
  - Tools like Navigation, Map Snapshot, Selection of Map features, Identify information, Measurement, Linear Referencing, Layer filter, Statistical tool, Dynamic queries, Buffers and Buffer selections, Document Viewer, Go to Coordinates, Map Tips

2.9. Social Media / Unstructured data

- Ingest data from available social media feeds, fuse with other structured / unstructured data to provide highly co-related intelligence

2.10. Rolta Universal Connector Platform

- Comprehensive solution for IoT integration
- Framework to develop, plug in new connectors quickly
- Pre-built real-time, event-based and batch / ETL based connectors across business, operations, geospatial, engineering & other IoT systems for optimal performance

2.11. Real-time Analytics Server and Data Bridge

- Extracts time series and events data from Operational Systems / Sensors in real-time or batch mode
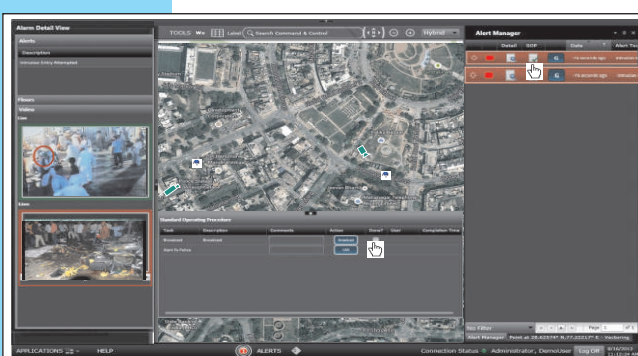
2.12. Asset Junction

- User-friendly mapping environment for Site-Historian Mapping, Asset-Tag Mapping, System-Tag Mapping
- Inbuilt schematic designer
- Multiple hierarchies support
- N-level function locations

2.13. Referential Integrity & Quality

- Transformation rules for data as it comes from various sources e.g. null rules, unique column values, primary key values, referential integrity rules and complex integrity checking

3. Data Lake
Rolta OneView™ Smart City Operations Suite supports Data Lake as storage repository for all the data in the enterprise. This covers wide spectrum of data - ranging from raw data to transformed data which is used for various tasks including reporting, visualization, analytics and data science. This storage repository accommodates various forms of data which includes structured data from IoT systems, semi-structured data (CSV, logs, XML, JSON), unstructured data (emails, documents, PDFs, P&ID drawings) and binary data (audio, video, 2D/3D images)

4. Real-time Operations Hub

4.1. Command & Control

- Alarm/Incident Management
- Geospatial Visualization
- Integrated Video Management

- Sensor Framework
- Multi Monitor Support
- Standard Operating Procedures
  - Provides multiple type of SOP re-usable templates for manual / automatic / notification
  - What if then else scenario based SOP
  - Tools for stake holder management for collaboration
  - Support for Dynamic SOP
- Dispatch
  - Assist to select best suitable Field Responding unit
  - Complete tracking of Alert handling status
  - Track the assigned tasks against alert
  - Manage (Revoke & Reassign) assigned Field resources
  - Collaborate with Field Responding unit(s) for effective containment of the situation
- Integrated Communication
  - Handles Emergency Calling along with bi-directional audio support
  - Supports "SMS", "E-mail", "Radio" and "Smart Phone"
  - Supports Public Announcement (Unicast / Multicast / Broadcast)
  - Sharing alerts with Computer Aided Dispatch system
- Collaboration
- System Health
- Escalation Management
- Business Rules
- Provision to define correlation rules for creating genuine alerts
- Configurable Alarm processing
- Watch rule
- Audit Trail
- Dashboard/Performance Indicator & Reporting
- Dock window
- High Availability

- Threat Level Indication
  - Configurable to support multiple levels
  - Definition of rules against each Threat levels to gauge level
  - Display Threat level color code indication on Operator & Mobile console
- Integrated Communication and messaging service
  - Sharing text, audio, Video, Images, Response Plan & documents among the users
  - Supports "SMS", "E-mail", "Radio" and "PDA" interface to communicate the alerts
- Resource Management
  - Enables user authentication
  - Configuration of rules and sensors
  - Configuration of Roles and groups

4.2. Services

- Health Services
  - Captures and display the System & Sensor health
  - Provision to notify the Maintenance team in case of sensors failure
- Rules Services
  - Define various rules depending upon the roles assigned to handle different alerts and configuration of various functionalities

- Entity Services
  - The data is modelled as entity. The various entities are sensors, alerts, SOP etc.
- Media Services
  - Enables the application to handle the videos/video management system

5. Enterprise Knowledge & Information Hub

Enterprise Knowledge & Information Hub enables powerful business intelligence and advanced analytics capabilities, to ensure that the integrated solution provides desired actionable insights for optimal Smart City Operations.

5.1. Knowledge Model Insights

- Deeper and broader coverage across all the key business functions for each area – Smart City Operations, Smart City Assets, Maintenance & reliability, Citizens, Safety & Environment, Projects, etc.
- Drives insights across these various functions in a meaningfully correlated manner in business process context, enabling meaningful cross-functional situational awareness and actionable role based insights leveraging industry standards data model
- Leverages years of domain expertise and best practices
- Single source of truth for monitoring, analytics, organization-wide reporting and regulatory reporting
- Modular solution with unified performance integrity model designed for business priorities driven phase wise roll out – across organizational functions
- Provides 360 degree spatially enabled view of an entity across business functions
- N-Level hierarchies with high level of granularity to contextually drill down
- Highly optimized persistence of data from varied data sources for high performance Analytics and cohesive view of information across business functions
- Logical Data Warehouse Model support for Big Data analytics
- Ability to collate multi-source master data -Traceability to source
- Pre-built Data flows
- Extendable with custom schemas, objects and flex field support
- Preserves customizations during patch or release upgrade
- Out of the box support for Hadoop
- Engineered for in-memory computing. Exploits the power of SAP HANA - In-Memory Data, Columnar database compression capabilities, Analytical Views and Query Optimization
- Cloud ready enterprise intelligence solution with multi-site support

5.2. Data Science Workbench

- In-built Data Science Workbench (DSW) provides Exploratory Analysis, Data Quality Analysis, Model Building, Model Validation, and Model Publishing to Model Mapping, Model Maintenance, Model Auditing, Service Creation followed by integration to Dashboards
- DSW covers complete gamut of Analytics from Descriptive, Diagnostic, Predictive, Prescriptive and Spatial Analytics

5.3.   Analytical Models include pre-built predictive analytics scenarios across functional areas

5.4.   Predictive Analytics Manager provides comprehensive run-time environment for analytical models, thereby ensuring model lifecycle support

5.5.   Enterprise Search

- Information Hub provides the interfaces for performing Enterprise Search and Analytical Views for to slice and dice across the different associated dimensions to address any MOLAP based requirements

5.6.   Industry Taxonomy based Semantic Model for Self-Service BI

- Transforms the knowledge model into business functions and processes based meta-data model objects
- Extends solution to support a logical data warehouse to federate data from external data sources
- Users can work from a variety of preconfigured and customized dashboards, or slice and dice through data using multi-dimensional analysis, ranking and alerting, condition monitoring with intelligent drill-down
- Enables Self-Service BI, eliminates dependency / load on IT team, empowering users to build their own reports/dashboards to meet their evolving requirements

5.7.   Pre-built Role Based KPIs | Business Value Scenarios | Balanced Score Card

- Pre-built role-based analytics accelerates solution acceptance providing out-of-the-box value to customers
- Seamless management of organization's balanced scorecard and strategy maps by tying together functional scorecards with Enterprise KPIs as well as operational and role based individual KPIs driving 360-degree percolation of organizational strategy. Can interface with popular BSC software tools

6.   Visualization layer

6.1. 2D / 3D Visualization

6.2.   Real time Controls

6.3.   Mobile Apps

- Receive and Acknowledge alerts notification
- Equip field responders with alert information
- Alert location over geospatial view
- Video information (Live and incident time recorded video)
- Set of SOPs which needs to be executed
- Locate the nearby events
- Share position with command Center for Real Time tracking of field responders
- Exchange notes with Command Center operators

6.4. Information Portal

- Supports standards based interfaces to permit seamless integration with popular portals

6.5. Collaboration

- Built–in collaboration & recommendations
- Built-in contextual collaboration enabling to take the right decisions quickly

6.6. Self Service BI Semantic Model for Self-Service BI enabling end users to create their own reports and analysis of the data sets they want, on an as needed basis.

7. Role-based Views

7.1. Smart Operator Console

- Configurable Multi Monitor support
- Unified view of alerts from the interfaced security sensors / systems
- Caching of map data for faster Geospatial display
- Integrated unified Video wall display interfacing with multiple VMS
- Dynamic SOP Plan to add procedures on the fly
- Share and collaborate the alert with other Command Center operators and Field Responders
- Messaging facility assist to share multimedia data with Operators involved
- Integrated Communication interface to announce public broadcast message over PA systems
- Sensor Health Display giving availability of all sensors
- Dashboard for complete awareness of command center operation
- Dock well to place the critical sensors for continuous visibility
- Escalation management to share alert with defined recipients

7.2. Supervisory Console

- "Resource Planning" and monitoring
- Monitor "Escalated alerts"
- Provision to define business rules
- Threat condition selection and behavior definition
- Displays status of sensors and systems
- Generate reports and dashboards

7.3. Decision Support

- Situational awareness platform enables user to all levels to visualize and take appropriate decisions and actions

7.4. Advanced Simulation & Optimization

- Allows simulation of what-if scenarios with advanced 2D/3D GIS visualization

- Leverages power of data science and predictive modeling
- Supports optimizer capabilities

8. Integrated Platform Services

8.1. Administration & Configuration

- User-friendly GUI based Configuration Manager to administer and fine-tune the integrated solution in line with changing needs

8.2. Security & Audit

- Granular role-based security over analytical and data privileges
- Supports PKI standards for data exchange
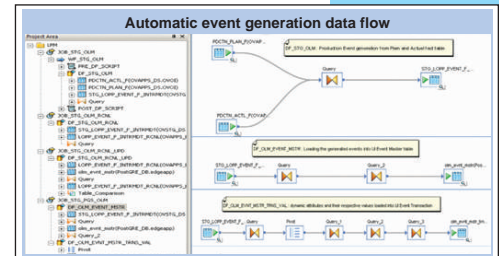- Supports LDAP based Single Sign On (SSO)

8.3. Messaging

- Announcements, discussion boards
- Searchable Knowledge Repository and glossary
- Task Notifications & Alerts
- Facilitate cross-functional expert discussions for problem deliberation

8.4. Workflows

- In-built multi-purposed workflow engine to drive collaborative Business Intelligence & Analytics along with Operational tasks

8.5. Scheduler

- In-built scheduler to automate workflows, data-flows, analytics and various Operational tasks

Rolta OneView™ Smart City Software Suite has been designed to support fault-tolerant system architectures featuring high-availability, load balancing and disaster recovery capabilities.

Conclusion

Rolta OneView™ Smart City Operations Suite provides real time Common operating picture of Smart Elements/ sensors/systems to visualize, analyse the available information, giving a unified view of all assets and resources for better fact based decision support to mitigate emergencies.

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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