

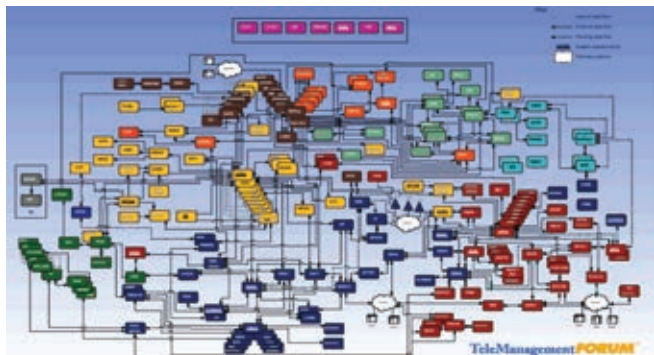


## ROCware

### Actionable Intelligence for Service Providers

- Enable profitable growth through coordinated financial control
- Link operations to profitability through cross-functional data correlation
- Exploit synergies in formerly disparate assurance, audit and governance functions
- Deliver Business Optimization in a pragmatic manner
- Provide visibility into Enterprise Assurance, delivering business health metrics in real time

The business landscape for communication service providers is continually evolving. With reducing voice revenues, growth in new services arising from advancing technologies, market saturation and increased competition, the greatest challenges facing service providers today are to continuously improve both Average Revenue Per User (ARPU) and Average Margin Per User (AMPU), while still enabling faster time-to-market of new services. To top that, service providers today are finding it increasingly difficult to retain existing subscribers, let alone acquire new ones.



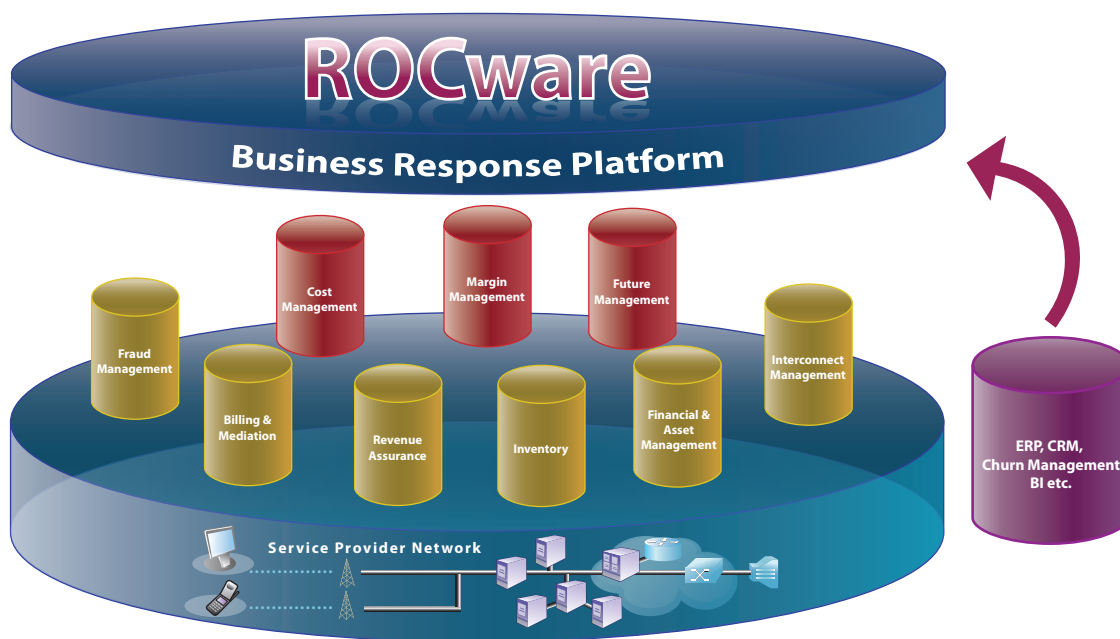
The primary roadblock to achieving solid ARPU and AMPU performance is that many service providers lack enterprise-wide and subscriber-centric revenue, cost and margin visibility, including a real-time mechanism to study the impact of operational changes on profitability. This lack of real time visibility stems from the fact that most BSS functions continue to operate as silos thereby leading to un-correlated and massively un-utilized data within the service provider's operational infrastructure.

In order to overcome the isolation phenomenon these BSS and other enterprise silos create, ROCware enables a direct linkage between operations and profitability, while also enabling credible and timely cross-functional data correlation. This concept that service providers are increasingly looking to establish is the foundation of a Revenue Operations Center (ROC) within their environment.

### Revenue Operations Center (ROC®)

The primary objective of the ROC is to function as the 'Mission Control for Financial Health'. The ROC thus enables profitable service provider growth through coordinated operational control, also known as Enterprise Assurance. The Subex ROCware platform is the industry's only solution specifically designed as the key enabler of a ROC within a service provider today.

For service providers that aim to optimize their operational and process infrastructure, the ROC delivers overall Business Optimization in the most pragmatic manner.



The ROC achieves its objectives by exploiting synergies in formally disparate assurance, audit and governance functions. This enables an Enterprise Assurance infrastructure that monitors and controls the entire revenue chain and identifies risks to profitability, margins and customer satisfaction. The ROC also allows a service provider to support Business Optimization and other operational innovation programs because of its end-to-end view.

As a centralized and integrated operations infrastructure, the ROC ensures that a service provider is guaranteed:

- End-to-End Operational and Process Visibility.  
This allows a service provider to perform centralized analysis and monitoring and thus have a focal point control for revenue and risk management functions.
- An Integrated and Real-time Business Response mechanism.  
By making the right information available to the right people at the right time, the ROC enables service providers to make informed decisions based on near-real-time data. In today's competitive environment this leads to a significant competitive advantage.
- Cross Domain Business Application Correlation.  
As the ROC collects and analyzes data from various BSS functions, it enables normalization and correlation of control and audited data, process maps and metrics..

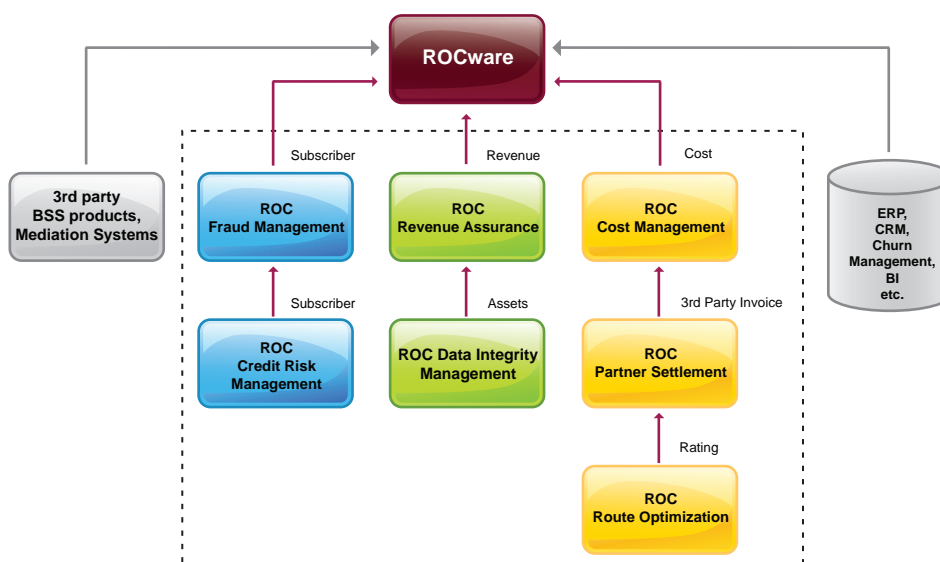
The key benefits that a service provider derives from the ROC are:

- Enhanced Revenue Management
- Enterprise-wide Risk Management
- Business & Operational Assurance
- Pro-active Intelligence & Insight
- Revenue Chain Integrity Assurance
- Improved Customer Experience
- Enhanced Market Responsiveness

The Subex ROCware platform forms the foundation that enables a Revenue Operations Center (ROC). ROCware also integrates with these additional Subex products to form key components of the ROC -

- ROC Revenue Assurance
- ROC Fraud Management
- ROC Credit Risk Management
- ROC Partner Settlement
- ROC Route Optimization
- ROC Cost Management
- ROC Data Integrity Management/ Asset Assurance

All the above solutions come together to help CSPs prevent fraud losses, collect all revenues, reduce defaulted payments, reduce wasteful expenditure, manage inter-carrier and partner expenses and defer or even avoid capex. ROCware integrates seamlessly with these Subex BSS solutions, as well as 3rd party solutions and also other enterprise systems such as CRM, BI etc.



## ROCware

ROCware is the Subex award-winning Business Optimization platform that harnesses the wealth of operational data within service providers, transforms it into actionable information, and then enables business users to act on it – all in near-real-time. ROCware also provides the ability to correlate cross domain information and extract additional value from near-real-time operational data. Using ROCware, service providers can create a true Center of Excellence for operational oversight across the enterprise, providing:

- Centralized management and oversight of common operational functions across domains
- Collection and analysis of data from disparate sources throughout the enterprise
- Use of Fuzzy Logic to correlate across domains with data challenges
- Ability to define complex analytic classifiers to group customers based on behavior
- Predictive insights into future events so they may be acted on today
- Setting of thresholds on cross domain data combinations (e.g. Margin)
- Initiation of workflows for issue management arising from any domain area within the ROCware scope of assurance

ROCware enables the pragmatic evolution to building a Revenue Operations Center (ROC), by

- delivering real-time and actionable intelligence to effectively monitor and control operational and tactical responses to changes in the business
- providing an integrated platform that acts as a centralized management point, sitting on top of all Subex BSS solutions or 3rd party systems
- linking service provider operations directly to financial health

Using ROCware's unprecedented ability to manage and relate complex processes and data across multiple business systems, service providers can now create an end-to-end view of the customer (and the partner) based on products, services, revenues, margins, costs, and more. It also enables service providers to define key cross-domain metrics and KPIs, specific to their business strategy, that can be monitored and tracked.

## ROCware Benefits

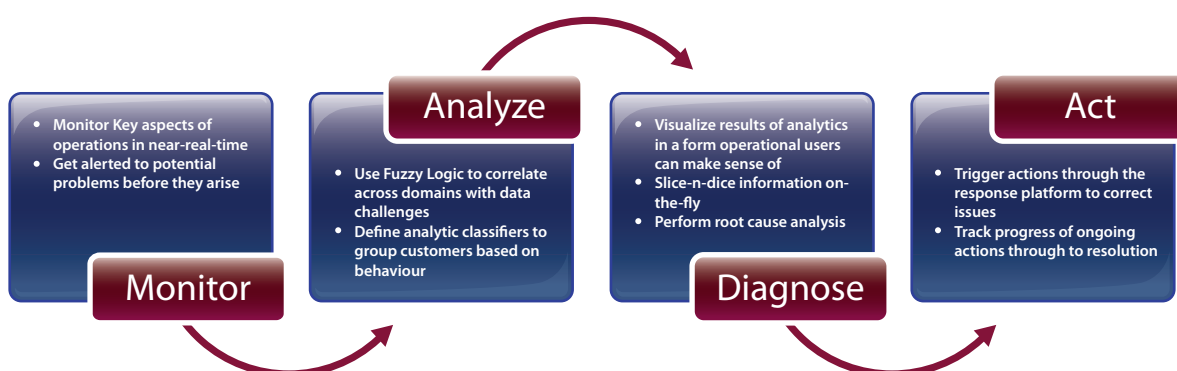
- Overcomes enterprise silos and delivers enterprise-wide synergy by creating linkages between previously unrelated data
- Allows real-time monitoring and analysis of operational efficiency, customer experience and profitability
- Enables intelligent decision-making and integrated response management across various levels in the organization
- Provides a customer-centric view of processes, margins, revenues and costs

## ROCware BSS Integration

ROCware seamlessly integrates with existing BSS products (Subex or 3rd party) and other enterprise functions (CRM, BI etc). Data aggregation and analysis includes transaction data (CDRs, IPDRs, etc.), cost and revenue data (supplier/partner invoices and bills), subscriber data, etc.

## ROCware Methodology

ROCware includes components for data collection, complex process creation and management, aggregation, analytics, presentation and workflow, all hosted on a common platform.



The value of ROCware extends to various business units within a service provider. For example, it allows senior-level executives to consistently monitor the impact of investments in Customer Experience Management (CEM) and related returns. It also allows customer support representatives to make real-time decisions to solve customer issues, as well as cross-sell and up-sell new services, all based on unparalleled views into individual customer analytics. It also provides key customer insights to the service provider's marketing team, facilitating the rapid roll-out of targeted and focused services for specific customer segments. ROCware also enables effective management of key processes, for example the Order to Cash processes, Leased Line Management processes, etc..



## ROCware Key Features and Business Advantages

ROCware supports creation of individual user access and analysis of intelligence information. ROCware also supports the creation of a "Mission Control" environment, allowing full, multi-screen operational visibility by all stakeholders simultaneously across multiple departments, domains, etc, from a single command center. Additionally, ROCware supports movement of key ROC information to mobile technologies, including smart phones; as a result, ROCware does provide support for iPhone and Android device viewing of ROC analytics for users needing remote visibility.

Features	Advantages
Meaningful and relevant metrics linkages and cross-functional data correlation across silos.	Provides proactive insight into the market and customer requirements and understanding of the financial impact of business operations. It also leads to faster time-to-market for new services and enhanced customer experience.
Real time and dynamic data visualization through dashboards; Accurate, granular and comprehensive metrics and Key Performance Indicators (KPIs).	Enables customizable data presentation to enhance service provider flexibility. It also allows proactive solution definition, aligned to relevant roles and responsibilities – CxO, Department Heads, SMEs (product manager, financial analyst).
Advanced Analytics for profiling, trending and propensity determination providing rapid insights into customer behavior.	Enables product managers to better understand their customers using next generation cube technology to "slice and dice" the customer base, even from mobile devices. De-risks decision making by allowing variable forecasting "what-if" scenario creations.
Automated cross-domain workflow and response engine.	Allows service providers to ensure immediate corrective measures and overall faster decision-to-action conversion. Replaces manual tools/spreadsheets and removes barriers between domains to manage issues jointly when required.
Support for modeling service provider's business processes and necessary data enrichments to manage complex factors	Maps data accurately and consistently, to ensure validity of cross-domain intelligence being reported. This allows the business to make rapid decisions with higher levels of certainty
Pre-built business modules for key service provider priorities and revenue challenges including support for new business models.	Pre-defined metrics within ROCware Analytics, combined with industry leading Applications that speed-up deployment times and enable operators to follow industry best-practices.

ROCware uses advanced analytics to calculate current metric/KPI values and predict future values, which enables service providers to make more informed decisions regarding investments and enhancements in customer care, marketing and various BSS functions. ROCware offers extensibility through additional purpose-built, pre-integrated business-focused applications to provide comprehensive, consolidated and customized information and knowledge to service providers:

- **ROCware Product Performance Management** – Enables service providers to monitor the overall health of individual products and track progress against targets. It collects real-time quote-to-cash data and tracks financial performance metrics to provide complete visibility into product performance, from service delivery to uptake, revenue and margins.
- **ROCware Propensity Profiler** – Using advanced analytics, the latest modeling technologies, dimensional analysis and data visualization techniques, this application correlates cross-domain data, and continuously monitors a wide range of related indicators to create various profile models. ROCware Propensity Profiler then creates predictive result sets that allow the service provider to understand a behavioral pattern in customers, markets, etc, before that behavior happens (or early in its life cycle). Armed with this intelligence, service providers can act immediately and proactively, prior to an adverse impact to the business. For example, ROCware Propensity Profiler supports the creation of a Customer Experience Management profile which is capable of predicting changes in customer satisfaction that increase call center costs, complaints, adjustments, and ultimately, churn. This advanced modeling technology can isolate the at-risk customers, allowing an alternate treatment path and ultimately, an improved satisfaction rating.
- **ROCware Leased Line Management** – Providing detailed views into actual network asset status from both logical and physical asset views, and mapping those to partner settlement information, ROCware LLM allows service providers to have complete visibility into network expense management. ROCware LLM also provides multi-path, multi-department workflow and analytics support to manage network vs. inventory dispute correction and resolution, while simultaneously supporting partner asset dispute management.
- **ROCware Payment Channel Assurance** – Managing the complex movement of cash across the external and internal paths within the business, ROCware PCA ingests, analyzes, and tracks ongoing information from banks, merchant institutions, retail channels, internal accounting, and other sources to capture and track all prepaid monies inbound to the service provider. Issues including missing payments, missing deposits, late or delayed transactions, incorrect ledger balances, etc, may all be captured and reported within the solution.
- **ROCware Vision 360** - Enables service providers to gain access to real-time customer analytics. It provides the customer with detailed views into both aspects of Customer Experience Management (CEM) – understanding the customer and also understanding their experience. Vision360 would be available whenever a customer interaction would take place (contact initiated by the operator or the customer) and offer immediate customer intelligence & analytics to help CARE agents better understand the customer throughout the course of the interaction. In addition to this, it also has the capability to do campaign management where it can identify customers at a high risk of churning and use case management tools to target relevant marketing campaigns at them.
- **ROCware Capacity Management** - Enables CSPs to prevent an availability or performance impact on business critical applications due to capacity issues. It provides the critical link between discovering the network 'as-is' and presenting the data in a normalized and appropriate format. It further engages analytics functions to provide actionable intelligence and also predict scenarios and their impact on network capacity which would help CSPs to plan capacity investments accordingly. It provides a holistic view of capacity through which it helps CSPs see threshold violations on key links and resolve capacity issues based on near real-time data.

In addition to the above, Subex also offers custom-built applications built on top of ROCware, to solve specific business problems of service providers.

## Some Real Life Examples

Type of Operator	Problem Faced	Solution Methodology
<b>Tier-I Service Provider</b>	High volume of expensive inbound calls to their call center. Using an average cost per contact of \$10.00, the call center cost burden for a single product exceeded \$20 million annually	<ul style="list-style-type: none"> <li>• Employ propensity methods to determine which customers were likely to call the call center with billing related issues</li> <li>• Use customer and service data, and combining it with customer behavior and contact history, propensity models can be developed to predict when customers will exhibit behavior that might signal a problem.</li> <li>• The propensity models can also determine how likely a customer is to call the call center within a particular time frame. Using this actionable intelligence, the service provider can then work to operationalize the information into the business.</li> </ul>
<b>Tier-I Carrier</b>	Need to predict customer satisfaction within their commercial business customer base and, more specifically, when a customer is likely to be dissatisfied with the service provider	<ul style="list-style-type: none"> <li>• Use a series of data sets that reflect current activities and recent customer polling information, the propensity model can be developed to predict those businesses that are at risk for being dissatisfied, isolate those customers, and place them into a treatment path within the service provider's customer care organization.</li> <li>• This proactive set of activities will enable the provider to better retain these high-value, high-margin accounts while also increasing overall satisfaction ratings.</li> </ul>
<b>Leading Integrated Telecom Service Provider</b>	Need to monitor the performance of new products, services or tariffs and determine the success or failure of a product scheme/launch	<ul style="list-style-type: none"> <li>• Business Case Validation through monitoring of actual activity and real margins to measure the success of a product. Match interconnect and retail records to obtain margin and actual ARPU and thus determine the success of a service</li> <li>• Identify unprofitable customers through analysis of usage patterns of individual subscriber, groups of subscribers and other segments of the subscriber base</li> <li>• Ability to perform true what-if scenarios which enable the launch of correct products, or an accurate view of how to combat competitor offers.</li> </ul>
<b>Leading Communications Service Provider</b>	Need to monitor the capacity of network elements and successfully predict the time till which one can sustain increasing bandwidth (time-to-exhaustion)	<ul style="list-style-type: none"> <li>• Collect key Network Capacity data for physical/logical circuits</li> <li>• Remove the need for manual correlation through automated normalization of thresholds</li> <li>• View summary of important thresholds</li> <li>• Using 'what-if' scenarios to predict network capacity 'time-to-exhaustion'</li> <li>• Gain a holistic view of capacity issue impacts – a combination of network, service and business views</li> </ul>

Subex Limited is a leading global provider of Business Support Systems (BSS) that empowers communications service providers (CSPs) to achieve competitive advantage through Business Optimization - thereby enabling them to improve their operational efficiency to deliver enhanced service experiences to subscribers.

The company pioneered the concept of a Revenue Operations Center (ROC®) – a centralized approach that sustains profitable growth and financial health through coordinated operational control. Subex's product portfolio powers the ROC and its best-in-class solutions such as revenue assurance, fraud management, credit risk management, cost management, route optimization, data integrity management and interconnect / inter-party settlement.

Subex also offers a scalable Managed Services program and has been the market leader in Business optimization for four consecutive years according to Analysys Mason (2007, 2008, 2009 & 2010). Business optimisation includes fraud, revenue assurance, analytics, cost management and credit risk management. Subex has been awarded the Global Telecoms Business Innovation Award 2011 along with Swisscom for the industry's first successful Risk Reward Sharing model for Fraud Management.

Subex's customers include 16 of top 20 wireless operators worldwide\* and 26 of the world's 50 biggest# telecommunications service providers. The company has more than 300 installations across 70 countries.

\*RCR Wireless list, 2010

#Forbes' Global 2000 list, 2010



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