SUBEX

HIERARCHY OF NEEDS FOR ACTIONABLE INTELLIGENCE

A Path to Actionable Intelligence for Service Providers

White Paper

Hierarchy of Needs for Actionable Intelligence

The telecom industry is undergoing a tectonic shift. In the past five years, the balance of power has shifted dramatically in favor of the customer. With customers being offered a seemingly unending array of rate plans, devices, content and services, VAS, service providers are scrambling to win new customers, while also retaining existing ones. The result is a rapidly changing industrial landscape, where the biggest challenge service providers are facing is complexity. The telecom marketplace today is characterized by:

- More complex business models and processes
- More complex supplier / partner relationships
- More - and more types of - competitors
- More complex, cross-platform service delivery scenarios
- Rapid changes in technology, competitive offerings and customer buying patterns
- Continuously increasing network capex

This complexity is the main driver for poor customer experience as well as cost inefficiencies in the telecom industry today. It provides both challenges and opportunities for service providers. On the one hand, it leads to the need for service providers to rapidly introduce, modify or withdraw new products and services to and from the market. On the other, it presents them with the opportunity to tailor products and services to customer needs, in a way that they could never imagine before.

To be able to quickly react to these opportunities and challenges, service providers need to be armed with the right tools. One of the key tools in this crusade is actionable intelligence. Service providers already have a wealth of operational data in their OSS/BSS infrastructure. The problem, however, is that this data exists in silos, and is rarely available when and where it is most needed. Moreover, when it is available, it is mostly inaccessible—inextricable reams of rows and columns that business users can barely make sense of, let alone interpret and use to make business decisions. Having access to granular, timely, understandable and actionable information is crucial for service providers both to improve their efficiencies and to offer an outstanding experience to their customers.

In addition to the data, business users need the right tools to understand and act on this data. IT must be able to put these tools in the hands of business users, so as to avoid unnecessary delays and enable them to make timely business decisions. The tools also need to be flexible, in order to keep up with the changing needs of the business. Users cannot be expected to always be able to predict what data (and resulting analytics) they will need in the future. Finally, these tools should be intuitive and easy to use for business users with limited technical skills.

A Hierarchy of Needs for Actionable Intelligence

This whitepaper will outline a hierarchy of needs that service providers must fulfill in order to achieve actionable intelligence. The fulfillment of these needs provides a realistic path for service providers to attain actionable intelligence. It will also offer examples from a few Subex customers worldwide who are leveraging this actionable intelligence to achieve real business results.

Hierarchy of Needs for Actionable Intelligence

The following pyramid describes this hierarchy of needs.
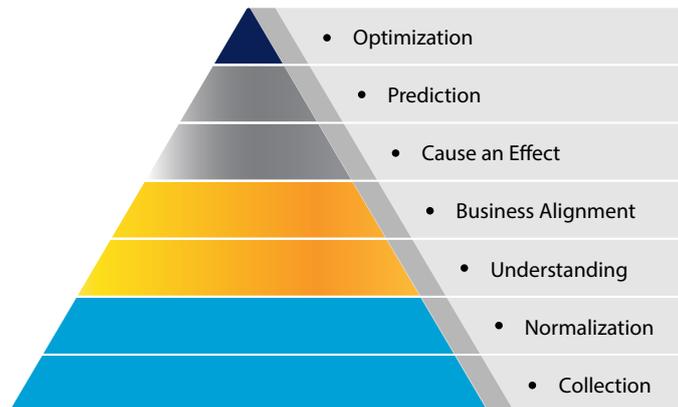
1. Collection – getting good data

The first step in attaining actionable intelligence is, of course, collecting the data that will form the foundation. This data needs to be collected from different silos across the enterprise (and outside it), and made available in one place. The sources of data will of course depend on the needs of the individual business, but some examples are:

- Existing OSS/BSS infrastructure (Billing, Inventory, Order Management, Service Provisioning, Trouble Ticketing, etc)
- Network (Transactions / Assets)
- External sources such as customer forums, social networks, market research surveys, etc

This step has often proved to be service providers' Achilles Heel in the quest for actionable intelligence. In order to properly leverage operational data as a foundation for actionable intelligence, such underlying data must be:

- **Accurate, validated and consistent:** In other words, it should be trusted.
- **Timely, or available 'right time':** While aggregate data is available with each billing cycle, business decisions might call for micro-intelligence—data availability in minutes, hours or days, as the case may be.
- **Granular:** Real business insights rarely come from aggregate data. Therefore, the data needs to be as granular as possible—for example, individual records relating to specific customer actions or events.

Needless to say, such granular data will involve potentially high volumes, and the data collection and storage tools need to be capable of handling such volumes.

2. Normalization

Normalization involves creating a common 'data currency' using all the different data sets from across the organization. This is imperative in order to allow correlation across the different data sets. This may involve the following steps:

- Creating standard IDs for customers, products, etc
- Creating a data dictionary to hold cross-silo keys (e.g. Customer ID, Circuit ID, etc)
- Creating fuzzy matching logic to identify and correct outliers

Once this is done, all the different data sets can be correlated so that it all makes sense. This data can now give users a 360° view of customers, products, etc.

3. Understanding the Data

Once the data has been collected from various business silos and normalized, it should be in a state in which business users can understand it and make sense of it. This step involves deep diving into the data to understand what really happened, and why it happened. This is the stage at which the data is beginning to become 'information'. Technologies to enable this include ROLAP tools with dimensional analysis and slice-and-dice capabilities. Such tools should have the ability to support guided 'train of thought analysis' as well as ad-hoc queries on the data. While this step enables users to find and fix problems soon after they occur, it is still reactive in nature, and often human-intensive.

4. Align the Business

This step involves defining metrics and KPIs on the information from steps 1 through 3 above. Thresholds and alerts can be utilized to highlight issues, and it is at this stage that the information starts becoming actionable. In addition to making the information actionable, this might also involve the use of case management / workflow capabilities to drive action on the issues thus uncovered. It thus makes the business truly proactive. This can also pave the way towards metrics-driven management, with 'killer metrics' that can be used to get executive attention on important issues. Thus, actionable intelligence gets embedded in the way the business is run.

5. Cause and Effect

With this step, users start to understand the processes / trends behind observed symptoms. It introduces more predictability into the process, and can involve the following:

- **Building process models and balanced scorecards:** This enables "what-if" analyses
- **Tracking actions and their effects through classification:** This builds up history, leading to the ability to provide guided (recommended) actions
- **Using time series analysis algorithms:** For trending and prediction

The above steps lead to a good understanding of the processes / trends causing observed symptoms, grounded on real data. It thus marks the beginning of the end of "seat of the pants" management.

6. Prediction

Once we understand the underlying processes, we can use them to predict in an automated manner – e.g. to predict what the customer will do before she does it. This enables the prevention of issues, rather than just diagnosis and fixing, thus making service providers proactive. This step involves the use of predictive analytics (statistical methods):

- **Classifiers:** By demographics, communities, behavior patterns, customer satisfaction, etc.
- **Propensities:** To churn, buy, complain; customer life time value; etc.

7. Optimization

The actionable intelligence attained through the above steps can be used not just for metrics-driven management, but also to drive business optimization. This involves streamlining and refinement of existing processes based on inefficiencies observed through historical analysis.

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Examples of Actionable Intelligence

Propensity to Call: Tier-1 Service Provider

This service provider was experiencing a 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.

With the help of the Subex ROC Analytics platform, this service provider employed propensity methods to determine which customers were likely to enter into customer care with specific billing issues. Using customer and service data, and combining it with customer behavior and contact history, Subex developed propensity models to predict when customers will exhibit behavior that might signal a problem. 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. Two general paths can be developed:

- The first is a direct proactive effort to contact those customers in advance of the customers initiating the contact themselves. By segmenting the pending contacts and prioritizing them based on the time frame in which the customer was predicted to contact; and by distributing the investigation and corrective action across offline resources, the service provider can proactively initiate a cheaper outbound contact, informing the subscriber an issue had been noticed and was being investigated. This can create a significant reduction in call center costs, faster issue resolution (less contacts needed), and lower adjustment rates.
- The second is to create a rolling reference library of accounts by phone number that would be accessed when an inbound customer call occurred. If the inbound call is present on the list, this results in an immediate routing to the live representative who manages the problem the customer was most likely calling about. This has a similar effect in lowering call center costs (through shorter calls), reducing customer frustration, and lowering overall adjustment rates.

In addition to the above, offline resources can be used to take corrective action, sometimes in mass, if a single root cause is the core issue driver. A final outbound and cost effective communication to the customer informs them of resolution.

Customer Experience Management: Tier-1 Carrier

This carrier worked with Subex to develop and implement a Customer Experience Management profile that will focus on predicting customer satisfaction within their commercial business customer base and, more specifically, when a customer is likely to be dissatisfied with the service provider. Using a series of data sets that reflect current activities and recent customer polling information, the propensity model will 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. This proactive set of activities will enable the provider to better retain these high-value, high-margin accounts while also increasing overall satisfaction ratings.

Product Performance Management: Leading Integrated Telecom Service Provider

Subex worked with this customer to enable them to monitor the performance of new products, services of tariffs. This involves building the following capabilities:

- **Business Case Validation:** It is all well and good to launch a tariff, special offer or even a new product based on a reasoned business case. But how often do service providers know how well the new product performs once it is launched? With so many new offers submitted to the marketplace, often in response to competitor offers,

identifying the impact and more importantly if they met their target, ranges from difficult to impossible. For example has the new package captured 100,000 new subscribers? Has the new offer for international calls just undercut the existing plans (and therefore reduced the revenue for international calls)? Can the increase in margin approved at the launch be verified?

The ability to monitor actual activity and real margins is key to measuring the success of a product offer. This in turn provides market feedback on what works, enabling future products to avoid certain 'pitfalls'. Establishing product margin requires the capability to match interconnect and retail records, not something which is easily done with current systems. Only by establishing the margin and actual ARPU can the success or not of a service be identified.

- **Identifying unprofitable customers:** Beyond the validation of the business case it is often very revealing to perform this analysis as it gives an insight into the usage patterns and behaviour of individual subscribers, groups of subscriber and other segments of the subscriber base. For example, which subscribers are 'savvy' to use the plan to their own maximum benefit (where they use up to the limit of free international calls, maximum amount of free downloads, etc., then switch plans or operators to continue the most beneficial usage). As the service provider understands more about the subscriber behaviour, it is possible to create offers which attract subscriber activity without losing revenue or undercutting their own offers.

  To be able to do this requires not simply access to data (which is often difficult to come by) but the ability to manipulate the data to give the necessary results. For example, matching Cost and Retail records, ability to identify offers and plans within the usage or subscriber data and the ability to process individual records and display by any segment, be that subscriber type, location, offer, day, time, supplier, etc.

  This deep knowledge of subscribers' usage patterns of different plans also opens up great possibilities to tailor offers to specific groups to increase revenue and improve the customer experience.

- **What-if analyses:** What if the costs to deliver this product were to rise by 5% next month? What remedial action can the service provider take? Would the service provider know by how many minutes the duration would need to increase, or by how much the retail price would need to rise to recover the increase and protect their margins? Only by understanding the actual usage of the subscriber base can the appropriate action be taken. As with Business Case Validation, it takes significant amounts of data to come up with a simple view of how to manage this situation. Only with the power to process the relevant cost and retail records will this capability be possible. Then a senior manager will have the ability to perform true what-if scenarios which enable the launch of correct products, or an accurate view of how to combat competitor offers.

Capacity Management: Tier 1 European Operator

This operator was facing major challenges with trying to forecast and predict, not only when and where they would run out of network capacity across their heterogeneous network of both 3G/4G technologies, but also across their common network core. As a result, they found themselves running out of capacity well in advance of scheduled network upgrades. Traditionally, they had focused their forecasting on only performance management traffic data, which led to repeated incorrect forecast conclusions. This significantly prevented the operator from immediately identifying and managing inevitable capacity and congestion issues, that led to degradation of service availability. The key objectives of this engagement were to understand the overall capacity consumption across the heterogeneous network and the common network core, to identify, forecast and predict how long current capacity

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would last based on current consumption metrics.

With Subex' analytics expertise and proven capacity management capabilities to extract, enrich, normalize and correlate network intelligence data and model it to see threshold violations on key resources, Subex was able to provide this operator the luxury of quickly altering network planning activities to meet the actual networks needs that were now visible on a daily basis. Moreover, this operator can now determine in real-time, capacity consumption trends based on subscriber usage of data and services, predict time to exhaustion, and perform predictive analytics to provide accurate views of potential hotspots based on various input scenarios.

This has resulted in the operator realizing significant network capex savings, improved network reliability, and has had a positive impact on overall customer experience.

Network Capacity Management: Tier 1 North American Service Provider

This North American operator was unable to collect key network capacity data for Layer-2 logical circuits. ROC Capacity Management was the best fit solution for this scenario because of Subex's proven discovery technology. ROC Capacity Management successfully extracted the data and modeled it to instantly reveal threshold violations on key links. Following the successful ROC Capacity Management trial, the operator noted the following distinct advantages: faster and powerful intelligence for network discovery, capacity hot-spots, best practice methods and procedures into workflow and allowing users to modify thresholds and business rules

Summary

Actionable Intelligence is no longer an "optional extra" for service providers. In an ever-changing telecom landscape, it is now a business imperative. Service providers can get there by ensuring that the underlying data is accurate and has the trust of business users, and by using the right tools to collect, understand, visualize and leverage the data to uncover actionable insights. As it is the business users who need to act on this intelligence, they must have immediate access to both the tools and the data to ensure timely dissemination and response to the information. If they succeed in doing this, service providers will uncover a potential goldmine of business benefits, including but not limited to:

- The ability to identify tomorrow's problems today
- The ability to solve problems before they negatively impact the bottom-line or affect customer experience
- Increase revenues through tailored offers and better performance of new products
- Reduced costs, by preempting inbound customer care calls
- Improved customer experience, for example by preventing 'bill shock'

About Subex

Subex Ltd. is a leading telecom analytics solutions provider, enabling a digital future for global telcos. Founded in 1992, Subex has spent over 25 years in enabling 3/4th of the largest 50 CSPs globally achieve competitive advantage. By leveraging data which is gathered across networks, customers, and systems coupled with its domain knowledge and the capabilities of its core solutions, Subex helps CSPs to drive new business models, enhance customer experience and optimise enterprises.

Subex leverages its award-winning analytics solutions in areas such as Revenue Assurance, Fraud Management, Asset Assurance and Partner Management, and complements them through its newer solutions such as IoT Security. Subex also offers scalable Managed Services and Business Consulting services.

Subex has more than 300 installations across 90+ countries.

Pipeline Innovation Award 2017 for Innovation in Managed Services and Security & Assurance category

Global Telecoms Business Innovation Award
2017,2016, 2015, 2014, 2012, 2011

Awarded Global Carriers Awards 2015

Winner of Telecoms Award 2015 - 'Advances in B/OSS' category

Awarded Best Global Product/Services

BSS&OSS Latin America Best Fraud Prevention Project Award 2016

tmforum Business Metrics Automation **CERTIFIED PRODUCT**

Received Global Market Share Leader in Financial Assurance Award 2012

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