alteryx

Unlocking Value from Big Data

A White Paper for Communications
Service Providers

With an effective and comprehensive data blending and advanced analytics solution, service providers can:

- Collect, cleanse, and blend Big Data from a wide variety of business and engineering systems

- Apply advanced analytics techniques to identify patterns of significance across data sets, including root cause, predictive and outcome analysis, complex event processing, and multi-variant business activity simulations

- Deliver actionable, context-specific insight to senior management on demand, enabling better, more timely business decisions

Introduction

Personalized offerings. Ubiquitous access. Broad choices. And a reliable, seamless service experience. These are just a few of the demands made by residential and enterprise subscribers of their communications service providers in today's market.

For providers, meeting these demands is no easy task, especially in the face of extremely low customer loyalty and high churn rates. What's more, new technologies and services, including smartphones, gaming, and streaming video, put a strain on providers' networks while adding to the copious amounts of usage data they must quickly and accurately analyze to maintain a competitive advantage.

The provider that develops the most innovative services and best understands its subscribers, especially how they use these services, wins. Success depends on the ability of business analysts, network planners, and other operations staff to take advantage of the Big Data assets they have at their disposal so they can create innovative new services subscribers actually want—as well as build the network infrastructure to support them.

But almost as soon as the data-gathering process begins, analysts run into steep obstacles. Much of the data they need to predict customer demands remains siloed or locked in disparate back-office systems. Often, only through great expense and hundreds of man-hours of effort can analysts extract the data—and its value.

What's more, not only must providers extract data from each one of its myriad systems—customer relationship management (CRM), billing, inventory, provisioning and fulfillment, service management, and network management—but they must also integrate and combine Big Data from different systems to identify important trends, patterns, and behaviors.

While many different analytic approaches exist to address the needs of service providers, including traditional mapping, visualization, and business intelligence tools, as well as data warehouse solutions, most of these options fall short. None of these solutions enables providers to easily blend data from massive and disparate internal—and external—data sources, most lack advanced geospatial and predictive analytic capabilities, and nearly all take too long to deploy.

Service providers have been left hamstrung by existing point solutions. So where should leading-edge providers turn for help in using analytics to unlock the value of Big Data and gain a competitive advantage?

A New Approach: Comprehensive Data Blending and Advanced Analytics Solution

Many leading service providers have adopted a new approach that focuses on data blending and advanced analytics: the weak spot for most existing solutions. Solutions based on this new approach allow network planners, business analysts, and other users in the lines of business to easily blend Big Data from all sources, including:

- Infrastructure utilization data from planning and engineering databases
- Device-generated, user-specific usage data
- Billing and customer care data
- Social media, weather, and other external, unstructured sources of data
- Demographics, viewership, and other data from third-party providers

Traditionally, service providers have attempted to overcome the data blending and analytics problem with a number of point solutions:

- **Mapping (GIS) tools:** While they enable providers to review spatial, demographic, and geographic data for past events, these tools lack the advanced algorithms to conduct complex modeling and help service providers conduct "what if"-type predictive analysis that delivers actionable insight.

- **Visualization tools:** Although great for reporting and interactive data discovery, visualization tools lack the ability to handle Big Data, with some tools limiting the size of the data providers can access and others limiting the types of data they can import.

- **Traditional BI and analytics tools:** Complex and requiring long IT or consulting engagements to customize, most tools only address one specific problem, requiring service providers to jump from tool to tool in order to access all the analytics capabilities they need.

- **Data warehouse solutions:** While data warehouses effectively handle Big Data requirements and often include bundled analytics applications to perform predictive analysis, typical solutions take months to deploy and customize and are prohibitively expensive. What's more, adding data outside the warehouse to the analysis is complicated or impossible.

Armed with more data than ever before, analysts can construct detailed workflows using intuitive, drag-and-drop predictive and spatial analytics tools that allow them—without any programming—to improve their understanding of customers' needs, increase the efficiency of their network, create better, more targeted marketing campaigns (for advertisers as well as themselves), and enhance their overall market entry and planning strategies.

And while previous approaches came with high price tags and steep learning curves that meant only data scientists could make use of them, these modern analytics tools are cost-effective and simple to integrate with different Big Data sources, providing a richer context to the entire analytical process. Plus, because they are easy to configure and deploy, these tools can be placed in the hands of the users who are closest to the data, speeding and improving the entire decision-making process.
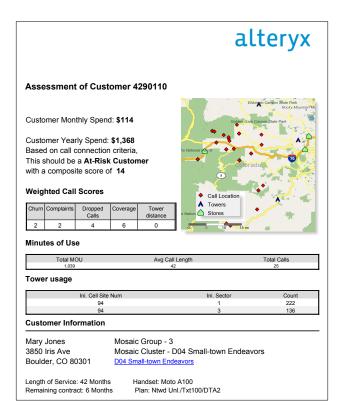
So what kinds of things can service providers do with an effective and comprehensive data blending and advanced analytics solution? Let's look at some common use cases.

Strategic Use Cases for Analytics in Communications

Using analytics, providers can perform a wide range of critical tasks to gain a competitive edge, including determining at-risk customers to prevent churn, analyzing handset performance to enhance customer satisfaction and loyalty, discovering subscriber viewing preferences to improve targeted advertising, and better allocating current and future network resources to meet subscriber needs.

Churn Prediction and Prevention

In today's competitive wireless market, many carriers see 3–5 percent of their customers churn every quarter. To put that into perspective, a carrier with approximately 10 million subscribers and industry-average revenue per account (ARPA) of $100 per month experiences an exodus of $60 to $100 million in revenue every quarter, compounded quarterly.

Customer Experience Management based on predictive analytics can be a critical part of a provider's customer retention strategy

By creating a Customer Experience Management (CEM) program based on predictive analytics, providers can prevent subscriber defection by identifying customers with a higher propensity to churn—and those likely to persuade other customers in their social circles to join them. Predictive analytics allows service providers to shift their focus from looking at historical data that tells them what has already occurred to looking at current data that tells them what is likely to occur in the future—and take steps to prevent or change that predicted outcome.

Customer service is one of the keys to preventing customer churn: quick responses to customer issues can help keep a subscriber happy throughout his or her customer lifecycle. Using CEM and predictive analytics, providers can empower their customer service, marketing, and sales organizations to respond swiftly and appropriately to subscribers whose behavior may indicate a high probability to churn—such as consistent complaints or being located in a geographic region with poor network coverage.
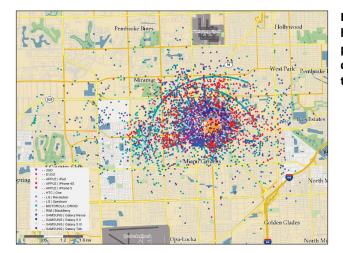
By processing all the Big Data they gather about interactions that impact the customer experience, including network coverage, bandwidth consumption, billing information, support history, and device type, providers can use predictive analytics to optimally mitigate churn. The predictive capability of analytics helps contribute toward end-to-end customer satisfaction and ideally extends the lifecycle of the subscriber.

Handset Analytics

Wireless service providers can conduct scores of tests on smartphones, tablets, and other devices in a lab or trial environment, but the rubber doesn't really meet the road until thousands of handsets are in use at once within a relatively dense and stressful environment, such as a concert, convention, or major sporting event. In these types of extreme environments, analytics allow providers to process the massive amount of user device-generated data in a spatial context and review handset performance (e.g., how well a handset maintains 4G/LTE speeds without dropping back to 3G or even 2G speeds).

Since handset performance is directly tied to customer satisfaction, using analytics to pinpoint potential performance problems can help providers take corrective action before a customer churns. For example, analytics can help providers identify trends specific to a particular mobile application or handset type/version. Analytics can also uncover performance or service problems that all devices may experience in a particular geographic area.

Armed with a better understanding of their wireless network's dynamics, providers can use analytics to drill down to the individual subscriber level

Handset analytics can help providers identify potential network and device problems and take corrective action

and discover trends that can help them introduce innovative new services. For example, analytics may determine that a higher than average number of subscribers use a mobile application, such as Yelp, to find a coffee shop in a particular geographic region. Providers could then use that insight to entice a local coffee shop to advertise through a push notification service and deliver an offer before the customers turn to Yelp, thereby driving not only the desire for coffee but also the best place to receive a discount.

Similarly, service providers can combine handset usage data with demographics and segmentation data to profile where subscribers use their devices. With detailed information about the types of consumers who drive past a vacant billboard or walk past a storefront each day, service providers can package this information as a service to advertisers, landlords, or anyone who is interested in getting a more accurate estimate of potential value.

Set-Top Box Analytics

With the worldwide advertising market expected to top $500 billion in 2014,[1] advertisers demand greater assurance that they are reaching their target audience. Many cable, satellite, and IPTV operators rely on external services, such as Nielsen data, to provide details about subscriber tendencies. While this data is important, it is often incomplete, because it takes into account only a sample of the subscriber population and does not segment the subscribers in a given area by provider.

Fortunately, the technology embedded in set-top boxes supports a granular approach to collecting viewership data down to the household level. But service providers must find a way to cost-effectively analyze that data—in a timely manner—so they can create new advertising options and increase their strategic value.
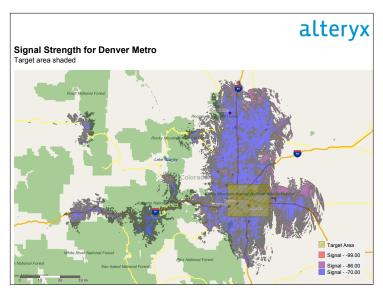
Using set-top box analytics, providers can easily determine viewing preferences by household and provide more targeted offer bundles and promotions that take these preferences and patterns into account. In fact, many sales departments within provider organizations that use set-top box analytics report that a customized advertising proposal that previously took weeks to prepare can now be generated instantly during an initial client meeting and then tweaked on the fly to provide an unprecedented level of customer service.

Plus, providers can better target advertising options, set true advertising rates, and, correlating set-top box data with demographic information, find similar households to place targeted ads. Providers that understand the viewing patterns and content preferences of subscribers can negotiate better rates with their advertisers by promising them greater insight about prospective customers.

Capacity Planning

Providers today face tough economic times and subscribers' growing appetites for bandwidth-intensive services—for which they are not willing to pay a premium. That means providers own a finite asset in network capacity and must handle the cost of increasing that asset through greater equipment spend, which can be prohibitive. What's more, some network elements in current dynamic IP networks fail under increased strain at unpredictable times and for unpredictable reasons, making the challenge of effective capacity planning even more daunting.

In-depth network intelligence can help providers combat this problem. With a better understanding of overall network usage and particular usage per application, operators can allocate assets in a more informed fashion.

[1] "Executive summary: Advertising Expenditure Forecasts," ZenithOptimedia, December 2013, http://www.zenithoptimedia.com/wp-content/uploads/2013/12/Adspend-forecasts-December-2013-executive-summary.pdf.

Signal Strength for Denver Metro
Target area shaded

By combining signal strength with demographics, Alteryx helps providers pinpoint the ideal locations for new equipment

Providers can blend their internal customer and network utilization data with external market data and then utilize predictive analytics to more intelligently plan capacity and provide both an optimal subscriber experience and maintain, or even reduce, capital spending.

What's more, providers can use analytics to determine the impact of over- or under-provisioning particular assets on the customer experience and how that may also affect profitability and customer churn. As large-scale operators entertain wholesale offerings for virtual network operators (VNOs) and other alternative service providers, analytics can give operators an accurate view of real network capacity, both current and forward-looking, enabling them to understand exactly which resources are available for a wholesale service of a certain VNO.
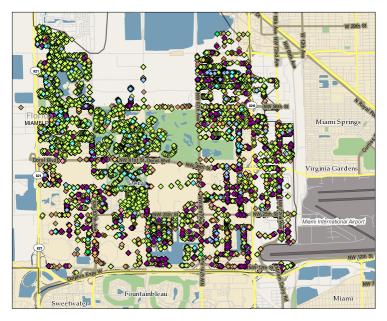
Network Modernization

Increasing customer demands and competitive threats require service providers to continuously upgrade their networks. Using market insight and location intelligence, analytics can help service providers identify the optimal areas for network modernization, answering specific questions such as:

- How big—physically and financially—is the market?
- Does the demographic make-up of residences vary across the service area and how much do they spend on services?
- Where are the headquarters, remote offices, and home-based businesses located? How many employees work at each location?
- Who are the most lucrative candidates for a particular service?

By combining critical geographical and demographic information with internal business and technical information, providers can determine where to position cell sites based on subscriber density, revenue projections, service preference, credit scores, and many other variables. They can also use analytics to identify where to deploy network upgrades and predict their impact on the customer experience by incorporating call detail records (CDRs) that include subscriber and device details and combining this information with location and network data. After upgrading the network, service providers can use predictive analytics to focus prospecting efforts on the most likely subscribers with highly segmented marketing campaigns and customized messaging.

Alteryx Analytics enables service providers to integrate data from the most common communications data sources, including:

- **Technical Data (from OSS):** Combine data from third-party management systems with internally-developed inventory systems and other data sources, including RF propagation plans, drive test results, and call detail records.

- **Customer Data (from BSS):** Extract customer information, including service history, billing records, and customer support details.

- **Prospect Data (from CRM):** Include sales and marketing data from CRM and marketing automation systems to assess the proximity of lucrative prospects to their network.

- **Household/Business Data (integrated within the product):** Match household and business segmentation data for the U.S. to internal data and get projections on network spending, bandwidth consumption and behavior/psychographic insight without the cost of additional services.

Providers can justify network modernization plans by identifying prospects for targeted acquisition campaigns

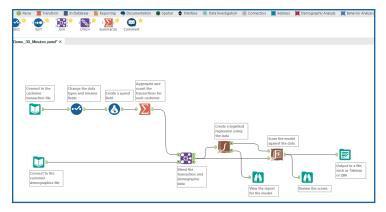## *Alteryx Analytics* Delivers Deeper Business Insights

As the trusted analytics supplier to many of the world's most prominent service providers, including the four major wireless service providers in the U.S., as well as other wireless and cable companies around the world, Alteryx is in a position to highlight some of the most common use cases for Big Data analytics across many departments within wireless, wireline, and cable operators.

Alteryx offers an intuitive workflow for data blending and advanced analytics that leads to deeper insights in hours rather than the weeks typical of traditional approaches. By combining data blending, predictive analytics, spatial analytics, and reporting into a single workflow, *Alteryx Analytics* enables analysts to:

- Blend All Available Data into a Single Tool
  Alteryx allows analysts to easily access, prepare, cleanse, and blend all types and volumes of structured, unstructured, and semi-structured data no matter where it is located. With a full range of data preparation tools accessible without any programming, analysts can speed through the previously time-consuming data-preparation process, leaving them with more time for value-added analysis.

- Enrich Internal Data with Third-Party and Cloud-Based Data
  Append demographic, firmographic, household, and segmentation data from leading third-party providers such as Experian, D&B, and the U.S. Census Bureau to enable better decision-making with real-world context. And, with geographic data from TomTom, analysts can perform drive-time analytics and other deep spatial analysis.

- Build R-Based Predictive Analytic Applications Without Any Programming
  Alteryx puts the power of predictive analytics in the hands of analysts with an intuitive, visual interface and more than 30 predictive tools based on the open source R statistical language. The result? Analysts can quickly and easily predict customer behavior, determine future network requirements, and much more.

About Alteryx

Alteryx is the leader in data blending and advanced analytics software. *Alteryx Analytics* provides analysts with an intuitive workflow for data blending and advanced analytics that leads to deeper insights in hours, not the weeks typical of traditional approaches. Analysts love the Alteryx analytics platform because they can deliver deeper insights by seamlessly blending internal, third-party, and cloud data, and then analyze it using spatial and predictive drag-and-drop tools.
This is all done in a single workflow, with no programming required.
Thousands of customers, including Experian, Kaiser, Ford, and McDonald's, and 200,000+ users worldwide rely on Alteryx daily. Visit www.alteryx.com or call 1-888-836-4274.

The Alteryx intuitive workflow for data blending and advanced analytics leads to deeper insights in hours instead of weeks

- **Share Deep Data Insight with Business Decision-Makers in Hours, Not Weeks**
  Alteryx streamlines the sharing of Big Data insights throughout an organization by integrating powerful reporting and file output capabilities into the same intuitive workflow used for data blending and advanced analytics. Analysts can create custom reports featuring tables, charts, and maps that can be refreshed and emailed on demand. And they can output the results in the native file formats of Tableau and QlikView for data visualization and discovery.

Conclusion

Service providers today must remain focused on strategies to improve their networks as well as the experience of their top customers in order to differentiate—and distance—themselves from their competitors. This means cost-effectively and efficiently extracting and combining the vast amounts of subscriber and network data they collect to identify trends, patterns, and behaviors—and using this information to not only develop innovative new services that customers want but also the network infrastructure to support these services.

Alteryx Analytics allows service providers to free Big Data from back-office silos and put it to work to better understand subscriber behavior, identify prospects for new services, detect and pre-empt potential network and service issues before they impact the customer experience, quantify and manage strategic growth opportunities, and analyze and plan for future network and market expansion. With *Alteryx Analytics*, providers can gain the deep market insight, location intelligence, and industry context they need to not only extend their competitive advantage but also win in today's competitive communications marketplace.

alteryx