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Maximizing value from advanced analytics in telco service operations

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By developing and pursuing high-potential use cases, telcos can unlock hidden value and ignite an analytics-driven transformation.

For years, telecom companies have deployed advanced analytics to improve the customer journey, often with great success. We've seen from our work around the world that these companies can reduce customer churn by as much as 15 percent.[1]

Similar opportunities exist for advanced analytics in service operations, yet we've seen that telcos have left them largely untapped.

Telco executives have the potential to generate significant value and achieve cost efficiencies from service operations, on both the customer and network fronts. With the unprecedented visibility into operations that advanced analytics offers, telcos can streamline processes, allocate resources to the highest-value areas, and reduce costs while maintaining or enhancing service levels. One company we recently observed achieved a 30 percent reduction in costs with the combination of advanced analytics and an end-to-end process upgrade.

The possibilities in service operations are numerous and sweeping (see Exhibit 1 for the range of examples). In network operations, analytics can help to guide workflows, optimize the allocation of technicians, and provide real-time updates on network performance. In customer operations, analytics can be used to track the evolution of customers over their life cycle, and enable real-time updates and on-demand provisioning, while predictive analytics can empower call centers to accelerate issue identification and call resolution.

With so many tantalizing opportunities, telecoms companies may seek to apply analytics across the board in service operations. But becoming an analytics-driven organization doesn't happen overnight. Just running advanced analytics projects on their own is not enough. It's when analytics are embedded in the organization and combined with process improvement that the true value materializes.

We have found that it's best to start with a few high-value use cases, and gradually build momentum across the enterprise. Once those use cases are identified, four key steps can help telcos maximize value from advanced analytics to unlock the next level of productivity in service operations. (See Exhibit 2 for the four steps.)

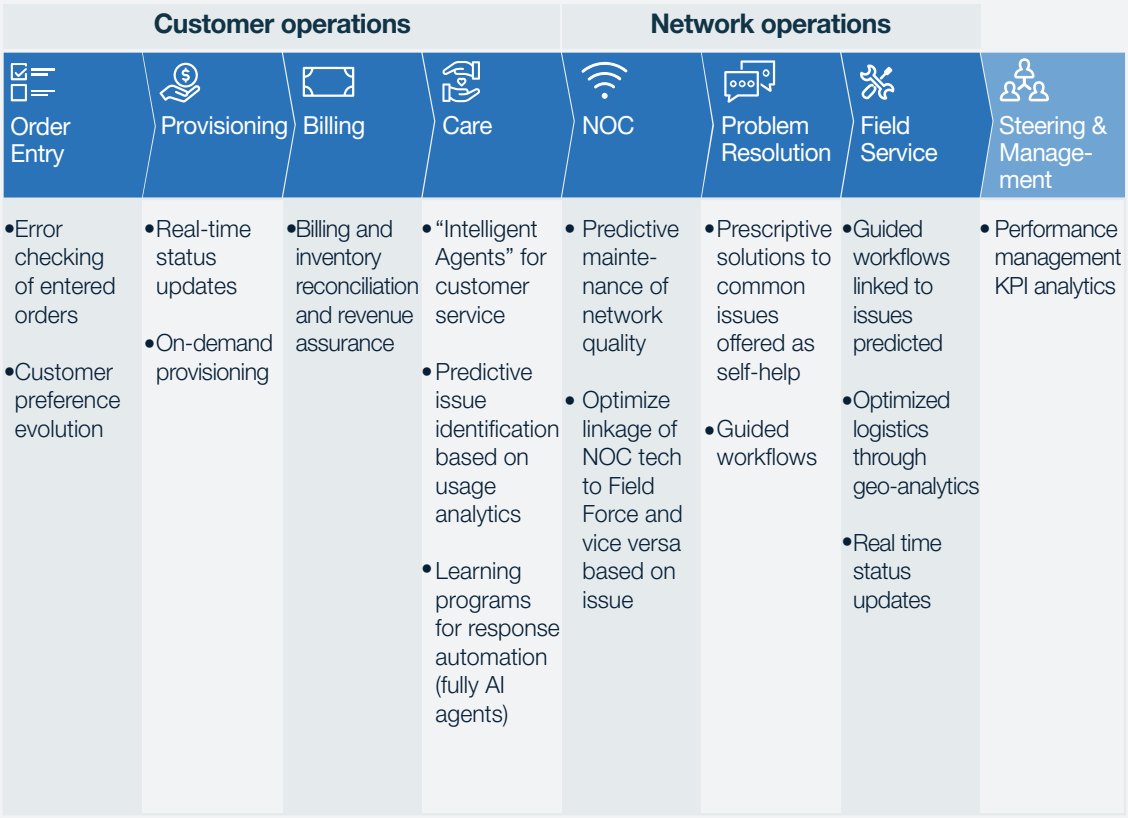
1. Think beyond the usual data

Analytics models depend on large quantities of data from multiple sources. Combining that internal data with selected external sources can heighten the clarity and accuracy of analysis. (See Exhibit 3 for types of data sources.)

1 Pallav Jain and Kushan Surana, "Reducing churn in telecom through advanced analytics," December 2017, McKinsey.com.

Exhibit 1

Analytics can fundamentally transform the operations of a telco operator across multiple dimensions

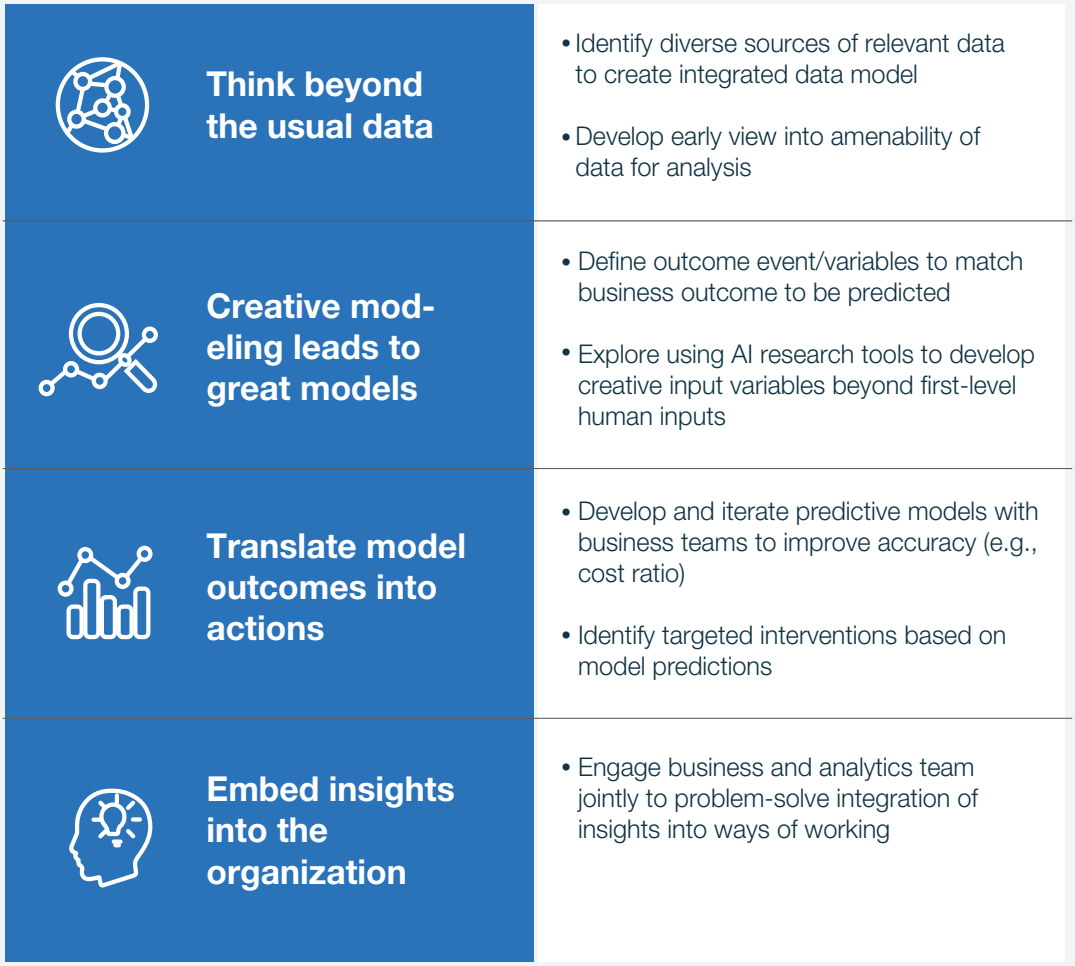


For example, a service provider had a client whose network operations center was suffering more than 2,000 major and minor network degradation events each month—an unacceptably high number, even though the provider was exceeding service-level agreement requirements. Seeing what was going on in the vast sea of data its systems generated was difficult.

The service provider's project leaders started by aggregating data on more than seven million alarms, hourly data from dozens of counters, and 4,000 incident tickets from a ten-month period. Then they augmented these internal data sets with external data. At first, weather data was not top of mind, in part because the causes of the degradations appeared to be related to software and hardware issues, and plugging in that external data set involved a fair amount of work. But in the end, they did include weather records for the relevant geographies, and it helped the engineers test and rule out some of their hypotheses.

Exhibit 2

Realizing value from advanced analytics



On the customer operations side, the company was looking to use predictive analytics to speed up call resolution and improve customer experience at the same time. As in the network operations example, the contact center went beyond its large amount of customer information and combined other sources, such as technical logs, internal knowledge articles, service tickets, and input from experts.

In both cases, the combination of structured and unstructured data created rich data sets that enabled each organization to test complex hypotheses and uncover patterns that would have been undetectable with fewer or narrower data sources.

2. Creative modeling leads to great models

Telcos can take advantage of a range of analytics models; the trick is to identify and deploy the right combination of tools and analytics approaches that can highlight exceptions and anomalies that will lead to the right solutions.

For the network operations center, to help its client predict problems rather than react to them, the service provider decided to concentrate on the early detection of service degradations. They took an innovative approach to anticipate network disruptions and detect when performance fell below a certain level: project leaders reviewed hundreds of KPIs and selected the eight most critical KPIs to monitor. The analytics team then developed a single composite metric that reflected the variance in each of the eight component KPIs in a weighted manner to serve as the outcome variable.

As the model was being developed, the team used advanced data visualization techniques to engage network subject matter experts and jointly narrow down problematic network elements and geographies by making it easy to detect issue patterns. They also developed a creative set of input variables, for example, patterns in fault alarms and rolling averages of alarm durations, instead of just using the occurrence of specific alarms to significantly improve modeling accuracy. Finally, variables were created out of weather and geospatial data to ensure testing of a broader set of hypotheses.

On the customer operations side, the project leaders posited that predictive analytics had the potential to provide agents with an unprecedented level of detailed information to identify the root cause of issues more quickly, while supporting more effective interactions.

To do this, they used natural language processing (NLP) techniques to have the model scan through hundreds of conversations between engineers and customers and break them down into machine-readable conversational elements. These elements then became the variables that could be sequenced by the algorithm to reconstruct a conversation between the customer and the engineer.

3. Translate model outcomes into actions

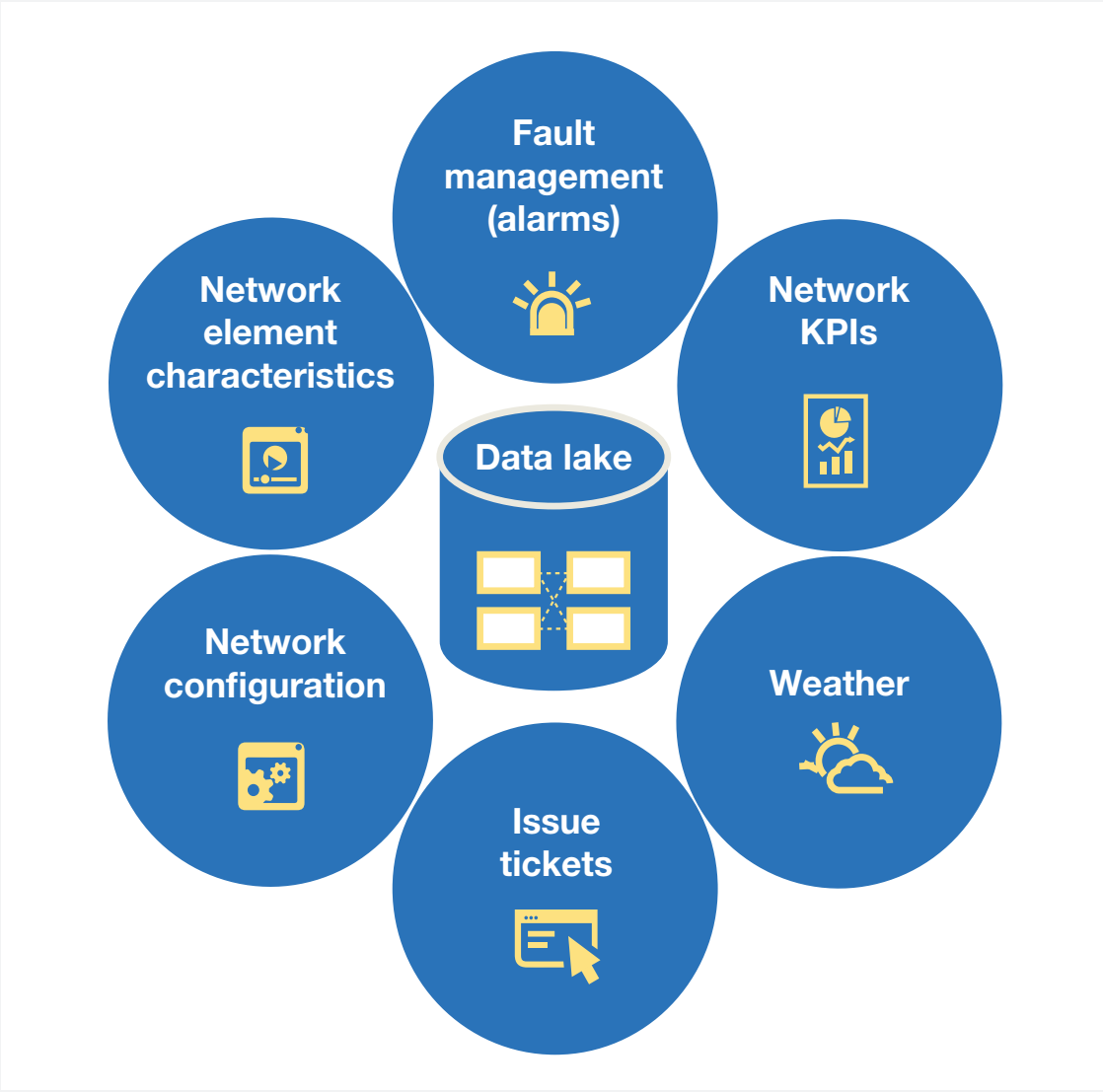
Once the right model has been identified and built, a layer of human judgment should inform what the model is used to accomplish. In the network operations center case, the company first separated the cyclical service degradation events (highly predictable) from rare degradation events (less predictable), which enabled the company to develop a distinct set of actions based on the nature of the event.

For example, if the company knows that traffic surges at the same time every day or week in the same region (cyclical events), it can do a deep review of the network configuration parameters, overlay that with revenue side parameters such as ROI per site, to make decisions on handling those peak usage times better. Further, for rare degradation events, to further enhance the model's cost ratio,[2] the service provider built in operational rules so that not all model predictions systematically result in actions. For example, the provider instituted a "mute window"—a period of time post-action on a prediction, where the model predictions are disregarded to reduce the number of repeat actions on the same network element. This ensured that remote diagnostics and field engineers were focused on the strongest predictions.

2 Ratio of benefit from reacting early to a true positive prediction to the cost of reacting to a false positive.

Exhibit 3

Think beyond the usual data: Predictive maintenance example



The algorithm for the rare degradation events was further trained to ignore data from two hours immediately preceding the event to ensure adequate time for the engineering teams to react. The resulting insights allowed the service provider to take much more effective preemptive action by weeding out low-priority events and only directing field service teams to the highest-priority events that had the greatest effect on service.

In the contact center solution, the advanced analytics solution consisted of two parts—the first is an intelligent "classifier," which tries to accurately predict the problem category from a customer's first few sentences of description. The second uses the reconstructed conversational elements to guide the engineer to the right set of solution points through a "next-best-question" approach. The tool provided agents with three recommended solutions presented as a visualization. The agents could view the solutions and indicate whether the recommended solutions were helpful. If the problem couldn't be defined within several questions, agents would escalate the call to an engineer.

4. Embed insights into the organization

The thought process of identifying the actions to take based on the outcomes the model generates is critical to building out successful advanced analytics programs across organizations. A great model alone is not enough. Embedding that thinking into the way work is done is where the real rewards will materialize. (See Exhibit 4 for the steps this process takes.)

In the network operations and customer operations use cases we describe here, combining business judgment with the power of analytics allowed the company to make intervention decisions that balance the advantage of predicted issues with the cost of taking action on false positives.

In the case of the service provider, its team developed a digital solution and embedded it across the network operations center and effectively transformed the user journeys of the engineers. For example, workflows of fault management teams changed to begin from the big picture of the overall network performance, deep-diving into problematic assets compared to the previously prevalent reactive focus on individual alarms.

Overall, this predictive capability allowed the provider to increase service quality while lowering its field force and network operating center costs by nearly 20 percent.

The contact center also achieved initial results that were impressive: with advanced analytics, the contact center could predict the top three categories of incoming tickets for about 80 percent of all calls, enabling engineers to reduce the total time to troubleshoot a problem by 15 percent. The telco is now looking to scale the solution across product categories to find savings across the enterprise.

Start now, and build on initial successes

These use cases offer a glimpse at the enormous potential of analytics in service operations. The fierce competitive landscape means that telcos must start quickly on their analytics journeys toward finding this value.

The good news is that many telcos already have much of the required IT infrastructure and systems in place, from data collection and storage to the necessary computing power. A full digital transformation takes time. We estimate that companies that have a solid vision for it in place will need 12 to 24 months to achieve transformative results and realize impact at scale.

Despite that, executives don't need to spend months to devise and launch a massive program. Instead, they should seek to identify and prioritize specific use cases that can deliver quick wins. We have seen that good cases to start with take as little as 10 to 12 weeks to turn around, on average. Getting started works best when the initial analytics project is one that meets three criteria: it's a high-value, high-impact use case; it can be done well with the talent that's currently available; and it's a project that has high visibility. Long-term, it can be more valuable

to conduct a highly-visible analytics project that will get wide buy-in than one that achieves great results yet is only known about or understood by a few people.

Telcos that chart such a course will be rewarded not only with a more sustainable cost structure but also better performance and superior service. More importantly, embracing analytics puts telcos in a superior position to build momentum for a transformation that will deliver a sustained competitive advantage. ■

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Exhibit 4

Embedding insights into the organization: Predictive maintenance example