



Top 10 AI Use Cases in Telecom

This e-book outlines prominent high-value AI use cases for the telecom industry and is a perfect read for anyone interested in understanding the fitment of AI in the mobile communication industry. Jump to a relevant section by clicking below.

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Introduction

The telecom industry has come a long way from the electrical and circuit-switched telecommunication systems of the 18th and 19th centuries to the completely IP-driven networks of today. With the advent of 5G, the industry has witnessed it all - the evolving technological landscape, the ups and downs of the economy, and the changing patterns in consumer behavior. With the emergence of artificial intelligence and the accelerated digitization fueled by the COVID-19 pandemic, the industry is now at the precipice of a new revolution - One that is driven by AI-enabled technology. With the growing need for real-time insights to drive personalization, optimize traditional processes and proactively resolve issues, the telecom sector is poised to embrace AI in almost every aspect of its business. The Global AI in Telecommunication market size is projected to reach [USD 14990 million by 2027, from USD 1189 million in 2020](#), at a CAGR of 42.6% during 2021-2027. AI can drive efficiency and deliver value for multiple functions from customer experience, network operations to product innovation. In this eBook, we explore how Artificial Intelligence and Machine Learning technologies are addressing some of the biggest challenges in the telecom industry.

Top 10 AI use cases in telecom

With artificial intelligence, telecom operators can simplify the complexities that arise from running their day-to-day operations and unlock new growth opportunities for business. AI-enabled solutions help remove human error and deliver faster, more accurate results than traditional methods. With complex technical infrastructure, vendor contracts, processes, and the massive amount of data being generated every day, there are multiple [AI/ML use cases for CSPs](#) to explore. These include [Customer Analytics](#), [Network Optimization](#), and [Product Development](#). Telecom companies are leveraging the self-learning, self-healing, and scalable capabilities of AI/ML algorithms to analyze large volumes of streaming data, forecast outcomes, and automate complex decision-making to reduce operational costs and enhance customer experience. Here are the top 10 high-value AI use cases in telecom.

01

Customer Analytics



With artificial intelligence, CSPs can monitor various rapidly changing customer behavior metrics in real-time. By tracking metrics such as usage/recharges, activity on the network, revenue, demographics, product subscriptions, device, Age on Network, location, customer care interactions, point of sale interactions, etc, operators can get a single pane of view of every customer. With AI, operators can gain in-depth insights into factors that affect customer health and liveliness. With greater visibility on customer profitability and satisfaction, CSPs can drive highly targeted campaigns and engagement strategies.

What is the Challenge?

With multiple customer touchpoints such as web, mobile, call center, social media channels, POS, and various systems of record, it is not easy to monitor customer behavior metrics in real-time and get a comprehensive view of all interactions in one place. These real-time insights are critical for driving a consistent and superior brand experience.

How does AI/ML help?

Where traditional [customer analytics](#) methods fail due to limitations of being able to handle only structured data and see only rules-based patterns and trends, AI-enabled solutions can help uncover the unseen and identify hidden patterns. AI solutions can sift through mountains of data and identify co-relations that would not have been evident otherwise or would have taken months for an analyst to decipher. Operators can integrate and aggregate all customer data points in one place to deliver highly targeted and successful marketing campaigns.

02

Customer Segmentation



Telecom has one of the lowest net promoter scores (NPS) for customer loyalty across industries. To engage subscribers and win their loyalty, personalization is critical. Machine learning algorithms help in customer micro-segmentation for driving a more precise and effective personalization strategy. AI can learn quickly from large volumes of customer data to deliver real-time behavioral insights to drive highly effective and customized marketing efforts.

What is the Challenge?

Customer segmentation is crucial for laser-sharp product targeting and marketing efforts. To engage and satisfy customers, CSPs need to create multi-dimensional segmentation based on metrics such as demographics, geographies, revenue, and usage. The customer segmentation must be dynamic and must reflect changes to input data points so that the segmentation stays relevant at any given point in time.

How does AI/ML help?

With AI/ML, CSPs can create multi-dimensional hyper-segmentation of their customers and drive targeted marketing efforts. [AI/ML-driven analytics](#) is highly scalable and can uncover behavioral insights from massive volumes of data. CSPs can create accurate customer segments to drive highly effective promotional campaigns. With AI-enabled insights, operators can reduce the overall cost of marketing campaigns, increase conversion rates, improve product development capabilities and get higher ROI.

03

Customer Churn Prediction



With machine learning models, CSPs can predict and understand the [customer churn propensity index](#). AI delivers explainability of potential causes of the churn enabling operators to take proactive measures to prevent churn. With real-time insights on factors that trigger churn, operators can take corrective actions to retain customers such as offer attractive packages, better pricing, and special discounts tailor-made to the preference of customers.

What is the Challenge?

The churn rate in the US in 2020 for Telecom/ Wireless services stood at [over 20%](#). To retain customers in a highly competitive market, CSPs must track churn and take preemptive steps to maintain service quality and customer satisfaction. It is critical to identify customers who are likely to churn to take proactive steps to prevent it.

How does AI/ML help?

Operators can leverage AI to build highly scalable and agile churn prediction models. By analyzing the existing customer data points and the data from external sources, CSPs can get an accurate view of customers who are likely to churn. AI enables granular-level monitoring of rapidly changing metrics such as Age on Network, Customer Revenue & Usage, Recharge & Product, Subscription data, Services consumed, social media posts, and customer activity, etc. By aggregating and analyzing these metrics, the AI models can accurately predict the potential customers who are likely to churn and pinpoint the factors that lead to it. This allows operators to take the right actions to retain subscribers.

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CLV, NBO & Campaign Analytics



With AI models, operators can also analyze their CLV (Customer Lifetime Value) and drive highly successful marketing campaigns. By narrowing down the target customers and the right products and offers they are likely to accept, CSPs can increase their campaign effectiveness. By targeting the right products and offers to the right customers, operators can achieve a higher ROI through increased conversions and revenues.

What is the Challenge?

There is an imperative need for CSPs to maintain and monetize from existing customers. Real-time behavioral insights are critical to send the right messages to the right customers. These insights help understand:

- Who the most profitable customers are?
- What their preference and likely consumption behavior is?
- What products and services will they most likely avail or upgrade to?

How does AI/ML help?

With AI models built on customer data, CSPs can get relevant insights and predictions for hyper-personalizing campaigns at a scale. Operators can create multiple models to meet specific objectives such as assessing the Customer Lifetime Value (CLV), identifying the product acceptance propensity, and discovering the Next Best Offer to be made. AI-enabled predictive analytics also helps analyze the historical customer data to forecast the potential revenue from customers. This makes it easy to plan, prioritize, and budget campaign activities.

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AI/ML models help in the hyper-segmentation of products based on metrics such as subscriptions, revenue, profitability, product changes, and upgrades. It provides high-value inputs and insights for product optimization and new product development.

What is the Challenge?

With a large subscriber base and massive volume of streaming data, it is not easy for operators to get comprehensive visibility into product-related KPIs such as:

- Which products are most profitable?
- Which products have the highest uptake?
- Which products are the ones most upgraded to?

How does AI/ML help?

With an advanced analytical model built for enhancing product performance, CSPs can accurately gauge the revenue, cost, and profitability involved to make better, faster product decisions. CSPs can aggregate and analyze multiple variables such as products and services subscriptions, usage/recharges, revenue, and cost of product design to improve the speed and efficiency of product development. With [advanced analytics](#), operators can analyze historical purchase data, and customer behavior data to get a clear understanding of customer requirements and translate those ideas to improve existing products or develop new ones.

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Network Fault Prediction



AI-enabled monitoring mechanisms can help CSPs to predict and reduce downtimes due to network faults and help deliver a better quality of experience. An optimized alarm monitoring process can drive efficiency, improve cost savings and lead to [higher Network Service availability](#).

What is the Challenge?

Downtime due to any reason including network fault can cause customer dissatisfaction. To deliver superior service, CSPs need to predict faults across Access, IP, Core, and Transport N/W. NOC teams need real-time data insights to take preventive maintenance actions before the customers are impacted.

How does AI/ML help?

An ML model built on-network data set gives operators a propensity score for potential failures or issues for selected network elements or components. This enables automation and preventive actions to avoid costly downtimes. CSPs can build effective fault prediction models using data such as alarms data, node-wise faults details, trouble tickets data, and issue resolution data. AI also enables faster root cause analysis, speedy issue resolution, and accurate forecasting of network disruptions. By enabling automation and lowering service disruptions or downtimes, AI drives a better customer experience.

07

Field Force / Truck Roll Optimization



Operators can leverage AI/ML models for better analysis and diagnosis to minimize unnecessary field assignments. By analyzing past data from previous incidents and field services, ML models can accurately forecast future field assignments and identify opportunities to reduce net dispatches. By resolving issues quickly and reducing the administrative hassles of coordinating visit logistics, this contributes to overall cost savings and higher customer satisfaction.

What is the Challenge?

CSP's spend a substantial amount of operational costs for Field Force or Truck Roll during site visits. As per OSP magazine, the average cost of the Truck Roll can range from [150\\$ to 600\\$](#) depending on location. Operators need real-time and accurate data visibility into technical issues and systems to establish more effective processes and identify opportunities to reduce Truck Rolls.

How does AI/ML help?

By building effective AI/ML predictive models to analyze existing data sets such as service tickets lifecycle data including resolution remarks and dispatch logs, operators can identify issues that can be resolved remotely. Predictive models also provide insights on the likelihood of an issue to be resolved remotely and accurately predict the likelihood of a dispatch that could result in a repeat dispatch. These insights enable operators to take actions to reduce the number of physical dispatches and bring down the overall service expenses.



Dynamic Capacity Management



AI/ML solutions can help operators collect, aggregate, and analyze multiple rapidly changing metrics in real-time to accurately forecast demand, improve [network capacity planning](#) and reduce operational costs. Operators can autonomously monitor rapidly changing metrics such as Network Traffic data, QoS data, and Call drop data to predict future performance, make profitable network investment decisions, and enhance the [network capacity and performance](#).

What is the Challenge?

With the launch of [5G services](#), the increasing complexity of networks, and higher consumer expectations for speed, telecom operators are under immense pressure to deliver a high-quality network and customer experience. Any drop in quality of service when demand for network resources surges either cyclically or for Adhoc reasons can lead to a sub-par customer experience. To proactively address network capacity issues, CSPs need to quickly analyze large volumes of data and explore various scenarios to identify potential problem areas before they impact subscribers.

How does AI/ML help?

AI/ ML-based solutions can help operators dynamically provision network resources to respond effectively to demand fluctuations. These methods are faster and less prone to errors. CSPs can analyze the vast volumes of traffic data and predict capacity needs and automate complex processes.

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Product Optimization



Operators can leverage [AI-based Next Best Offer \(N.B.O\) models](#) to identify products that a customer of a certain segment is most likely to show a positive response to. CSP can improve product performance with these in-depth AI-driven insights on what's most likely to work.

What is the Challenge?

Telecom product optimization involves a considerable investment of cost and effort. To generate the most value from such initiatives and make informed decisions, the product team needs accurate insights on the opportunities and challenges. These insights help answer critical questions such as the right product to offer customers while ensuring a high rate of acceptance.

How does AI/ML help?

With an ML-enabled product optimization model, operators can analyze vast data points such as products and services subscriptions, usage/recharges, revenue, cost of product design, device & technology, age on the network, location, and demographics to accurately identify avenues for improving a product or service. AI models help understand the complex correlation between various parameters. CSPs can quickly explore various control variables to identify the most profitable avenues and take informed decisions. AI thus helps in accelerating product development and improving margins.

10

Credit Risk Assessment & Defaulter Prediction



Telcos can leverage AI/ML models to reduce risk exposure, predict defaulters, and ensure minimal impact on genuine customers who are serviced. AI/ML-based models offer a higher percentage of accuracy compared to rules-based risk assessment models.

What is the Challenge?

To reduce risk exposure, CSPs must identify prospects who are likely to default on payments or contractual obligations. The service to high-value customers must not be affected during the process. It is not easy to analyze a large volume of financial transactions with multiple vendors, [complex contract terms](#), spread across various geographies.

How does AI/ML help?

CSPs can use AI/ML to build a credit risk prediction model (Classification model) using customer and third-party information such as purchase history, credit bureau data, credit card and/or bank statements, current debt details, other collaterals, and holdings details. By infusing contextual learning, ML models bring the distinct advantage of reducing false negatives and positives in comparison to traditional rules-based algorithms.

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Roadblocks to AI Adoption

While the telecom industry generates a large volume of data, the sector is yet to capitalize on this data fully. As per the ["Artificial Intelligence, Machine Learning and the Future of Telecoms" survey report](#) the lack of relevant skills was cited as one of the biggest obstacles to implementing AI by over 40% of operators. The second common roadblock cited by CSPs is the high cost of AI/ML implementation. With the increase in remote work, there is a greater demand today for self-service AI tools with augmented intelligence capabilities. [Self-serve augmented analytics platforms](#) such as Subex's [HyperSense](#) are empowering business users without coding skills to easily aggregate data from disparate sources, turn it into actionable insights by building, interpreting, and tuning AI models. As the telecom sector continues to grow and expand its services, there will be a greater need for artificial intelligence and automation platforms.

Conclusion

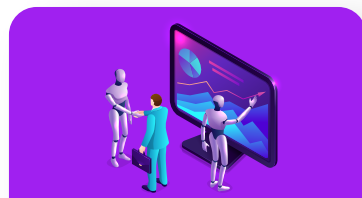
The telecom sector is not new to change. The sector has been constantly innovating and adapting to new market conditions, changing the way it operates and does business. With cutting-edge AI-enabled solutions and a proactive customer-centric approach, the telecom industry is poised to chart a new growth trajectory in the digital era. AI-driven technologies will play a vital role in transforming telecom as we know it.

Further Reading



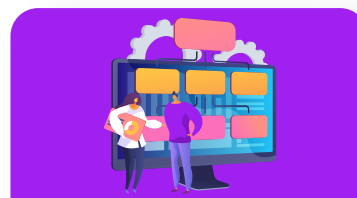
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