

## TELECOM AI TRANSFORMATION: COMPREHENSIVE STRATEGY AND USE CASES

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#### **CHAPTER 1:**

## THE LAY OF THE LAND

It's not an underestimation to say that a world without telecommunications is like a world without electricity: screeched to a halt. unproductive and profoundly disconnected in myriad ways. The sector is the lifeblood of the over \$105 trillion global economy, powering nearly every one of the over 358 million businesses around the world. Network consumption is only increasing primarily driven by a continued growth in video traffic leaving many telecom operators to ask how will they keep up — and elevate above their competitors in a highly rivalrous environment. Not to mention, how will they manage the high cost of doing business and advance a muchneeded increase in profit margins?

## AI EXCITEMENT, CONFUSION AND COMPLEXITY

Al has arrived at a fortuitous time for the telecommunications industry. Given its incredible ability to drive immense business and cost efficiencies, network optimization and revenue streams, it has become a top priority among telecom decision-makers. But despite the fervent enthusiasm of many service providers, there is confusion and a lack of knowledge about what it takes to effectively, efficiently and securely implement enterprise Al.

Enterprise AI implementation requires critical prerequisites and strategies such as ensuring access to high-quality data by adopting fully managed data platforms that break down data silos and carry the necessary compliance, security and governance capabilities. Also adding to the challenging conundrum faced by operators is the tremendous complexity of existing legacy systems and the lack of awareness of how to best collect, cleanse and utilize valuable telecom data to power growth initiatives.

Al is integral to providing cost reductions and efficiencies for service providers, freeing them up to focus on meaningful revenue generation."

**-PHIL KIPPEN**Global Industry GTM Lead,
Telecommunications, Snowflake

Telecoms are also very aware that AI comes with data security risks; risks that can be costly on many fronts — from hefty regulatory fines to painful reputational damage. The industry is one of the most highly regulated (GDPR, CCPA, Digital Services Act, etc.), and there are more regulations on the way for operators to navigate as they modernize toward the AI-powered telecom. For example, in the U.S. alone, lawmakers introduced more than 100 bills regarding AI in just the fall of 2024 while other countries have already enacted AI regulations — for instance, the EU's Artificial Intelligence Act and Brazil's AI Bill.

Additionally, the breakneck pace at which AI continues to advance will not only benefit telecoms but also place high demands on the network as the demands on and need for more **data centers will increase substantially**. Additionally, AI innovation will pave the way for incredible advances such as quantum computing, advanced AI and 7G powered by **self-directed AI** in the not-so-distant future — all impacting how the network is configured, operated and managed.

This ebook explores the decisive role AI has to play in transforming the telecommunications industry, including key use cases such as optimizing the network and customer experience. It also explores how a robust data strategy is integral to AI success and why Snowflake is a trusted partner on telecom's AI journey, providing a reliable, secure and easy-to-use platform and AI solutions.

#### **CHAPTER 2:**

## AI IS CORE TO TELECOM TRANSFORMATION

Imagine telecoms transforming from a utility service to an intelligent, adaptive ecosystem — and AI is the driving force making it happen. Today's leading service providers are using AI to completely reshape how they connect with customers, predict their needs, deliver services, and, very importantly, reduce costs and power efficiencies across the business.

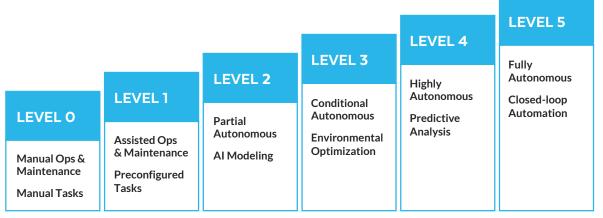
Think of AI as the catalyst that helps telecoms understand their customers better than ever before: predicting when a customer might need a plan upgrade, personalizing marketing messages that actually feel relevant, and creating support experiences so smooth that customers barely notice the complex technology working behind the scenes. By leveraging ML and predictive analytics, these companies are turning mountains of data into laser-focused insights that can optimize everything from network performance to customer satisfaction.

Al to completely reshape how they connect with customers, predict their needs, deliver services, and, very importantly, reduce costs and power efficiencies throughout the business."

But here's where it gets really exciting: the future of telecom isn't just about better service — it's about creating entirely new digital experiences and new revenue streams such as data monetization. As we look toward emerging technologies like 6G and the whispers of an AI-powered 7G, telecom providers are positioning themselves as more than just network infrastructure companies. They're becoming digital innovators, using AI to build adaptive, intelligent platforms that can predict market trends, dynamically adjust to customer behaviors, and create services we're just starting to imagine today. It's like watching an entire industry evolve in real-time, with artificial intelligence acting as the blueprint for a more connected, intuitive and responsive digital world. The most forward-thinking service operators aren't just implementing AI they're reimagining what's possible when technology becomes truly intelligent.



#### TELECOMMUNICATIONS' NETWORK AI INNOVATION JOURNEY



THE EVOLUTION OF TELECOMS' CAPABILITIES WITH AI-POWERED INNOVATION

#### Level 1: Manual Operations and Maintenance:

In this foundational stage, network management relies heavily on human intervention. Technical teams must monitor and execute every dynamic task, creating a labor-intensive environment where system adjustments and problem-solving depend entirely on manual human expertise and real-time decision-making.

#### Level 2: Assisted Operations and Maintenance:

Introducing initial process optimization, this stage allows the system to execute specific, repetitive subtasks based on preconfigured parameters. By automating standard, predictable processes, organizations can significantly increase operational efficiency, reducing human workload, and minimizing the potential for manual error in routine network management activities.

Level 3: Partial Autonomous Network: At this level, the system begins to demonstrate more sophisticated capabilities, enabling closed-loop operations for specific network units through advanced AI modeling. Under controlled external environments, the network can now perform limited self-management tasks, making basic independent decisions within predefined constraints and learning from its operational patterns.

#### Level 4: Conditional Autonomous Network:

Here, the system evolves to sense and respond to realtime environmental changes across specific network domains. By developing the ability to self-optimize and dynamically adjust to external conditions, the network can now enable intent-based, closed-loop management, anticipating and resolving potential issues before they impact performance.

Level 5: Highly Autonomous Network: Operating in increasingly complex, cross-domain environments, the system now leverages predictive analysis to make sophisticated decisions. This stage emphasizes proactive, customer experience-driven network management, with the ability to conduct active closed-loop management that considers multiple service parameters and potential future scenarios.

Level 6: Fully Autonomous Network: The pinnacle of network autonomy, this stage represents comprehensive closed-loop automation across multiple services and domains. The system can now independently manage its entire lifecycle, seamlessly integrating and optimizing operations not just within its own infrastructure, but also extending to partner domains, creating a truly intelligent, self-sustaining network ecosystem.



Now is a great time for telecoms to evolve beyond the 'dump pipe' motion to drive new revenue. Although important, expanding bandwidth only gets you so far and hinders business growth. Telecom IT organizations must adopt modern data architectures to transition to a decentralized, federated architecture that powers Al and enables greater monetization and network and business efficiencies."

#### -JON PENROSE

Industry Principal, Telecommunications, Snowflake

### TELECOM'S AI SUCCESS HINGES ON A ROBUST DATA STRATEGY

The wealth of telecom's diverse and valuable data today is scattered across the entire enterprise — a fragmented resource ready to be unlocked. Imagine if this data could be harnessed as a powerful, unified strategic asset — with intelligent data management the driving force making it happen. For today's leading telecoms, data isn't just information — it's the lifeblood of Al innovation and profitability. Think of a comprehensive data strategy as a supercharged digital conductor that helps organizations orchestrate their most valuable resource: turning raw information into a clean, secure and adaptable strategic powerhouse that ignites growth. By leveraging modern data platforms, companies are breaking down traditional silos across operations support system (OSS), business support system (BSS) data and beyond; surfacing laser-focused insights that can transform everything from AI model performance to organizational decision-making.

But the future of enterprise Al isn't just about collecting and cleansing data — it's about creating an entirely new approach to information management. As we look toward increasingly complex technological ecosystems, forward-thinking organizations are positioning themselves as more than just data collectors. They're becoming digital architects, using cloud-based platforms to build adaptive, intelligent data environments that seamlessly integrate information from internal teams, external partners and third-party sources. It's like watching an entire approach to data evolve in real time (literally and figuratively), with intelligent management acting as the blueprint for a more connected, secure and dynamically responsive digital infrastructure. The most innovative enterprises aren't just implementing data strategies — they're reimagining what's possible when information becomes a truly strategic, governable asset.

#### 3 BENEFITS OF MODERN DATA PLATFORMS

- 1. Break down silos: Keeping data siloed makes it harder to share and creates more complexity, which impedes collaboration and slows the pace of innovation. Critical for telecom operators, their business systems data must be unified with their operational network data, empowering telecoms to utilize their strategic networking assets, as an intelligence driver to optimize customer experience and surface growth opportunities. Collecting data in one place is a necessary first step toward getting it ready for Al. A modern data platform can gather all the data within a single location and democratize access across the organization without compromising its integrity.
- 2. Build a flexible, governed and scalable data infrastructure: IT environments are rarely homogeneous, and this is especially true for telecom organizations. Hybrid on-premises and multi-cloud architectures are the norm. Regardless of the diversity of the on-prem and cloud systems in the mix, companies across the industry need the ability to coalesce huge volumes of first- and third-party data, while also enforcing strict data governance and security policies. A modern data platform is critical for securely sharing and analyzing data across the business without compromising any sensitive or proprietary information, or running afoul of regulations.
- 3. Leverage built in AI and ML capabilities: Modern cloud-native platforms like Snowflake also have built-in AI and ML functionality, allowing telecoms to easily implement AI/ML solutions across the business without moving or copying data to another solution or platform. This allows enterprises to bring AI to the data but also retains valuable business data in one place, where it can be secured, governed and compliant. Leading enterprises today are adopting modern data platforms to securely and efficiently implement a wide range of AI/ML solutions to deliver myriad business benefits.

### ARE YOU READY FOR AI? KEY OUESTIONS YOU NEED TO ASK

With time-to-value and cost efficiency being top of mind, here are a few important questions telecoms should ask before starting on their Al journey:

- How confident are we in the quality and governance of our data foundation?
- Do we have a single, unified view of our data across the business?
- How does this Al solution align with our overall data and business strategy and goals?
- Have we clearly defined our KPIs? How often will we measure them to ensure ROI?
- What is the total cost of ownership (TCO) for the solution or project, including additional costs like maintenance, training and future upgrades?
- Can the solution evolve with our business needs and as technology and the industry continue to mature?

## Top 5 things to look for an Al Data Cloud platform:

- 1. Easy to use, fully managed and cost efficient
- 2. Reduces tech and business and operational complexity
- **3.** Enables data quality and data collaboration without movement or copying data
- 4. Native AI/ML and app functionality
- 5. Offers compliance, security and governance controls, and includes a **Trust Center**

#### **CHAPTER 3:**

## SNOWFLAKE: YOUR TRUSTED PARTNER ON YOUR AI JOURNEY

## SNOWFLAKE'S AI PRINCIPLES: EASY. EFFICIENT. TRUSTED.

At Snowflake, our customer-first philosophy permeates every aspect of how we design and deploy our technology — where complex systems are transformed into intuitive, powerful tools adapted to how people and businesses actually work. As tech pioneers, Snowflake understands that true innovation isn't just about features — it's about creating experiences and tech ecosystems that are efficient, secure and provide an optimal user experience. Think of this approach as a careful balance of simplicity without compromising the sophisticated nature of modern technology; it's about delivering technology crafted to be as straightforward as your favorite everyday app, while packing the flexibility to meet your tailored needs, such as enterprise-grade security and governance capabilities that today's organizations need.

By reimagining how users interact with the AI Data Cloud, Snowflake is breaking down traditional barriers between leading-edge capabilities and accessible experiences, turning complex data and AI solutions into streamlined workflows that just make sense. The result is that Snowflake's platform features don't just work well — they work the way your business needs them to, and they include security and governance capabilities you can count on and trust.

#### EASY.

- Seamlessly access advanced LLMs tailored for telecom operators to improve efficiency and customer experience.
- 2. Reduce data movement by deploying LLMs directly with your telecom data estate, reducing latency and enhancing performance.
- 3. Use no-code or code tools to innovate across customer service, network management and marketing.

#### EFFICIENT.

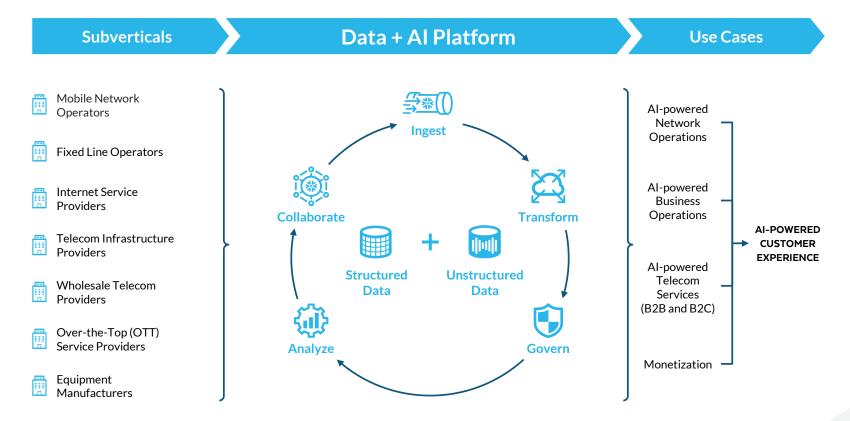
- 1. Easily train models with advanced search for customer insights and network optimization.
- 2. Unify your data and AI platform to avoid new pipelines.
- 3. Optimize compute for cost-effective real-time insights on network and customer interactions.

#### TRUSTED.

- Effortlessly enable unified security and governance for all telecom data and Al workflows.
- 2. Maintain data quality and transparency for customer insights and network planning.
- 3. Built-in guardrails help prevent bias and harmful content, promoting ethical Al use.



#### **OVERVIEW OF AI DATA CLOUD FOR TELECOM AND CORTEX CAPABILITIES**



#### AI DATA CLOUD FOR TELECOM

Service providers are searching for new innovative yet cost-effective ways to edge out their competitors and grow their revenue streams in a complex ecosystem that's rapidly evolving and uncertain, from the global economy to new government regulations. Today, industry leaders recognize the need for data-driven

decision-making powered by a robust data and AI strategy. The AI Data Cloud for Telecom is at the center of their business strategy, empowering them to unlock value from their sensitive data and collaborate across the business and with partners in a secure, compliant and scalable way.

#### FORRESTER'S NEW ANALYSIS OF SNOWFLAKE

**354%** 

<6 MONTHS

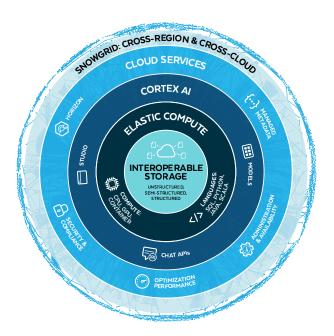
\$24.9M

Proven ROI

Payback

Benefits Present Value

Learn more about Snowflake's proven results in Forrester's new **Total Economic Impact of the Snowflake Al Data Cloud report** 



#### IT JUST WORKS.

The AI Data Cloud is a single, fully managed platform that provides a collaborative application framework, ML and gen AI tools and interoperability telecoms need to move with agility and scalability while delivering optimal experiences for customers and optimal results for the business. Snowflake's powerful core **platform capabilities** provide telecom operators with a wide range of benefits.

- An easy-to-use, fully managed global platform
- Unified, built-in security, privacy and governance capabilities
- Easy-to-use and secure AI/gen AI
- No hidden costs: Transparent, consumptionbased pricing
- Powerful data collaboration to discover, shareb and monetize data and apps
- Business-critical processes and tasks

### POWERFUL GOVERNANCE: SNOWFLAKE HORIZON

Snowflake Horizon offers telecom operators a comprehensive governance framework that enables data security, compliance and trust across their organization. With capabilities like sensitive data classification, row- and column-level security, and robust access controls, operators can manage their data assets while adhering to stringent industry regulations. This unified approach empowers telecom leaders to unlock the value of their data, drive innovation, and confidently collaborate across teams and partners in a rapidly evolving landscape. Snowflake Horizon comes equipped with a unified set of capabilities, including:



**Compliance:** Protect and audit your data with business continuity, data quality monitoring and lineage.



**Security:** Secure your environment with continuous risk monitoring and protections, role-based access control (RBAC) and granular authorization policies.



**Privacy:** Unlock the value of your sensitive data with advanced privacy policies and data clean rooms.



Access: Classify, share, discover and take immediate action on data, apps and more across regions and clouds.



**Interoperability:** Integrate with other compatible catalogs and engines, and with data catalog and data governance partners.

#### **SNOWFLAKE CORTEX AI**

Built for the enterprise, **Cortex AI** enables a secure and seamless development of AI, generative AI and LLM applications, empowering telecom operators to engage with their data to drive innovation and deliver critical business solutions faster. By enabling real-time, data-driven insights, Cortex supports key telecom use cases such as optimizing network operations, enhancing customer experience, streamlining business processes, and monetizing telecom services.

Cortex powers business insights for key use cases, including:

- Al-augmented business intelligence: Deliver advanced insights on customer behavior, network performance and operational efficiency to inform strategic decisions and drive revenue growth.
- **Text processing and summarization:** Automate the processing of customer feedback, call center transcripts and regulatory documents to streamline operations and improve customer service.
- **Document chatbots:** Enable self-service customer support by creating Al-driven chatbots that provide real-time answers to billing, network and device troubleshooting queries.

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#### **CORTEX AI CAPABILITIES**

#### Easy.

Fully managed, user-friendly and tightly integrated data and Al infrastructure. Accessible via no-code Studio, SQL, Python and REST APIs interfaces to reduce development costs and complexity.

#### Efficient.

Bring AI to your data. Streamline development-todeployment lifecycle with cutting-edge AI models, frameworks and apps running next to the data to help achieve better quality and lower operational cost.

#### Trusted.

Protect the value of your IP at scale with industry-leading security and unified governance capabilities for data and models trusted by thousands of organizations.

#### **INDUSTRY-LEADING MODELS**

ANTHROP\C









and more

#### **CORTEX AI OVERVIEW**



#### **Deliver Al Solutions in Minutes**

**Build** and deploy Al and LLM apps in as little as minutes. Deliver quick apps in minutes or go fully custom in days.



#### **Robust Security and Governance Features**

Robust foundation to **safeguard your data**, **models and IP** from unintended use with role-based access definitions on data, models and apps in Snowflake.



#### **Analytics in Seconds**

Use Al and LLMs in everyday analytics within seconds. No Al expertise or integrations needed.

#### **CORTEX AI FEATURES**

Built for fast enterprise AI, Cortex features a suite of capabilities for across the enterprise, from business users and customer service agents to CTOs and COOs.

#### Al and ML Studio

All levels of users can securely use Al with a built-in no-code development interface.

#### **Cortex Fine-Tuning**

Easily customize LLMs securely to increase the accuracy and performance of models for use-casespecific tasks.

#### Cortex Search

Quickly and securely find information in documents by asking questions in natural language.

#### **Cortex Analyst**

Empower business users to ask questions of data, allowing them to find insights and answers faster.

#### **BUILT ON SNOWFLAKE CORTEX AI**

Snowflake knows just how business-critical it is to optimize time-to-value. So Snowflake Cortex Al offers fully managed AI experiences inside **Snowsight**, the Snowflake web interface, including:



#### SNOWFLAKE COPILOT

#### **Enterprises' AI-Powered Assistant:**

Improve productivity with a breakthrough Al-powered assistant that refines queries or questions of the data through conversation.



#### **DOCUMENT AI**

#### **Effortless Data Extraction:**

Easily obtain data points from multiple PDFs and other documents using Arctic-TILT, a multimodal LLM developed by Snowflake.



#### **UNIVERSAL SEARCH**

#### Powerful Search:

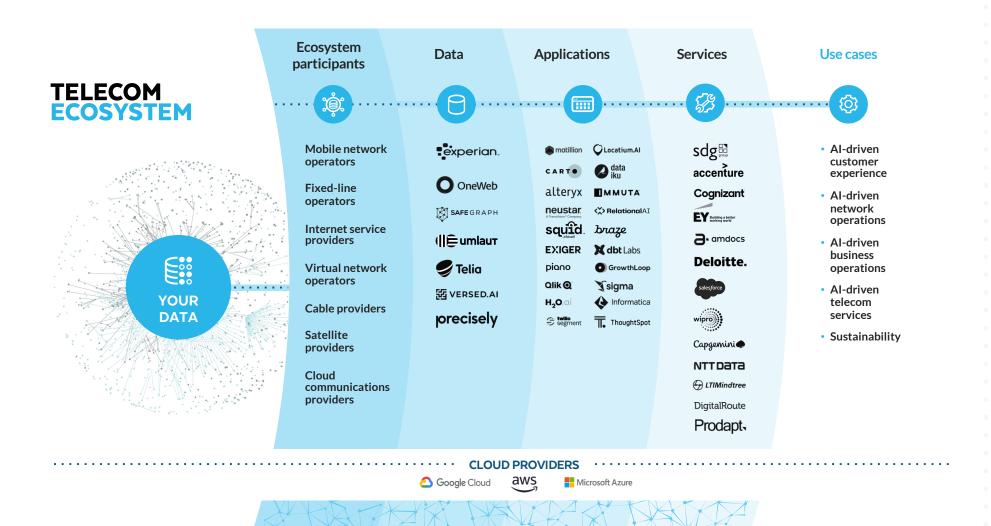
In just one search, find data and apps fast across both your Snowflake account and Snowflake Marketplace.

#### **LEARN HOW CUSTOMERS ARE USING CORTEX NOW**



Download the Secrets of Gen Al Success

#### **SNOWFLAKE'S TELECOM ECOSYSTEM**



#### **CHAPTER 4:**

## ESSENTIAL TELECOM ENTERPRISE AI USE CASES

## AI-POWERED NETWORK OPTIMIZATION

Imagine transforming your network operations into a proactive, predictive force — where AI doesn't just prevent disruptions but also turns network data into a strategic advantage. With advanced AI and ML capabilities, telecom operators can anticipate issues before they affect customers, optimize resource allocation, and improve operational workflows. By combining network performance data with business insights, operators can enhance customer satisfaction, better allocate capital investments, and drive smarter, more efficient growth while maintaining the critical benefits of predictive maintenance.

#### **USE CASE: CALL TRANSCRIPT ANALYSIS**



#### Accelerate network resolution time:

Transform manual troubleshooting into Al-driven, automated solutions. By leveraging Al for transcript analysis, telecoms can identify and resolve network issues **65% faster than traditional methods**. This Al-enabled approach turns customer calls into actionable network insights, preventing recurring problems before they impact more customers.



#### Improve customer experience:

Turn customer service interactions into actionable network insights. With Al-analyzed call transcripts, service providers can reduce network issue resolution time by **up to 65%** while improving first-call resolution rates. Telecoms can then identify systemic network issues in near real-time, turning customer feedback into proactive network improvements.



#### Enable real-time issue detection:

Convert massive call volumes into real-time network intelligence through AI analysis. By automating transcript processing with AI, telecoms can instantly spot emerging issues and patterns that human analysts might miss. The result is telecoms can help prevent service disruptions by catching problems early in its lifecycle.



#### Enhance network performance:

Transform scattered customer feedback into strategic network improvements using Al analytics. With Al-processed call transcripts correlated with network metrics, telecoms can pinpoint performance issues with precision and deploy targeted fixes, and predict and prevent network problems before they affect customer satisfaction.

#### CALL TRANSCRIPT ANALYSIS FOR NETWORK OPTIMIZATION

How it works

Data consolidation and **Correlation with network** Natural language Agent feedback breaking down silos processing and analysis data and third-party data **DATA** Stream call transcripts and Bring pre-trained Match transcript Leverage **Streamlit** to **OSS** data associated metadata in Multimodal LLM models insights with network develop a UI /app that near real time into (i.e. Open AI Whisper) performance logs to provides actionable Network performance Snowflake using Snowpipe within Snowpark identify systemic issues feedback for agent metrics **Container Services** to improvement based Consolidate data with Use geospatial data to Fault management logs extract key themes, on transcript analysis locate problem areas network logs and sentiment, and intent Geospatial network data customer feedback affecting customers Use targeted coaching from audio transcripts programs driven by Al Service quality metrics Unify relevant third-party Use Cortex AI to detect insights and talk to your demographic data with IoT/Device performance data capabilities with recurring customer **Snowflake Marketplace** metrics issues and highlight **Cortex Analyst** to identify high trending topics value customers BSS data Customer interaction data Billing and usage data Y **KEY FEATURES** Third-party data **Snowflake Native Connectors** Cortex Al **Geospatial Analytics** Streamlit Service requests Sales and marketing data \*\*snowflake\*
MARKETPLACE <u>₩</u>(() **Snowpark Container Services Snowpipe Streaming** Snowflake Marketplace Cortex Analyst

#### **USE CASE: NETWORK DEPLOYMENT AND PLANNING (SMART CAPEX)**



#### Increase CapEx ROI:

With the telecom industry spending **\$300 billion annually** on network CapEx, Al-driven planning can **increase ROI by up to 25%**. Smart deployment identifies high-impact areas for investment, prioritizes resources based on customer demand, and predicts return on investment before breaking ground.



#### Predict network investment ROI:

Implement ML models that predict ROI for network investments by analyzing consolidated OSS and BSS data, including customer usage patterns, network metrics and geospatial information. Leverage geospatial analytics to simulate different deployment scenarios and model variables such as population growth and traffic patterns to assess investment outcomes.



#### Proactive maintenance:

Convert reactive maintenance into predictive network care using AI insights. With AI-analyzed network performance data, telecoms can prioritize critical assets and reduce downtime before issues impact service, preventing service disruptions through early intervention.



#### Faster planning cycles:

Transform lengthy manual planning cycles into rapid decision-making processes. By automating scenario simulations with AI, service operators can evaluate multiple deployment options simultaneously. This approach accelerates network planning while improving accuracy and reducing resource requirements.



#### **NETWORK DEPLOYMENT AND PLANNING (SMART CAPEX)**

How it works

Market insights

#### Collaboration **Machine learning** Simulate scenarios for **Data consolidation Actionable insights** and intelligence optimal investments and execution DATA Consolidate OSS and Train ML models Use geospatial Use Cortex for Leverage Streamlit to BSS data, including to predict ROI for analytics to simulate on-demand exploration develop a UI /app that **OSS** data customer usage, network investments the impact of of recommendations allows for monitoring of Network performance network metrics and different network with natural language **ROI** and investments and identify geospatial data deployment priorities metrics deployment scenarios Use Snowflake Data Maintain governance Enrich datasets with Deploy and manage Model variables such **Sharing** to collaborate and compliance Fault management logs across all teams third-party insights models in **Snowpark** as population growth, with Horizon Coverage maps using Snowflake to enable analysis traffic patterns (finance, network, Marketplace and churn rates to data, others) with Geospatial network data assess outcomes of tailored insights for investments different teams Service quality metrics Enable stakeholders IoT/Device performance to query and compare metrics scenarios using **Cortex Analyst BSS** data Market demands insights Customer profiles and **FEATURES Geospatial Analytics** segmentations Snowflake Native Snowflake ML Cortex AI Streamlit Connectors Billing and usage data **t Cortex Analyst** Third-party data \*\*snowflake\* MARKETPLACE KEY Loyalty and rewards **Snowpark Container** Snowflake programs **Data Sharing** Horizon Services Marketplace Snowpark

## AI-POWERED BUSINESS OPERATIONS

Modernize your business operations into an intelligent ecosystem that not only optimizes revenue but also creates hyperpersonalized customer experiences and detects fraud. By leveraging Al-driven insights, telecommunications providers can revolutionize how they protect revenue streams and engage with customers, turning data into actionable intelligence that drives growth and customer loyalty.

#### **USE CASE: REVENUE ASSURANCE**



#### Reduce revenue loss:

With global telecom revenue leakage estimated at \$50 billion annually, AI-powered solutions can significantly reduce revenue loss through advanced anomaly detection and automation. The solution can help ensure billing accuracy, protect customer trust, and enable compliance with regulatory requirements while reducing the cost of fraud detection systems.



#### Enhance compliance processes:

Transform regulatory compliance processes into automated workflows through AI monitoring. By continuously analyzing financial processes, telecoms can help ensure adherence to standards while reducing manual oversight. Compliance is maintained while reducing the resource burden of regulatory requirements.



#### Enable fraud prevention:

Deploy ML models within secure container services to identify discrepancies and fraud in real time. The solution consolidates data from OSS/BSS systems and third-party fraud detection sources, enabling automated alerts and root cause analysis through cross-referenced customer profiles, network logs and geospatial data.



#### Power cost savings:

Turn operational expenses into efficiency gains using AI automation. By streamlining reconciliation processes, service providers can reduce fraud detection system costs substantially. This AI-powered approach offers both immediate cost savings and long-term operational benefits.



#### **REVENUE ASSURANCE**

How it works

	Break down data silos	Use ML to detect anomalies	Analyze the root causes	Create automated alerts	Continuously improve and obtain regulatory compliance support
Revenue data Transaction logs Service activation data Historical fraud and risk data Network performance metrics Customer profiles and segmentations	Use Snowpipe Streaming for real-time ingestion of transaction logs, billing records and operational data into Snowflake's unified platform Consolidate data in Snowflake platform from OSS/BSS systems and third-party fraud detection sources	to identify discrepancies like billing gaps or fraud in real time  Use Cortex AI to automatically detect and surface systemic errors and generate visual insights	network logs and geospatial data  • Leverage Geospatial Analytics for regional insights and Data Sharing for collaborative investigations	Cortex AI with generated recommendations for issue resolution	Leverage Streamlit     to monitor revenue     assurance and     fraud risk      Maintain governance     and compliance     with Horizon      Refine ML models      Enrich models with     external insights     via Snowflake     Marketplace
Product and service catalog Third-party data	Snowflake Native	Snowflake ML			Streamlit
aamanlian aa data	Snowpipe Streaming	Snowpark Container Services	Geospatial Analytics	Cortex AI	Horizon (Rbac)  Snowflake ML
Revenue adjustment data (refunds, adjustments) Geospatial metrics	**snowflaker* MARKETPLACE Snowflake Marketplace	Cortex Al	Data Sharing		Snowflake Marketplace

#### **MARKETING AI DECISIONING**



#### Increase campaign ROI:

Transform marketing investments into measurable returns through AI optimization. By leveraging AI for targeting and timing decisions, service providers can **improve marketing ROI by up to 30%** and capture the **80% of customers who prefer personalized offers**.



#### Improve customer engagement:

Convert generic outreach into hyper-personalized experiences. With AI decisioning in marketing, telecoms can significantly increase customer engagement and **boost revenue by 5-15%** through delivering personalized interactions that drive customer loyalty.



#### Drive cost efficiencies:

Turn resource-intensive campaign management into streamlined operations. With Al-driven campaign planning and execution automation, telecoms can significantly reduce manual effort and operational costs, allowing them to **reduce customer acquisition costs by up to 50%** and optimize resource allocation while improving campaign effectiveness.



#### Better marketing intelligence:

Take fragmented data and turn it into actionable insights. With Al-unified marketing data analysis, service providers can make data-driven decisions across all initiatives, leveraging their unique data assets for strategic advantage.



#### MARKETING AI DECISIONING

How it works

		Break down data silos and build your Customer 360	Apply AI/ML to existing dataset	Execute automated campaigns	Execute improvements and dynamically adjust campaigns based on metrics	
Customer profiles Network usage data Sales data Financial data Service subscription data Billing data Social media insights Engagement history	DETAILS	<ul> <li>Ingest customer profiles, billing records and network usage with Snowpipe for real-time data streaming</li> <li>Pull in Clickstream data or ads data with Snowflake native connectors</li> <li>Execute audience overlap by sharing data while maintaining privacy with Snowflake Data Clean Rooms</li> </ul>	opportunities  Use Cortex AI to recommend channels, audiences and messaging	activation out of your Snowflake instance Deliver real-time,	Track engagement and ROI metrics in real time with dashboards, a partner application or a Streamlit App  Optimize campaigns by adjusting the targeting and messaging dynamically with near real-time analytics	
Campaign performance metrics Channel metrics	ES	Snowflake Native Connectors	Snowflake ML			
Geospatial data	FEATURES	<b>₹</b> *(1)	Snowpipe Streaming  Snowpark Container Services	Snowflake Native Apps	Streamlit	
Device data				.0.	Snowflake Native Apps	
Loyalty data	KEY	<u> </u>		<b>ڹ</b> ۿؚڹ		
Product catalog data		Snowflake Data Clean Rooms	Cortex Al	Snowflake Data Sharing		
Third-party market data	J [	SHOWHAKE DATA Clean ROOMS	Cortex Ai			

## AI-POWERED TELECOM SERVICES

The next evolution in telecom services has arrived — dynamic, intelligent solutions that create new revenue streams while delivering unprecedented value to enterprise customers. By leveraging AI and advanced data capabilities, telecommunications providers can expand beyond traditional connectivity services, offering innovative solutions that address complex business challenges and unlock new market opportunities.

#### **USE CASE: DIGITAL TWIN FOR PRIVATE 5G**



#### Immediate network load balancing:

Enable effortless network management with natural language controls, allowing Al business users to optimize capacity in real time. This enables telecoms to make complex network adjustments as simple as having a conversation.



#### Optimized network utilization:

Convert static resource allocation into dynamic efficiency. By leveraging Al-driven digital twins, telecoms can maximize network utilization through intelligent adjustments, ensuring resources are always aligned with actual demand.



#### Reduce downtime:

Shift reactive maintenance into predictive network protection. With Al-driven digital twins, service providers can substantially reduce network downtime through preventive interventions, stopping disruptions before they impact service delivery.



#### Cost optimization:

Convert operational expenses into strategic savings. By implementing dynamic Al adjustments, telecoms can reduce operational costs while reducing waste, optimizing return from network investments.



#### **DIGITAL TWIN FOR PRIVATE 5G**

How it works

#### Build the network digital **Enable capacity** Break down data silos **Enable natural** twin and train models visualization and optimize in Snowflake language interface with scenarios networks dynamically DATA Ingest IoT signals, foot traffic Develop a digital twin of the Use Cortex to create a Leverage Snowflake Marketplace for external data metrics and network logs from private 5G network using AI/ML natural language interface for Customer profiles the infrastructure operator's models hosted in Snowpark, infrastructure managers sources, such as weather systems using Snowpipe for simulating congestion, capacity (i.e. allow for commands like conditions or event schedules, Network usage data to enhance predictive accuracy real-time streaming changes and signal strength "Optimize capacity in Zone C" or "Focus resources on Use Geospatial Analytics to map Implement Snowpipe Streaming Enable collaboration by Sales data Terminal 3 during peak hours.") centralizing geospatial, crowd movements, for near real-time anomaly sensor, and usage data from Link the natural language detection like congestion infrastructure layouts and Financial data interface with the underlying infrastructure managers network coverage areas or downtime and adjust into a unified view using Use **Snowflake ML** to train the digital twin and network capacity automatically Service subscription data Secure Data Sharing management systems DT with historical and live data Provide the infrastructure via Snowflake Native Billing data to accurately predict network operator with detailed App framework demands under different insights into traffic flow and Social media insights scenarios (e.g., event start network adjustments using times, flight landings) Streamlit dashboards **Engagement history** Campaign performance \*\*snowflake\* MARKETPLACE metrics **Snowflake Native Connectors** Snowflake ML Snowflake Marketplace **FEATURES** Channel metrics Snowflake Native Apps Geospatial data <del>#</del>(() Device data **Snowpipe Streaming Snowpark Container Services** Streamlit ΚĒΥ Loyalty data **#**(() Product catalog data Cortex Al **Snowflake Data Sharing** Cortex AI **Snowpipe Streaming** Third-party market data

#### **TELECOM MEDIA**



#### New revenue streams:

Convert traditional telecom services into a dynamic media business. By leveraging AI and data clean rooms, they can achieve **profitability margins exceeding 50%** in a market projected to reach **\$140 billion by 2026** and create new value from existing customer relationships.



#### Increase transparency:

With AI and data clean rooms, telecoms can build advertiser relationships through measurable results. By providing privacy-preserving, impactful solutions, service providers can build deeper trust with both customers and advertisers.



#### Enhance compliance processes:

Elevate privacy challenges into competitive advantages. With secure data clean rooms and AI, telecoms can monetize customer data while maintaining strict GDPR and CCPA compliance. This privacy-first approach builds trust while enabling new revenue opportunities.



#### Improve ad performance:

Unlock advertising effectiveness through first-party data and Al intelligence. With Al-driven customer insights, telecoms can improve ad performance as compared to using third-party cookies and deliver superior results for advertisers.



#### **CUSTOMER SPOTLIGHT**



**HEADQUARTERS**Bellevue, Washington

INDUSTRY

Wireless Network Operator

T-Mobile is the fastest-growing wireless carrier in the United States, serving over 115 million customers. Snowflake's Telecom Data Cloud platform enabled T-Mobile to power one of its new business divisions: T-Mobile Advertising Solutions (a.k.a. T-Ads). With the support of Snowflake, T-Ads is empowering brand marketers to build customized audience personas for targeted advertising and, to date, have created over 400 ready-to-use personas for behavioral targeting. T-Ads' customers can also source and layer on third-party data from over 40 providers in its own marketplace, the Magenta Advertising Platform. Snowflake has not only helped T-Mobile improve its return on ad spend (ROAS) by leveraging T-Ads' audience targeting capabilities, but it has also been essential to T-Mobile improving operational efficiency, increasing profitability for new products and services, and accelerating time-to-market on other data and machine learning projects.

#### TELECOM MEDIA (MARTECH/ADTECH)

How it works

#### **Execute campaigns** Consolidate and secure data Deploy and use a data clean Use AI/ML for audience and provide real-time estate in Snowflake room to share insights targeting and insights measurement **DATA** Use Snowflake Data Clean Ingest customer profiles, Use Snowflake ML and Activate campaigns, either Rooms to allow secure, Snowpark to deploy directly via DCR, or via engagement metrics and Customer profiles machine learning models CDP/CEP applications network usage data into privacy-compliant Snowflake using **Snowpipe** for segmentation and collaboration for audience Monitor results with Streamlit, Network usage data overlap with advertisers for real-time data streaming audience targeting and refine AI models for improved to predict ad performance Sales data Implement data governance Advertiser matches customer targeting and insights, and use to different segments through Horizon rules to data with Telecom's data conversational analytics with Financial data Cortex Analyst to democratize ensure secure access and to identify customers Apply **Cortex AI** to automate compliance with regulations for targeting the matching of ad inventory insights to ad planners Service subscription data like GDPR and CCPA with high-value customer Set strict role-based access segments, improving clickcontrols and encryption Consolidate siloed ad and Billing data through and conversion rates customer data into a single protocols to ensure customer Social media insights data is anonymized and secure platform, enabling comprehensive insights Engagement history Campaign performance metrics **Snowflake Native Connectors** Snowflake ML Streamlit Channel metrics Snowflake Data Clean Rooms Geospatial data <del>#</del>(() Device data **Snowpipe Streaming Snowflake Native Apps** Snowpark ΚĒΥ Loyalty data Product catalog data Snowflake Horizon (RBAC) Snowflake Horizon Cortex Al Cortex Analyst Third-party market data

## AI-POWERED CUSTOMER EXPERIENCE

Every customer interaction can be an opportunity for deeper engagement and enhanced satisfaction with AI. —where AI doesn't just respond to customer needs but anticipates them. By leveraging advanced AI capabilities, telecom providers can revolutionize how they support and engage with customers, creating seamless, personalized experiences that build loyalty while reducing operational costs.

#### **USE CASE: SELF-SERVICE DOCUMENTATION**



#### Drive cost savings:

Reduce operational expenses through AI-powered self-service. By limiting contact center reliance, telecoms can decrease costs while meeting the needs of the **57% of customers** who prefer to engage through digital channels. This automation-driven approach can optimize resource allocation.



#### Faster resolutions:

Accelerate customer support response times through Al assistance. With intelligent documentation systems, service providers can notably improve resolution speeds by generating immediate answers to customer queries.

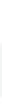


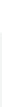
#### Increased customer satisfaction:

Boost customer loyalty through Al-driven personalized self-service experiences. By providing relevant solutions, telecoms can reduce churn rates annually as the result of strengthened customer relationships and the building of long-term trust.



**Efficiency gains:** Optimize agent productivity through Al-automated task handling. With routine inquiries redirected to self-service channels, service providers can free agents to focus on complex, high-value interactions. This strategic approach can optimize the impact of their support team.







#### **SELF-SERVICE DOCUMENTATION**

How it works

#### Break down data silos in and **Build Al-driven Deploy real-time** Monitor and optimize build your Customer 360 self-service performance documentation models self-service tools DATA Ingest device manuals, Deploy Cortex Search to Provide customers with Cortex Monitor search performance, **Analyst**-powered dashboards troubleshooting guides and enable natural language resolution rates and customer Customer profiles support FAQs into Snowflake queries like "Why is my for self-diagnosis of network or feedback with a Streamlit App internet speed slow?" or "How using Connectors device issues Continuously update Network usage data do I reset my router?" Snowflake ML models Implement Snowpipe for real-Integrate Cortex Search into Sales data time input from customers Leverage **Snowflake ML** to customer portals or mobile with new data from predict common customer apps to provide accurate customer interactions Standardize Content: Financial data issues based on query patterns troubleshooting steps and emerging issues Use **Document AI** to parse, and historical resolution data classify, and structure Use **Snowflake analytics** in near Service subscription data unstructured documentation real time to identify recurring Billing data into searchable formats issues and push notifications with solutions before Social media insights customers report problems Engagement history Campaign performance metrics **Snowflake Native Connectors Analytics FEATURES** Channel metrics Snowflake ML Streamlit Geospatial data <del>#</del>(() Device data **Snowpipe Streaming** Cortex Analyst ΚĒΥ Loyalty data Product catalog data Snowflake ML Cortex Search Document Al Cortex Search Third-party market data

#### **USE CASE: CONTACT CENTER NEXT BEST ACTION**



#### Improved customer retention:

Elevate customer satisfaction through personalized interactions. By implementing Al-driven recommendations, telecoms can reduce churn and prevent the **60% of customers** who switch brands after poor experiences. Not to mention build lasting customer relationships.



#### Increased revenue:

Unlock new revenue streams through intelligent opportunity detection. With Al-powered next best actions, service providers can increase upsell and cross-sell opportunities, optimizing revenue per customer interaction.



#### Faster resolution times:

Accelerate customer issue resolution through real-time AI assistance. By providing agents with immediate recommendations, telecoms can significantly reduce handling times and improve both efficiency and customer satisfaction.



#### Agent productivity:

Enhance agent performance through intelligent decision support. With AI-powered workflow tools, telecoms can empower agents to handle complex cases more effectively, reducing their stress while increasing productivity.



#### CONTACT CENTER NEXT BEST ACTION / EXPERIENCE

How it works

#### Apply AI/ML for Break down data silos Capture and transcribe **Enable real-time** real-time understanding agent assistance in Snowflake audio in real time and predictions DATA Use Connectors to consolidate Use Snowpark Container Deploy Cortex AI to analyze Implement ability to notify data from CRM systems, Services to pull in multi-modal transcriptions for intent, tone agents of potential issues before Customer profiles interaction logs and billing capabilities and LLM models and sentiment, categorizing calls answering calls (e.g., "Area platforms and network data (i.e. Twelve Labs or OpenAI as problem-solving or upsell network disruptions detected") Network usage data Whisper) to process live audio into a single Snowflake opportunities Provide real-time environment streams from contact center Use Snowflake ML to identify troubleshooting steps or Sales data Leverage Secure Data Sharing systems and transcribe them potential issues (e.g., network product recommendations in real time and Snowflake Marketplace outages) or upsell opportunities based on live transcriptions Financial data to collect second- and third-Ingest transcribed data directly based on historical patterns using Cortex Al Service subscription data party data to reinforce deeper into Snowflake via Snowpipe and live data understanding of customers Streaming pipelines for Deploy Cortex Analyst to enable Billing data and market conditions immediate analysis self-support for agents to recommend resolutions for Social media insights known issues or personalized service upgrades **Engagement history** Campaign performance <del>#</del>(() metrics **Y Snowpipe Streaming** Cortex Al **FEATURES** Channel metrics Snowflake MI Streamlit Geospatial data Device data **Snowpark Container Services** Snowflake ML ΚĒΥ Loyalty data \*snowflake\* MARKETPLACE Product catalog data Snowflake Marketplace Cortex Al Cortex AI Cortex Analyst Third-party market data

#### **CHAPTER 5:**

## **LEARN MORE ABOUT SNOWFLAKE**

**Leading telecom companies** are gaining powerful data-driven insights, AI solutions, analytical capabilities and the collaborative tools they need to outsmart their competitors in a complex market and tech ecosystem with the AI Data Cloud for Telecom and Cortex AI. With Snowflake, telecoms can focus on delighting customers, identifying new business opportunities and driving sustainability efforts while maintaining strict levels of data security, privacy, compliance and governance.

To learn how your organization can unlock the power of data and AI, visit Snowflake AI Data Cloud for Telecom.

**SNOWFLAKE TELECOM CUSTOMERS** 











View all customer stories



## **ABOUT SNOWFLAKE**

Snowflake makes enterprise AI easy, efficient and trusted. Thousands of companies around the globe, including hundreds of the world's largest, use Snowflake's AI Data Cloud to share data, build applications, and power their business with AI. The era of enterprise AI is here.

Learn more at **snowflake.com** (NYSE: SNOW)









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