



TELECOMMUNICATIONS IN THE AGE OF GENERATIVE AI

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Generative AI is ushering in a new era of innovation for the Telecom industry. It represents a seismic shift for the Telecom industry, fundamentally transforming how networks are built, services delivered, and customers engaged. With its ability to produce novel data, content, and insights autonomously, this technology promises immense opportunities to reimagine every facet of modern telecommunications.

At the infrastructure level, Generative AI will be the driving force enabling the next-generation of intelligent, self-optimizing networks. By continuously analyzing massive volumes of traffic data, AI systems can dynamically predict and resolve connectivity issues, optimize transmission routing on the fly, and intelligently allocate bandwidth where it is needed the most. This lays the vital groundwork for delivering phenomenal quality of service to customers at previously impossible scales.

With a USD 350 Mn Generative AI in Telecom market size in 2023, enterprises and providers are leaving no stone unturned in their quest to adopt and leverage this transformational technology to drive efficiencies. From building autonomously driven 6G networks for critical workloads, to fostering strategic partnerships to democratize the AI infrastructure, to optimizing network performance and reducing downtime by leveraging Large Language Models (LLMs), and integrating LLMs to existing use cases to drive innovation at the edge, Telecom players are emphasizing their belief in the potential of Generative AI.

The customer experience domain is where the creative power of Generative AI truly shines. AI-powered chatbots, virtual assistants, and recommendation engines can have natural, contextualized conversations and provide hyperpersonalized suggestions tailored to each user's ever-evolving needs. Customers get fast, frictionless support, while providers understand user requirements better than ever before, nurturing loyalty and uncovering new revenue opportunities.

Generative AI also holds the key to transforming network operations and lowering costs through predictive self-healing. Complex AI models can forecast equipment degradation, failure risks, and infrastructure vulnerabilities well in advance, enabling timely maintenance and reduced downtimes. The result – more resilient and efficient networks running at lower cost.

As we step into this Generative AI-powered Telecom era, players that strategically invest in ethical, trustworthy generative capabilities will leapfrog the competition. However, to deliver on its full potential, the development of thoughtful governance frameworks around data, security, and social impact will be crucial. By coupling technological ingenuity with the highest ethical standards, Generative AI can steer the Telecom industry towards an exciting new age of innovation. The time for telecom leaders to plunge into the possibilities is now.

1 An overview of the Telecommunications Ecosystem with Generative AI at the core



2 Generative AI use cases across five transformative themes



3 Communications Service Providers (CSPs) combating challenges with the implementation of Generative AI use cases



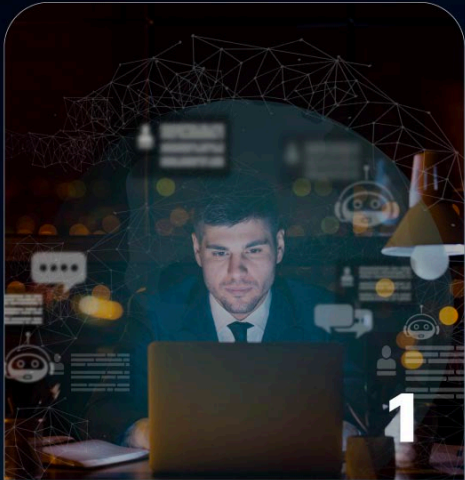
4 The role of Technology Giants in empowering enterprises to adopt and scale Generative AI



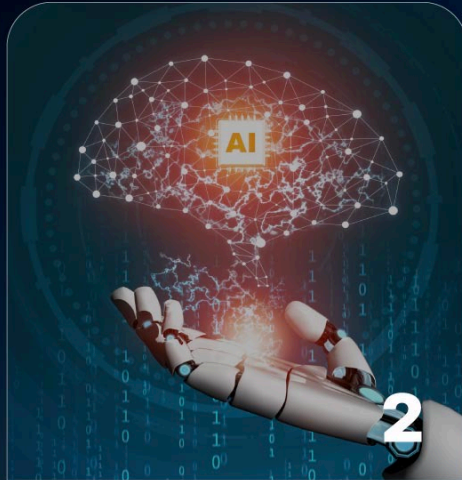
5 Food for thought: What next for Technology Providers in the Telecom Market



EXECUTIVE SUMMARY



Generative AI is revolutionizing Telecom, integrating AI and Automation **into business and customer-facing workloads**. The influx of unstructured data empowers CSPs, fostering innovation in transformer architecture and paving the way for highly Intelligent Automation that can reshape the landscape with data-centric excellence.



CSPs are innovating across the **5C (Connectivity, Computing, Control, Co-worker, Customer)** themes to provide transformative solutions that accelerate operations and optimize the advantages of Generative AI.



Generative AI unlocks immense value for CSPs by **optimizing networks, eliminating downtime**, and tailoring **optimal mobile plans** through data synthesis, virtual assistants, and scalable 5G/6G. This synergy of cutting-edge technology **elevates the customer experience**, embracing the convergence of AI, network efficiency, and futuristic connectivity.



Generative AI algorithms navigate the challenges that Telecom companies face by **conquering network intricacies, reducing field service costs, and ensuring code consistency**. From **network routing optimization to streamlined site operations and automated code generation**, these algorithms redefine efficiency with seamless precision.



In the technology domain, a fervent race unfolds as **tech providers amplify their offerings with cutting-edge Generative AI tools for CSPs** and software providers. Strategic investments and collaborative partnerships expedite market entry, minimizing the timeline for POCs through swift innovation and heightened competitiveness.

Rising demand for Intelligent Automation across business processes is enabling Generative AI integration across Telecom platforms and applications

Telecom enterprises have identified transformational use cases to integrate Generative AI across the value chain and have set long-term goals to execute Generative AI-led workloads with the help of 5G/6G networks



USD 320 Bn

Telecom Services IT spend (2023)



USD 350 Mn

The current Generative AI in Telecom market size (2023); this is expected to reach USD 18-20 Bn by 2030



70%

Of the Telecom players have Generative AI pilots underway



67%

Of the Telecom executives believe in Generative AI's potential to transform IT functions



18%

Of Telecom players have already implemented Generative AI across at least two business functions

GENERATIVE AI TRENDS ACROSS THE TELECOM MARKET

6G DRIVEN BY GENERATIVE AI

Ongoing **research** to build **autonomously driven 6G networks** is path-breaking for critical workloads run by smart devices

The **Ericsson-IIT Madras partnership** to work on projects like 'improving the interpretability of attention-based models,' and 'LLM for healthcare'; Goal to ensure performance guarantee and explainability in AI algorithms

DEMOCRATIZE AI INFRASTRUCTURE

Alliances & Partnerships among Telecom providers and services companies aim to democratize and collaborate for faster time to market

"TCS' partnership with NVIDIA will democratize access to AI infrastructure, accelerate build-out of AI solutions, and enable upgradation of AI talent at scale."

N. Chandrasekaran
Chairman, Tata Sons

OPTIMIZING NETWORK PERFORMANCE

Telecom providers are leveraging LLMs to **improve network efficiency, reduce downtime, and enhance network slicing**

AWS' long-term goal - 'self-driving network'; "Going into more autonomous operation of networks where you are changing configurations will take a little more time, but we are definitely heading in that direction."

Ishwar Parulkar
Chief Technologist, Telco Vertical, AWS

INNOVATION AT THE EDGE

Enterprises are trying to **integrate LLMs in existing use cases** in order to increase computation and use them on the edge

SK Telecom has revamped its chatbot to 'A.' or A dot – built in-house on LLMs to provide chatbot computation on the edge of the network

THE SUMMARIZATION OF THE 5CS AS THE 5 THEMES OF TRANSFORMATION REVEALS A BUNDLE OF GENERATIVE AI FOSTERED USE CASES



CONNECTIVITY OPTIMIZATION

- Optimize network performance
- Predict and prevent network congestion
- Identify and resolve network anomalies
- Improve network security (focus on securing Gen AI workloads)
- New algorithms for network slicing



Verizon is monitoring network traffic in real-time, to identify potential anomalies, to address CAPA measures

COMPUTATION ENHANCEMENT

- Rise in Generative AI-assisted code writing
- Mobile tower operations
- Amplified DevOps capability
- Synthetic data generation to run and train models



Integrated Generative AI to build a virtual assistant to write code and improve productivity by 30%-45% during the POC stage

CONTROLLED WORKLOADS

- Fraud prevention
- Revenue assurance to prevent revenue leakages
- Faster traceability of malware and threats
- Incident root cause analysis
- Streamlined site ops and predictive maintenance



Leveraging Generative AI to strengthen its cybersecurity initiatives – identifying threats including AI-created attacks

CO-WORKER EMPOWERMENT

- Acceleration of RFPs
- Intelligent billing system
- HR operations automation
- Business process Intelligent Automation
- Resource allocation



Amdocs Cloud Management Platform relaunched with Generative AI capabilities to automate business processes and faster computing

CUSTOMER EXPERIENCE

- Personalized plan recommendations
- Real-time call analysis and prompts
- Intelligent virtual assistants
- Call transcription and summarization
- Sales promotion generation
- Sentiment analysis



Deutsche Telekom's Conversational AI Platform augmented with Generative AI is used to create multiple speech recognition apps to address customer service challenges

Partnerships between Telecom Providers and Generative AI providers are driving Generative AI adoption and faster time-to-market with smart products

The increasing need for adopting Generative AI is driven by Telecom providers taking critical steps such as investing in or acquiring stakes in start-ups, forming partnerships with leading technology providers and start-ups, and expanding their in-house capabilities and research through Centers of Excellence (COEs) and Innovation Labs.



DEDICATED RESEARCH

Telecom providers are experimenting with Generative AI in areas that could be transformational for the industry, like process automations and customer experience



BT's **Digital Unit** is a 'Center of Enablement' for AI, and Generative AI has become a priority; testing its capacity to augment critical workloads



Partner-led (Netcracker) research for **BSS transformation** which will incorporate Generative AI for improved customer interactions



IMPROVISED SOLUTIONS

Adoption of Generative AI-enhanced solutions is enabling providers to reimagine employee and customer interactions



Leveraging ChatGPT to build a smart **conversational chatbot for employees** – "Ask AT&T"



Based on ChatGPT, SKT has a **custom conversational chatbot** – "A dot," with a goal to build a smart super app



PARTNERSHIP-LED INNOVATION

Strengthened partnerships with technology providers demonstrate Telecom providers' willingness to enhance critical workloads with Generative AI



Implemented **AI-driven speech analytics** for customer support using NVIDIA's NeMo AI toolkit and Triton Inference Server



"**Global Telco AI Alliance**" is witnessing co-development motions with a current target to empower customer service



INVESTMENTS & ACQUISITIONS

Telecom providers are steadily investing in Generative AI start-ups to improve customer experience use case delivery and attain operational efficiency



RelianceJio invested USD 15 Mn in **two platforms** to expedite the product development process of their interactive AI and Metaverse-based products



SKT acquired stake in LLM builder – **Anthropic** to solely build LLMs customized for Telecommunications

Network Optimization and Integration of Generative AI to revolutionize customer experience are leading the charter for a smart-automated Telecom sector

Telecom is poised for a promising future as Generative AI unlocks novel use cases and optimizes existing ones. The time horizon is segmented to understand the maturity of use cases across the five key themes.



ILLUSTRATIVE CASES



(Sentiment Analysis)
Deployed a speech recognition software that helps **detect emotions and reactions on a call using speech**



(HR Operations Automation)
AT&T's "Ask AT&T" tool assists employees with **automated responses in diverse HR tasks and processes**













(Personalized Customer Interactions)
Leveraged Microsoft Power Virtual Agents to develop its digital assistant named Aimee that will help it in **resolving customer queries**



(Network Optimization)
Collaborated to modernize telcos by integrating **Generative AI with 5G/6G technology to enhance network performance and reduce costs**

Network Management Complexity and Inefficient Call Center Functioning are the key challenges faced by Telecom providers

The Telecom industry is experiencing core challenges that are now being transformed with Generative AI integration. CSPs are working in partnership with Cloud providers, ISVs, and SIs to address these challenges and invent transformative use cases that are proving to be highly impactful in the value chain.

KEY CHALLENGES	GENERATIVE AI INTERVENTION TO COMBAT CHALLENGES	KEY USE CASES	REFORM IMPACT
 Inefficient Call Center Functioning	Chatbots and Virtual Assistants, have significantly improved customer service by providing instant support, reducing response times, and enhancing the overall customer experience	Intelligent Virtual Assistants Call Transcription & Summarization	
 Network Management Complexity	By automating and enhancing network traffic analysis, Generative AI is making it more efficient and accurate	Network Optimization Network Routing Automation	
 Expensive Field Service Operations	Generative AI accelerates diagnostics, minimizes on-site visits, and improves field-service training, leading to cost savings	Predictive Maintenance Streamlined Site Operations	
 Unaddressed Diverse Customer Needs	With its ability to analyze customer behavior patterns, Generative AI enables improved personalization in e-Commerce interactions, helping customers make informed choices	Personalized Plans Recommendation Customer Profile Generation	
 Inconsistent Legacy Code	By leveraging Generative AI, businesses are improving the performance, security, and functionality of their legacy systems without having to rewrite the code from scratch	Modernizing Legacy Code Automated Code Generation	

Hyperscalers are launching their own Generative AI tools and services to lead the Telecom charter

Cloud providers are spearheading the Generative AI innovation charter for the Telecom industry. Microsoft Azure and Google Cloud, with their CSP-led partnerships, are diverting resources to accelerate the implementation of Generative AI-augmented use cases



KEY INSIGHTS

AWS is driving Generative AI through innovative **tools for coding assistance, substantial investments, CSP partnerships, and collaborations** to enhance customer relationships, shaping the industry's future

GCP is **improving contact center services** to enhance customer support, **optimizing subscriber acquisition and retention, and collaborating with industry leaders** to enable telco-specific Generative AI models

Azure is offering **specialized coding assistants for developers**. It is also integrating Generative AI into their services for **network automation and developing customized models**. Partnering with industry leaders and ISVs to build telco-specific solutions

INITIATIVES

Developed Amazon CodeWhisperer, an AI coding assistant that generates code suggestions in real-time, based on developers' comments

Amazon to invest USD 4 Bn in Anthropic with partial ownership of the start-up, and Anthropic is expanding its AWS integration. Anthropic has recently partnered with and is providing services to CSPs like SK Telecom

Added Generative AI capabilities to its Contact Center AI

Telecom subscriber insights improves subscriber acquisition and retention for CSPs. The model ingests data from various sources and creates predictive models with Generative AI

Developed a Generative AI solution specifically designed for the Telecom sector, intended to generate code, easing the developers' job

Azure is integrating Generative AI into its AIOps service suite, which includes Azure Operator Insights for network data analysis

Developed customized Generative AI models for Telecom operators "injected" with telco-specific knowledge and capabilities

PARTNERSHIPS

Collaborated with IBM Consulting to enhance Bouygues Telecom's customer relationships by harnessing extensive customer data

Netcracker has developed a telco-specific Generative AI platform in partnership with GCP's vertex AI. Operators can enhance their Generative AI models with telco-specific data

Netcracker developed a Generative AI telco solution with OpenAI's ChatGPT through Azure OpenAI Service to increase productivity and customer experience

CO-INNOVATION

Partnered with Ericsson to enable their Cloud RAN solution to run on Google Distributed Cloud Edge infrastructure to improve network operations

Orange is testing Generative AI from Google Cloud in a next-gen contact center

Viaccess-Orca launched Generative AI product, integrating Azure OpenAI Service Cloud to enable personalized content delivery and recommendations

Partnered with e& to integrate Microsoft Azure and OpenAI's GPT to improve its internal operations and customer service

NEXT STEPS: Technology Providers must focus on three key opportunity areas to expand their presence in the Generative AI Telecom market



OPPORTUNITY 1

Enterprises are emphasizing on 'human-touch' to enhance Customer Experience

WHAT NEXT?

Address use cases like real-time prompt generation for sales executives, sentiment analysis during customer interactions, and ISV partnerships

OPPORTUNITY 2

Host vendor network functions in the Cloud and support private network services for CSPs

WHAT NEXT?

Identify the top network equipment providers and develop Cloud-native solutions on their network infrastructure to achieve optimized networks with Generative AI



OPPORTUNITY 3

Host vendor network functions in the Cloud and support private network services for CSPs

WHAT NEXT?

Develop Generative AI integration into Edge Computing and network solutions to enable network optimization at the edge

HOW CAN ZINNOV HELP YOU?

Use case intelligence with revenue potential

- Identification of Telecom-focused customer experience use cases that have high-growth prospects and revenue potential with Generative AI

Voice of Customers/Partners

- Identify current gaps in offerings and tech expectations of customers/partners
- Analyze their future bets to better plan customer and partner engagements

Partner Design/Assess/Scale Programs

- Identification and analysis of top ISVs and GSIs as prospective business partners on focus technologies/industries/use cases to scale GTM initiatives
- Understanding their needs and expectations from partner programs

Competitive Landscape and Benchmarking

- Identification of competitors' future investment roadmap, partner programs, and any other strategic initiatives to prepare competition-ready offerings/talent

Product Strategy and GTM

- Assess client offerings to identify gaps, redundancies, and areas for expansion so that they can prioritize their product investments and align them with market demand and business objectives

MEET THE TEAM



RAJAT KOHLI
PARTNER
MODERN TECH US PRACTICE



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ABOUT US



Founded in 2002, Zinnov is a leading global management consulting and strategy advisory firm, with a presence in 10 global locations including New York, Santa Clara, Houston, Seattle, Paris, Gurgaon, Bangalore, Hyderabad, and Pune. In the last 21 years, Zinnov has partnered with Global Enterprises and Fortune 2000 companies across their value creation journeys to develop actionable insights - across revenue, talent, innovation, scale, and optimization.

Our nuanced understanding and in-depth analysis of the newer technologies, enable us to work alongside our customers in outlining winning strategies that maximize value, while impacting positively on the environment. We work closely with our enterprise and technology customers to not only identify whitespaces to unlock the best growth opportunities, but also empower them with actionable insights to make data-driven decisions.

We help our customers with –

Market Opportunity and Technology Insights: We help customers understand the digital priorities of organizations, their behavior, and decision-making process, to optimize the solutions, messaging, targeting, and time to market. Our in-depth analyses of target accounts from an enterprise's portfolio enable our customers to achieve a greater wallet share among existing customers and actively pursue net-new opportunities more effectively.

Partner Strategy: We identify and analyze the top Independent Software Vendors (ISVs) and Global System Integrators (GSIs) as prospective business partners for our customers, on specific focus technologies, industry verticals, and/or use cases to scale GTM initiatives. We also help our customers understand their needs and expectations from partner programs to drive mutual growth and outcomes.

Compete Intelligence: We evaluate the technology landscape to gain strategic insights into our customers' competition ecosystem to enable the prioritization of strategies to create tangible business outcomes. We provide intelligence on the target competitors' future investment roadmap, partner programs, and any other strategic initiatives to outline future-ready offerings and talent strategies.

Account Intelligence: We provide intelligence across focused accounts (Fortune 500, mid-tier firms, SMBs) to gauge market direction and help our customers realign their product and GTM strategies. We also empower our customers with a playbook based on the gaps identified and provide actionable recommendations.

Voice of Customers/Partners: We assist our customers by conducting a detailed survey of customers, partners, competitors, SMBs or other sets across regions, technologies, or industries to identify current gaps in offerings and technology expectations. We enable this through real-time insights and analysis on their future bets to better plan customer and partner engagements.

Use Case Analysis: We assist our customers in identifying industry-specific business use cases that have high-growth prospects and revenue potential across emerging technology themes. This involves conducting an extensive analysis of priority business use cases based on a demand-supply framework. Additionally, we support CXOs in building data-backed business plans and estimating the dollar value associated with each use case.

Pricing Analysis: We empower our customers by determining the value drivers that drive maximum revenue generation. We help them understand customer behavior and perceived value to identify pricing strategies that align with customer expectations.

Positioning and GTM: We track and analyze the expanding technology ecosystem and divide it into practicable programs and initiatives. We enable customers to gain strategic insights into their target markets, potential customers, and demand drivers to fine-tune offerings and solutions. We also act as a channel to curate and disseminate a series of thought leadership pieces from the CXOs' desk (blogs, posts, and whitepapers focused on the latest digital technologies and related industry-wise use cases) to anchor our customers' positioning.

For more details, visit: www.zinnov.com





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