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How Telecom Service Providers Can Leverage Gen AI Across the Value Chain

White paper

An RPG Company

Abstract:

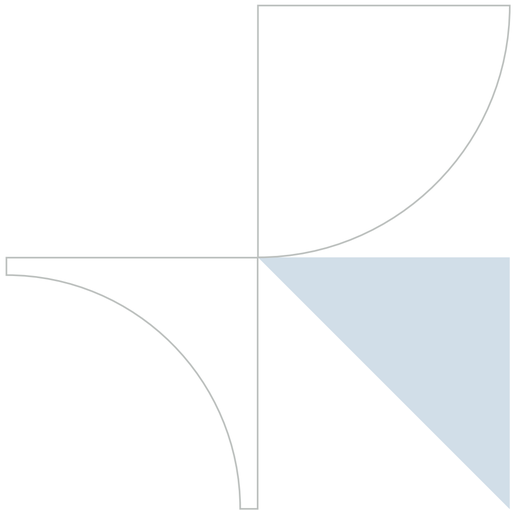
In the hyper-dynamic and fiercely competitive telecommunications industry, telecom service providers (TSPs) are at the forefront of technological evolution. The ongoing transition from traditional connectivity models to the digital connectivity era has necessitated a strategic reevaluation of TSPs' roles and capabilities. Amidst this backdrop, the emergence of Generative AI (Gen AI) stands out as a transformative force, presenting TSPs with unparalleled opportunities for innovation and growth. This paper deep dives into the complexities of this evolving market, exploring how Gen AI can be harnessed across critical facets of TSP operations to enhance existing services and develop innovative revenue streams.

Introduction

As we witness the evolution of the telecommunication industry, progressing from modest 256Kb/sec speeds to robust gig links and multiple wireless generations – from 2G to 5G – a digital revolution is clearly underway. This revolution is driven by the insatiable demand for increasing bandwidth, which is critical to enhancing business productivity, efficiency, security, and scalability. Whether connecting global locations, delivering heavy analytics through the cloud, supporting the transition to bringing your own device (BYOD), or working from home practices, the linchpin remains the TSP.

TSPs have been diligently focused on fortifying and advancing their network capabilities, eagerly embracing each new generation to stay abreast of industry advancements and avoid being left behind by their peers. This commitment is exemplified by key industry players like T-Mobile, Verizon, and AT&T, who are redirecting their emphasis toward 5G. Meanwhile, Dish has embarked on a reinvention journey, leveraging 5G with the innovative Open Radio Access Network (ORAN) architecture.

Contrary to seeking direct competition with industry giants like AWS, Azure, Google, Facebook, or Netflix, TSPs strive to transform into digital service providers. Their aim is not merely to provide bandwidth for voice, data, and video services but to transcend these traditional offerings and make a strategic shift to offer and monetize a spectrum of products and services beyond the conventional bandwidth paradigm. This transformation is an extension of patterns observed in the past decade when telecoms endeavored to embrace value-added services (VAS), establish app marketplaces, introduce new services, and create abstractions from the network through Service Delivery Platforms (SDP). These efforts also extended into media services, including triple-play offerings, as telecoms sought to tap into advertising revenue and explore diverse avenues of growth and innovation.



Gen AI integration for capability monetization

Gen AI offers telecoms the compelling prospect of undergoing a comprehensive transformation and climbing up the value chain by becoming facilitators of artificial intelligence. When delving into the integration of Gen AI within the TSP domain, two crucial areas emerge for consideration in terms of capability monetization:

Advanced network capabilities:

TSPs should explore the potential for monetizing their capabilities by providing advanced features like network slicing, high-capacity bandwidth, and workload segmentation. This involves leveraging these capabilities to execute Large Language Models (LLMs) through public cloud services and collaborating with AI providers.

Edge computing for Gen AI:

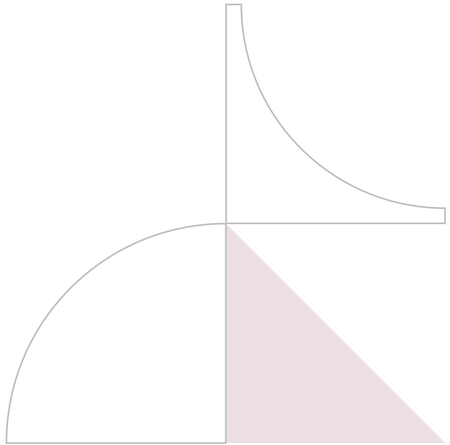
TSPs can also explore the possibility of delivering Gen AI at the edge, extending its reach to remote locations such as plants, retail stores, oil fields, and more. This capability empowers TSPs to provide AI services in real-time scenarios, catering to diverse environments beyond traditional network centers.

Maximizing Gen AI impact across TSP domains

B/OSS and corporate systems integration: Leveraging Gen AI in B/OSS and corporate systems is essential for optimizing core functions, spanning order-to-cash and trouble-to-repair. Gen AI offers transformative capabilities for functions ranging from rating, billing, charging, mediation, collections, and customer care to service provisioning, assurance, supply chain, customer data management, and product/service delivery. Within BSS, Gen AI excels in tasks with documented content and SOP-based deliveries, such as customer care and intensive data processing like CDR processing. Beyond this, it optimizes rating and billing plans by forecasting network resource consumption across mobile, broadband, and TV. The implementation requires the creation of precise data sets, often referred to as a vector database, to facilitate Gen AI models seamlessly operating across B/OSS systems.

Product and services development evolution: Telecommunications companies are inherently dedicated to innovating and refining their offerings in the product and services development space. This involves creating new products, enhancing existing ones, and venturing into new markets and geographies. Gen AI plays a dual role in shaping telecom products. Firstly, it integrates seamlessly across the development value chain, influencing ideation, research, content creation, and requirements structuring to bridge potential gaps between telecom business domains and network technology analysis. Secondly, Gen AI transforms the core development and testing of code, a concept extensively discussed by McKinsey in their insights on unleashing developer productivity with generative AI. Additionally, Gen AI introduces a revolutionary dimension by enhancing product capabilities beyond conventional limits. Drawing inspiration from Google's recent introduction of Duet as a close human assistant, TSPs can leverage Gen AI to dynamically allocate bandwidth based on user needs. This innovation extends to optimizing broadband services, personalizing TV content, and refining mobile features such as spam filtering, missed call reminders, and location-based services. The infusion of Gen AI across these diverse domains allows telcos to transcend conventional boundaries and redefine the possibilities of their products and services.

Revolutionizing network design, engineering, development, deployments, and operations: Automation has revolutionized network processes, paving the way for service management, controls, governance, and integration into NetOps. Network operations have evolved from isolated applications, elements, data, and security processes to an integrated structure extending from the core to the edge. This integration adheres to principles such as a software-defined converged core, virtual radio access network, site reliability engineering, and the



DevSecOps value chain. The progression from NetOps to AIOPs witnessed the infusion of AI and automation into every facet of FCAPS. Gen AI is poised to elevate NetOps to new heights by harnessing its generative capabilities both "east-west" (from user experience to service management) and "north-south" (from network applications like microservices/APIs to network elements, security, and data). Gen AI's impact extends to mature and highly automated operations by structuring even the most intricate SOPs. It transforms advanced fault and problem management across command centers, NOCs, SOCs, and IoT operations. Beyond learning and structuring alerts, alarms, traces, and event data correlations, Gen AI goes a step further by autonomously writing network code for configurations, ushering in the concept of smart, self-configuring networks.

Shaping the future with generative AI governance

In the evolving telecom landscape, marked by standardization, safety, bias, security, economy, and governance, Gen AI is poised to take on a proactive role in governing enterprise Gen AI. Its continuous learning capabilities will extend to policies, spending, and governance patterns. To thrive in the future, TSPs should explore Gen AI use cases across the enterprise, from systems of engagements (BSS/Client side) to systems of records (Network/Supply side), including products and operations. This transformation will give rise to a "network of generative intelligence," laying the foundation for the envisioned "telecoms of the future."

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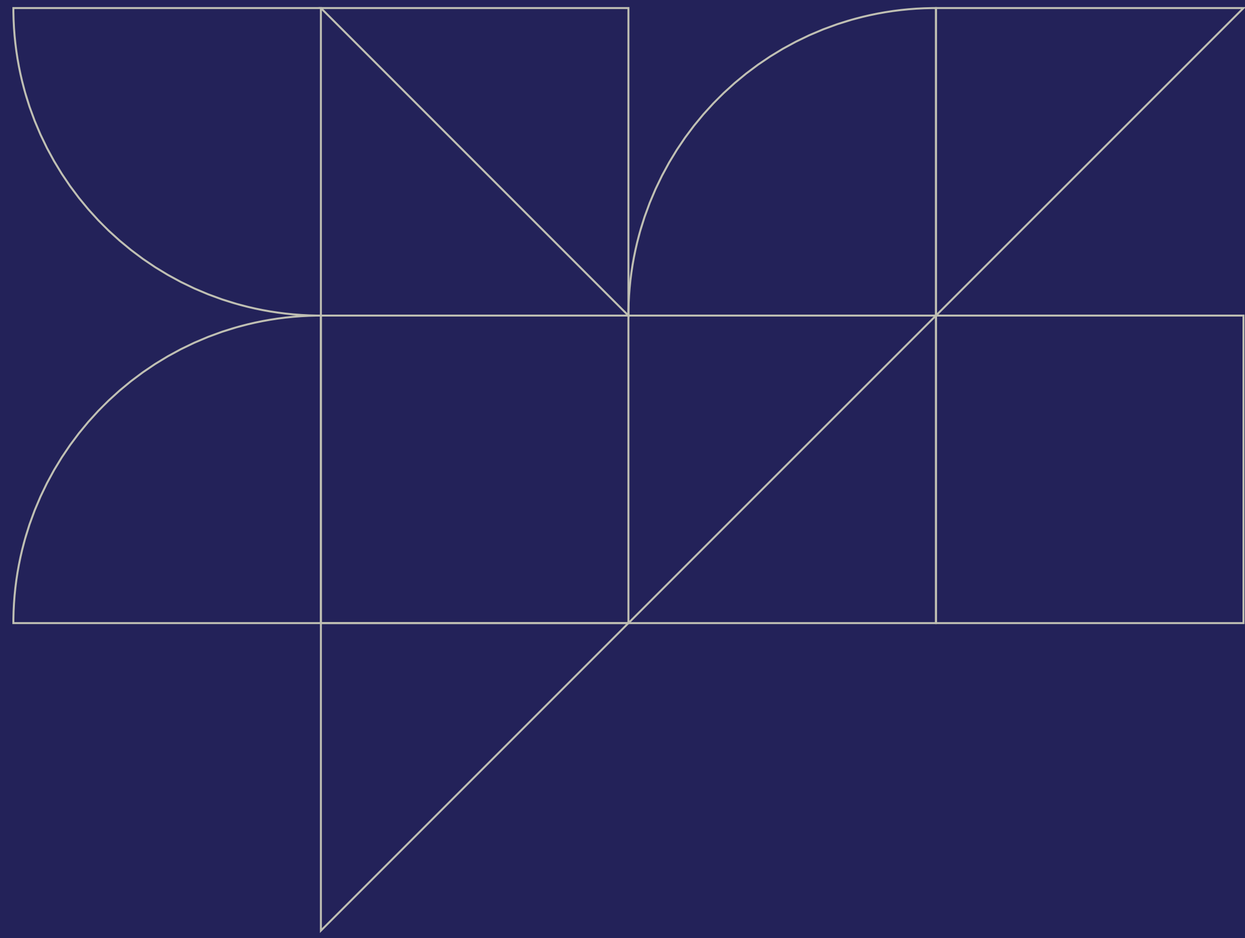

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