GTI

5G-A × AI 100 Commercial Campaign

5G-A × AI Use Case Report

March, 2026

GTI 5G-A × AI Use Case Report

Version:	V 1.0
Deliverable Type	□ **Procedural Document** ☑ **Working Document**
Confidential Level	☑ **Open to GTI Operator Members** ☑ **Open to GTI Partners** □ **Open to Public**
Program	5G-A × AI Development Program
Working Group	N/A
Project	N/A
Task	Task 3: Exploring Innovative Use Cases
Source members	China Mobile, GSMA, Huawei, ZTE
Support members	
Editor	Jie Ma, Jingyuan Liu, Jiang Yu, Lei Shi, Li Lin, Naresh Chouhan, Daniel Ding, Chunxia Qian
Last Edit Date	25 February, 2026
Approval Date	3 March, 2026

Document History

Date	Meeting #	Version #	Revision Contents

Table of Contents

1. Background

To accelerate the integration and commercialization of 5G-A and AI technologies, GTI & GSMA launched "5G-A × AI 100 Commercial Campaign"on March 20205 at MWC Barcelona, aiming to unify joint efforts with global operators and industry partners to achieve this goal, with the following targets, within the next three years.

- Engage 100+ Partners: Collaborate with leading enterprises, research institutions, and innovative startups worldwide to drive innovative applications of 5G-A and AI.
- Open 100+ APIs: Foster technology sharing and ecosystem co-development by opening 100+ APIs, accelerating the integration and innovation of 5G-A and AI technologies, and contributing to Open Gateway APIs standard jointly with GSMA.
- Develop 100+ Lighthouse Projects: Establish 100+ well-defined exemplary 5G-A and AI integrated application projects globally, spanning smart consumer services, smart cities, smart industries, healthcare, education, and more.
- Facilitate Deployment in 100+ Commercial Markets: Extend 5G-A and AI technologies to 100+ markets worldwide, promoting digital transformation and value creation.

This report presents 25 excellent use cases from GTI & GSMA partners, which shows how global partners closely collaborated to deepen and strengthen the integration of 5G-A and AI technologies, accelerate commercialization, empower industries, and usher in a new era of digital intelligence and remarkably superior user experience.

2. 5G-A × AI Use Cases

2.1. 5G-A × AI for Manufacturing

2.1.1. Use Case: 5G-A Autonomous Driving Solution for Yimin Open-Pit Mine

Challenge: In traditional open-pit coal mines, drivers operate in dusty, noisy environments for long hours, facing high labor intensity, fatigue-related risks, and potential safety hazards. Manual mining truck operations are limited by shift changes and driver fatigue, restricting daily operational hours per vehicle and hindering significant improvements in transportation efficiency. Additionally, large teams of rotating drivers result in high labor costs, which continue to rise amid growing recruitment difficulties driven by labor market shifts. Conventional mining trucks rely on fossil fuels, leading to high fuel consumption, substantial carbon emissions, and considerable environmental pressure. Moreover, manual operation complicates personnel management and dispatching, making refined management challenging to achieve.

Solution: From 2024 to 2025, over 100 autonomous mining trucks are in large-scale commercial operation. China Mobile Inner Mongolia, in collaboration with Huawei, deployed advanced 5G-A 3CC (Three-Carrier Aggregation) wireless communication technology to achieve precise network coverage across mining truck routes, excavation areas, dump sites, and battery swapping zones. Leveraging 5G-A's high bandwidth, low latency, and accurate positioning capabilities, the solution enables remote-controlled electric shovels and coordinated operation of autonomous vehicle fleets. Each autonomous electric mining truck is equipped with 5 cameras, and 100 such vehicles require ultra-high uplink capacity for

remote control and video transmission— a demand efficiently met by the 5G-A network. A single 5G-A base station covers 500–600 meters, supporting stable upload speeds of 500 Mbps and latency as low as 20 ms, ensuring uninterrupted operation of HD video transmission, autonomous driving, and remote-controlled transportation. Furthermore, the innovative 2.6G+4.9G dual-band reception feature enhances the reliability of remote-controlled electric shovels from 99.99% to 99.999%.

Application & Benefit: This solution effectively addressed the mine's core pain points, delivering substantial improvements in safety, production efficiency, labor cost control, environmental sustainability, and management simplicity. The autonomous driving enables 24/7 continuous production of over 100 autonomous electric mining trucks. This has significantly improved open-pit mine productivity, with labor efficiency expected to increase by 120% and operator additional revenue to rise by 150%.

2.1.2. Use Case: 5G-A ISAC-based Maritime Management

Challenge: As critical hubs for global trade and the marine economy, coastal areas and ports face core challenges in inefficient port operations, maritime safety hazards, and difficulties in security regulation. Traditional communication and sensing technologies (e.g., AIS, radar, cameras) can no longer meet the demands of modern smart ports and coastal management.

(1) Challenges in Port Operational Efficiency

Large ports handle hundreds of vessels daily, yet traditional scheduling relies on manual experience and AIS (Automatic Identification System). However, AIS suffers from update delays and cannot reflect real-time dynamic changes.

(2) Challenges in Maritime Traffic Safety

Collisions between ships and ships, ships and small boats, or ships and buoys frequently occur, leading to significant economic losses. Particularly at night or in foggy/rainy conditions, optical cameras fail, increasing collision risks.

(3) Challenges in Security & Regulation

Issues such as smuggling, illegal immigration, and unregulated fishing persist in coastal waters. Current monitoring methods have limitations—for example, AIS signals can be spoofed or turned off, making vessel identification unreliable.

Solution: To address core challenges such as low port operation efficiency, maritime traffic safety risks, and difficulties in security supervision, Türk Telekom deployed ZTE's 5G-A ISAC (Integrated Sensing and Communication) solution at the Kumport Port. ISAC technology fundamentally integrates radar-like sensing capabilities into cellular communication systems. By combining "communication + sensing" dual functions on traditional base stations, it enables intelligent wireless infrastructure.

The ISAC solution consists of three key components in terms of deployment:

(1) ISAC AAU – Utilizes a Massive MIMO antenna array to transmit and receive sensing signals via beamforming

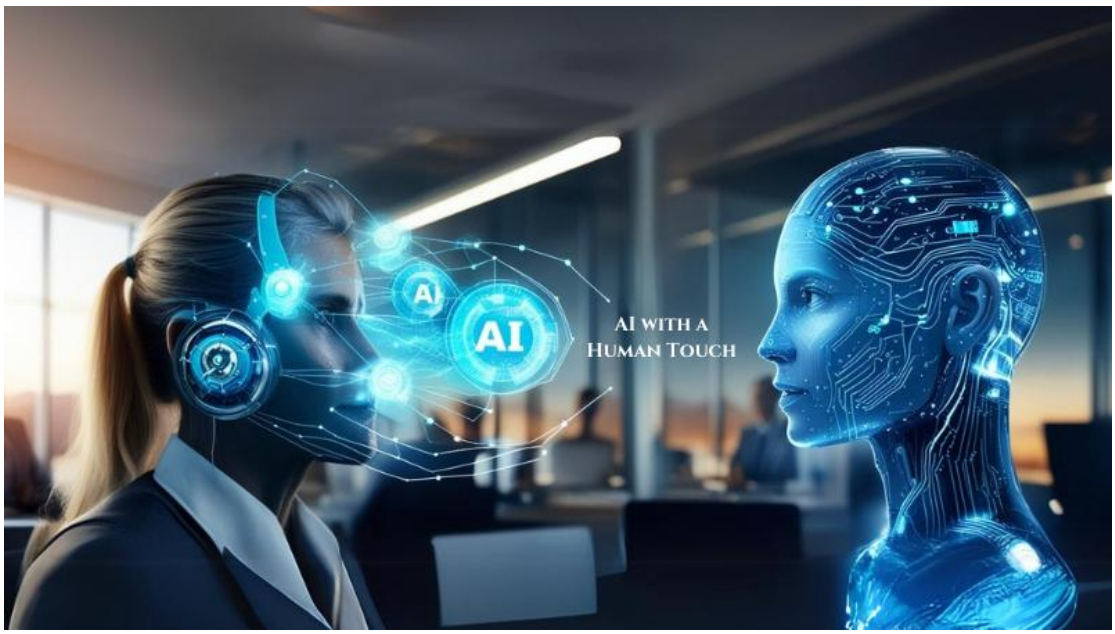
(2) ISAC BBU – Processes reflected signals to calculate target information (e.g., latitude/longitude, speed). An AI-powered sensing model deployed on the BBU's computing board not only detects targets but also identifies their type (e.g., distinguishing between large and small vessels in this case).

(3) ISAC Platform – Receives target data (position, type, etc.) from the BBU and displays

real-time trajectories on a map. The system also supports virtual geo-fencing, triggering alerts when targets enter restricted zones.

Application & Benefit: After deploying the 5G-A ISAC solution at Kumport Port, the system achieved:Vessel detection, trajectory tracking, and target classification. Automated ship counting via geo-fencing near port entrances, improving operational efficiency. Collision prevention by setting geo-fences around bridge piers—alerts are triggered if vessels deviate into restricted areas. In the future, the ISAC platform can integrate with Vessel Traffic Systems (VTS), fusing data from ISAC base stations, AIS (Automatic Identification System), and radar to further enhance sensing reliability.

2.1.3. Use Case: Exploring the New Paradigm of Intelligent Customer Service by Deep Integration of New Calling and AI



Challenge: STC Bank, approved as a digital bank by the Saudi Central Bank in 2021, had 12 million users by Q1 2024, with nearly one-third of Saudi smartphone users using its mobile wallet. However, traditional customer service faced prominent issues: calling the hotline had an average waiting time of 17 minutes (even longer on busy days), email consultations took up to 20 days for a response, and it struggled to quickly and accurately address diverse

customer needs (account status, transaction abnormalities, etc.), seriously affecting customer experience and business efficiency. Meanwhile, the 5G era has brought the popularization of 5G networks and breakthroughs in AI technology, with 3GPP formulating New Calling standards. Featuring high definition, intelligence, and interactivity, New Calling technologies (integrating screen sharing, AR assistance, etc.) have broken traditional call limitations, becoming a key tool for enterprises to upgrade customer service and gain digital competitive advantages.

Solution: The solution adopts an architecture supported by core network elements such as NCP (providing New Calling DC mini-program repository and control capabilities), UMF (handling audio and video processing and DC channel management), and NEF (abstracting underlying network capabilities into standardized APIs, opening them to the outside world, and ensuring security). It integrates innovative technologies including intelligent speech and semantic recognition (over 95% speech-to-text accuracy, capturing complex demands), AI voiceprint recognition (over 99% accuracy for rapid identity verification), and NaaS (enabling quick access to New Calling capabilities for one-sided video calls). The solution also considers regional ethnic customs, offering alternative identity verification methods, and builds an ecosystem with partners such as STC KSA (carrier), iFlytek and Qwen (AI tools), Huawei (device vendor), and STC Bank (vertical industry).

Application & Benefit: In account service scenarios, relying on New Calling and AI, face recognition realizes second-level identity confirmation, completing account loss reporting, unblocking, and password reset within 5 minutes. Voiceprint recognition is provided for female users inconvenient with face recognition, ensuring convenient services anytime, anywhere. In financial product consultation and recommendation scenarios, voice calls are upgraded to one-way video calls, with customer service pushing product details, income trends, and risk assessments, and answering questions in real time, expected to increase transaction conversion rate by 10%. In business handling guidance scenarios, AI-based ASR recognizes user keywords (e.g., "APP account locked") and automatically pushes short videos

to help solve problems, effectively improving user satisfaction.

2.1.4. Use Case: 5G-A Ambient IoT based Digital and Intelligent Warehousing and Logistics System

Challenge: The logistics center warehouse is a Regional Distribution Center (RDC) for the storage and allocation of all categories of materials, with an annual cargo turnover of up to tens of thousands of pallets. As the business continues to expand and customer demands grow, the center faces challenges such as low inventory counting efficiency, rising labor costs, and errors or omissions in manual inbound and outbound verification.

Solution: The main functionality of this system are as follows:

(1) One-step Inventory Counting: This includes inspection and unloading, inbound inventory at the gateway, in-warehouse inventory, outbound inventory at the gateway, and finished product outbound/container recovery.

(2) Inbound and Outbound Identification: This covers box-pallet binding, put-away for storage, full-pallet outbound, and the outbound of broken-case items and residual materials.

(3) Storage Location Management: This enables rack management, storage location management, and position management.

Application & Benefit: 5G-A introduces cellular technology to passive IoT. By enhancing the hardware transmission power of modules and optimizing corresponding tag-side standards, it enables a Class B coverage improvement of 26dB compared to RFID. Technical verification has shown Ambient IoT coverage to be 10 times that of RFID. In Line of Sight (LOS) scenarios, the coverage distance exceeds 100 meters. In Non-Line of Sight (NLOS) scenarios, with a 36m by 72m network layout, coverage can penetrate three layers of wooden crates.

Through a combination of multi-head-end polling, multi-coverage level traversal, and centralized scheduling, the system aims for an inventory accuracy rate of ≥99%. It facilitates both automated systematic inventory and ad-hoc inventory checks. Inventory tasks can be automatically executed by the system at scheduled times, or initiated manually via a one-step inventory counting, all without manual intervention. This resolves common warehouse issues such as low efficiency and error-proneness associated with manual inventory. By enabling intelligent identification during inbound and outbound processes and automated periodic inventory updates, the system achieves rapid identification and online database updates for all warehouse transactions.

2.1.5. Use Case: Smart Solution for Mountain Photovoltaic Power Stations

Challenge: Mountain photovoltaic power stations face multiple challenges during production and operation. The photovoltaic areas are dispersed across expansive terrains with complex topography, making operation and maintenance difficult, thereby creating an urgent need for minimally manned or even unmanned management. Besides, power plants have stringent network security requirements that traditional wireless communications cannot satisfy regarding security isolation.

Solution: The main functional modules of this solution are as follows:

(1) 5G + Inverter Wireless Collection

The smart photovoltaic system issues IV diagnosis commands to inverters via the 5G monitoring system. Upon receiving the IV scan command, the voltage of individual string returns to the open-circuit voltage. The inverter then scans from the open-circuit voltage down to the minimum voltage, and based on the trend of the IV curve, determines the fault location or completes routine inspection tasks. This scenario breaks away from traditional wired data transmission methods by adopting a 5G power virtual private network for industrial control system data transmission. While ensuring data security, it serves as a pilot verification for the secure application of 5G technology in industrial control systems.

(2) 5G + Equipment Status Awareness

This utilizes sensors/intelligent communication modules to collect real-time operational status data from transformers and intelligent AV components. The online comprehensive status data of power equipment is uploaded to the monitoring platform via the 5G network. The platform organizes and analyzes the acquired data based on data models, assessing, diagnosing, and predicting the health status of equipment. This supports the implementation of multiple advanced applications, including lean operation and maintenance, fault prediction, intelligent retrofitting, and asset management, contributing to the establishment of a comprehensive life cycle management system for power equipment. Furthermore, by automatically dispatching work orders for fault points within the photovoltaic station, enabling intelligent positioning and navigation, and integrating multiple systems, precise

inspection and repair are achieved.

(3) 5G + Drone and Robot Inspection

By deploying industry terminals such as smart drone hangars and inspection robots, and leveraging the 5G power virtual private network for command transmission and data feedback, the solution enables data collection and automated route planning for operational terminals across various areas. For instance, video data captured by drones is transmitted to the cloud via the 5G network. Utilizing defect recognition AI algorithms and intelligent positioning algorithms, the system rapidly locates, automatically identifies, and annotates fault points on photovoltaic modules (such as hot spots, diodes, and strings). This achieves real-time monitoring and awareness of power equipment operating status, significantly enhancing operation and maintenance efficiency.

Application & Benefit:

(1) Enhanced Inspection Efficiency

By adopting low-altitude automated inspection methods, the average time required to complete a single photovoltaic module inspection within a single station area has been reduced from 110 days to 15 days, achieving a tenfold increase in efficiency. Utilizing deep learning technology, the system automatically identifies and locates faults such as hot spots, diode failures, and zero-current anomalies on photovoltaic panels, achieving an accuracy rate exceeding 95% with fault positioning precision superior to 1 meter.

(2) Reduced Power Generation Losses

Through module intelligent sensing algorithms and technologies, faults are rapidly detected, enabling timely operation and maintenance. This reduces annual power losses by approximately 17.99 million kWh per station.

(3) Increased Power Generation

Photovoltaic panel defect identification combined with AI-based intelligent illumination

technology contributes to an annual increase in power generation of 2.1%.

(4) Reduced Communication Infrastructure Investment

Given the extensive area covered by distributed photovoltaic installations, the construction of a 5G converged communication dedicated network effectively controls the construction and maintenance costs associated with hundreds of kilometers of cables and optical fibers per station. This results in a reduction of 1.5 million RMB in construction and operational costs per station. Furthermore, the flexibility and security of the 5G dedicated network support the expansion of novel smart photovoltaic applications in multiple directions. Operators provide enterprises with services such as mobile network operation, maintenance, and monitoring, thereby reducing enterprise network maintenance expenditures.

2.2. 5G-A × AI for Life

2.2.1. Use Case: Dynamic and Differentiated Service Experience Assurance

Challenge: With the increasing variety of services supported by 5G-A networks, different business types such as live streaming, VR glasses, medical emergency services, and AI inference have varying demands for network services, such as latency, bandwidth, and packet loss. This necessitates differentiated, dynamic, and real-time adjustments to network

service guarantees for users' diverse services. This ensures that high-priority services are allocated sufficient network resources and stable, seamless data transmission, thereby preventing degradation in user experience.

Solution: This use case provides dynamic and differentiated network service quality assurance by integrating 5G-A network and AI technology. Leveraging the intelligent analytics capability of the core network element NWDAF (Network Data Analytics Function) and the traffic identification capability of UPF (User Plane Function), along with massive network data and AI technology, precise and real-time user experience evaluation is provided, along with differentiated service experience assurance.

Application & Benefit: Now this use case has been applied in 7 provinces in China, providing differentiated QoS of videos, games, and live streaming etc..Video and live streaming speeds have increased by over 30%, and gaming latency has been reduced by up to 20%.

2.2.2. Use Case: Service Maerstro — One Call, One Conversation, One Payment

Challenge: Traditional call centers have cumbersome IVR processes, long waiting times, and

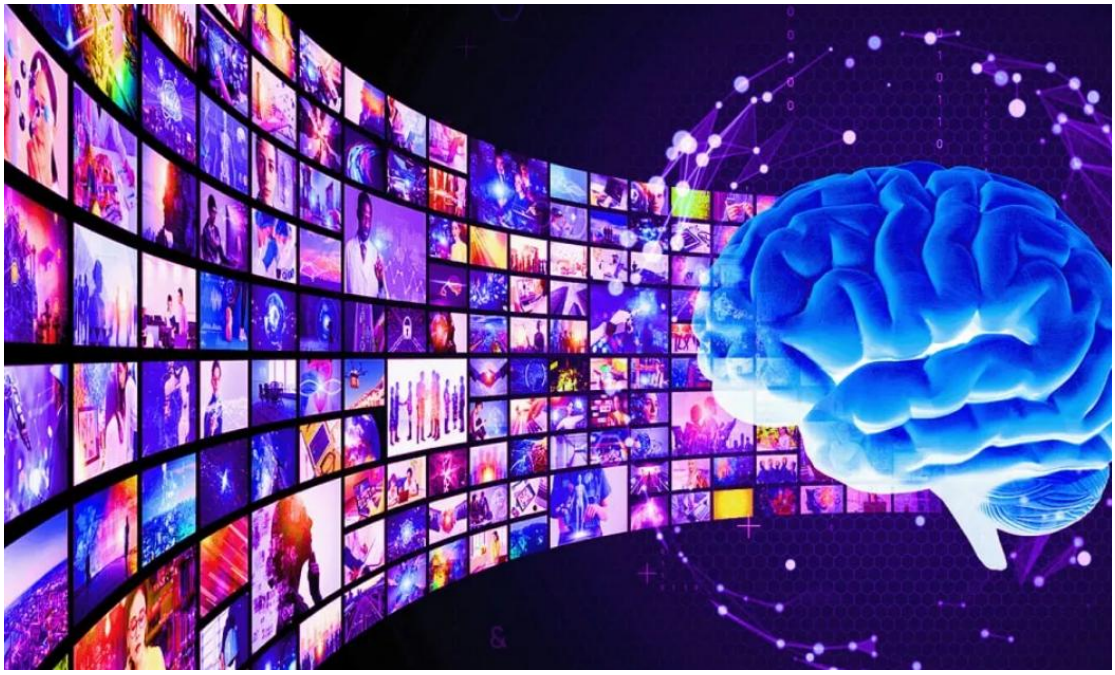
cannot complete payments within calls, leading to 38% transaction abandonment. Intelligent agents rely on app downloads, with low penetration among seniors (below 15%). Voiceprint payment has limited application scenarios and low market penetration (below 5%). Meanwhile, market demand is strong. For example in China, over 260 million elderly people rely on traditional telephone services, and enterprises urgently need to solve the low payment conversion rate of outbound calls (only 10-15% for dunning calls) by completing services and payments in a single call.

Solution: This use case builds the "Lingxi AI Life Maestro" intelligent agent by integrating CT networks, 5G New Calling, Ant Group's Bailing large model, and Alipay's service ecosystem, with the exclusive short code 12580. It adopts a three-layer technical architecture. The communication layer provides stable voice/video transmission and user authentication. The capability layer integrates media processing (ASR, TTS, noise reduction), large-model orchestration, and multimodal interaction. The data layer supports user profiling and traffic analysis. Key technologies include real-time intent recognition, multi-agent collaboration, 5G DC channel-based video/mini-app insertion, and 0.8-second voiceprint payment (98% accuracy in noisy environments). It also establishes an ecosystem with partners such as China Mobile (operator), Ant Group (AI and payment), and various life service/government agencies, realizing a closed loop of "conversation → service → payment" through natural language interaction.

Application & Benefit: This use case covers multiple scenarios such as life services (e.g., food ordering, ride-hailing, ticket booking), telecom services (e.g., phone bill recharge, broadband handling), public services (ef. government affairs inquiry, housing fund services), healthcare (e.g., intelligent guidance, report interpretation), and traveling (e.g., itinerary planning, scenic spot guidance). Users can complete the entire process of inquiry, confirmation, and payment with a single call. This use case has achieved remarkable benefits. Enterprises see 65% higher payment conversion on dunning calls and 30% shorter average handling time. Users especially seniors and low-tier market groups get one-stop, app-free services.

Operators transform from traffic pipes to transaction partners, gaining commissions from life service GMV and enhancing brand value in digital inclusion.

2.2.3. Use Case: AI Video Ringtone One Sentence, One Clip



Challenge: Video ringtones, a unique 5G communication service for operators that displays 10-15 second videos before calls connect, combine telecom and internet attributes. With over 400 million users and 700 million daily call exposures, the service faces a key bottleneck: high video production barriers make it hard for users to efficiently create personalized content that matches their creative needs, leading to extremely low ringtone change rates. Meanwhile, 80% of young people demand personalized mobile content, brands seek fresh 5G advertising channels, and users crave vivid video alternatives to traditional audio ringtones—needs that existing services fail to fully address.

Solution: The "One Sentence, One Clip" AI video ringtone project applies AIGC technology to DIY ringtone creation. Built on a DiT (Diffusion Transformer) architecture-based multi-modal large model, it enables users to generate 9-15 second videos in 1-3 minutes by inputting a creative sentence. Core features include customized video styles, scenes, characters, background music, special effects, and real-time preview and modification. The model uses

Sparse MoE technology to reduce computational costs, adversarial distillation to enhance image clarity and realism, and excels in semantic relevance and visual aesthetics in industry benchmarks. It also supports voice commands and interactive editing to lower creation barriers.

Application & Benefit: The service caters to personal expression (e.g., animated avatars, emotional status), travel check-ins (e.g., combining personal photos with local landmarks), and holiday greetings (e.g., New Year wishes). It also serves brand marketing needs as a 5G call advertising channel. Commercially, it integrates with operator packages via subscription or pay-per-DIY models, with over 20 million users and more than 50 million yuan in Q1 revenue, while user penetration remains below 5%—offering vast market potential.

2.2.4. Use Case: 5G New Calling × AI in Nanjing

Challenge: Most 5G New Calling applications focus on single scenario, the market faces prominent pain points such as cross-department collaboration and high manual costs. For example, in tourism area, cross-language communication cost is high and the identity verification has barriers in foreign-related services.

Solution: This use case adopts a four-layer technical architecture. The network communication layer relies on IMS data channel for parallel transmission of audio, video, and data, loads B-end mini-apps, and carries AR rendering and translation data streams. The

basic service layer provides standardized functions such as hotlines and workbenches, and automatically dispatches government work orders. The AI enhancement layer builds a multi-modal service engine based on the Jiutian model and ASR/TTS/NLP modules. The open ecosystem layer offers API/SDK interfaces for customized development, and the product supports HD low-latency multi-modal calls, multi-party participation, cross-platform compatibility, as well as agent assistance functions, various AI application components, and strict security authentication mechanisms to build a "call-as-a-service" ecosystem.

Application & Benefit: In government scenarios, cross-border approval relies on video calls + AI verification to achieve 95% efficiency improvement and cost reduction, expat services complete "three-in-one" AI certification to shorten processing time from 5 days to 2 hours, and emergency command realizes rapid response through multi-party video + AI decision-making. In cultural and tourism scenarios, virtual digital guides and "historical IP + avatar" interaction enhance tourist experience, with AR guide utilization exceeding 75%, and hotel digital butlers reduce check-in time and improve satisfaction. In foreign-related scenarios, multinational conferences use real-time bilingual translation and blockchain electronic contracts to reduce costs and improve efficiency. Cross-border payment relies on intelligent exchange rate matching to increase success rate by 40%, and tax refund achieves 30-minute settlement through AI guidance, forming a closed-loop service.

2.3. 5G-A × AI for Governance

2.3.1. Use Case: Real-Time Scam Protection with AI

Challenge: Voice call scams and spam calls have become increasingly sophisticated, causing financial losses and eroding trust in phone communications. Traditional blocking lists and rule-based systems cannot keep pace with rapidly evolving scam tactics. Mobile operators need a solution that can identify and block fraudulent calls in real-time without impacting legitimate communications.

Solution: Hiya's AI-powered protection solution consists of:

(1) Real-Time Call Analysis: Analyzes call metadata and patterns in real-time to identify suspicious behavior indicative of scams or spam.

(2) Machine Learning Models: Uses continuously updated ML models trained on billions of calls to detect new and emerging scam techniques.

(3) Network-Level Protection: Integrates with operator networks to provide protection at the network level, blocking fraudulent calls before they reach subscribers.

(4) Adaptive Learning: The system learns from user feedback and new threat patterns to continuously improve detection accuracy.

Application & Benefit: Implementation of Hiya's solution has enabled mobile operators to:

- Block millions of spam and scam calls annually
- Reduce subscriber exposure to fraud attempts
- Improve customer trust in voice services
- Decrease customer complaints related to unwanted calls
- Provide value-added security services to subscribers

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/hiya-security-real-time-scam-protection-with-ai/)

2.3.2. Use Case: Government Service AI Agent

Challenge: Government service hotlines handle millions of inquiries from citizens seeking information and assistance across a wide range of public services. The volume and diversity of inquiries create significant challenges for manual response systems, including long wait times, inconsistent answers, and high operational costs.

Solution: China Unicom's Government Service AI Agent features:

(1) LLM-based Interpretation: Utilizes large language models to accurately interpret citizen inquiries, including complex or ambiguous questions.

(2) Comprehensive Knowledge Integration: Connects to extensive government service databases and knowledge bases to retrieve accurate, up-to-date information.

(3) Multi-Turn Dialogue Capability: Engages in natural, multi-turn conversations with citizens to gather additional context and provide complete answers.

(4) Seamless Human Handoff: Intelligently transfers complex cases to human agents when needed, providing them with full conversation context.

(5) Continuous Learning: Improves over time by learning from interactions and feedback.

Application & Benefit: Implementation of the AI agent has enabled:

- Dramatic reduction in average response times for citizen inquiries
- Improved accuracy and consistency of information provided
- 24/7 availability of government information services
- Reduced workload on human agents, allowing them to focus on complex cases

- Enhanced citizen satisfaction with government services
- Scalable service capacity without proportional cost increases

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/china-unicom-government-hotline-service-ai-agent-llm/)

2.3.3. Use Case: Cross-border — It's More Than Just Language

Challenge: In global e-commerce, traditional translation tools are inadequate, offering fragmented, delayed services and lacking deeper capabilities like business intent recognition, process automation, or support for emotional and psychological needs in communication. The core challenge lies in overcoming persistent language barriers that hinder cross-border economic and social activities. These barriers cause significant order losses (10%–15%) in annual revenue loss. With over 280 million international migrants and surging multinational collaboration, the demand for seamless communication is urgent.

Solution: Global Link Pro is a platform integrating AI translation and business process automation, with a core innovation in its self-developed Semantic Enhancement Translation Engine (Semantic+) that adopts a three-tier cognitive architecture (foundational, intent, entity layers) for real-time semantic analysis and business linkage. It supports real-time cross-modal conversion in 87 languages (including 35 minority languages) via an improved Whisper engine, achieving 98.7% translation accuracy and 800ms ultra-low latency, and

integrates 5G and AI technologies like Transformer models (Google BERT, OpenAI GPT) for natural translations and edge computing to reduce cloud dependency. Key features include business intent recognition (covering 28 intents across 4 categories), automated workflow triggering (e.g., CRM ticket creation, contract generation), emotion monitoring with visualized fluctuation charts, AI psychological and medical services, and a tiered service model, with a modular system architecture ensuring stable real-time bidirectional voice translation for calls and face-to-face interactions.

Application & Benefit: The platform serves enterprises in cross-border negotiations, e-commerce, and team collaboration—shortening negotiation cycles by 65% for a Southeast Asian rubber buyer and improving meeting efficiency by 4.2x for a multinational manufacturer. For daily use, it provides travel translation, personalized recommendations, and emotional support for overseas students and migrants. Commercially, it uses a tiered To C membership system (free to 39.9 yuan/month) targeting 12 billion yuan in first-year revenue, and collaborates with phone makers, hospitals, and educational institutions in the To B market via customized solutions and data revenue sharing, driven by high-growth sectors like cross-border e-commerce.

2.4. 5G-A × AI for Network Optimization and Automation

2.4.1. Use Case: Reduction in Site Inspection Time Using AI and Computer Vision

Challenge: The consistent and reliable operation of mobile network services hinges on the health of thousands of system rooms at cell sites. These rooms house critical equipment, including batteries, cooling units, and power systems.Traditionally, Türk Telekom relied on manual field inspections to monitor this equipment. While effective, this process was time-intensive and difficult to scale across a vast and geographically dispersed network. The challenges included:

- Operational Inefficiencies: Manual checks required significant field engineer hours, diverting skilled personnel from more complex tasks.
- Time Sensitivity: Delays in identifying equipment issues, such as a failing battery or a faulty cooling unit, could impact service quality.
- Scaling Difficulties: Ensuring consistent and frequent inspections across hundreds or thousands of sites was a logistical and costly challenge.
- To maintain its commitment to service excellence, Türk Telekom needed a smarter, more scalable solution to streamline inspections, improve maintenance planning, and guarantee network uptime.

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Solution: The AI-Powered Eye on the Network solution works in four key stages:

(1) Continuous Visual Capture

At each mobile site, 360° cameras are installed to continuously capture complete, panoramic views of the system room.

(2) AI-Powered Object Detection

The captured images are processed by a YOLO v8 Convolutional Neural Network (CNN) model. This powerful computer vision algorithm automatically scans the images to locate, identify, and label key equipment, such as battery belts, caps, and air conditioning units.

(3) Automated Inventory & Anomaly Detection

The system compares the detected equipment against a pre-defined digital inventory standard. Any discrepancy—such as a missing component, an incorrect installation, or a

visual anomaly—instantly triggers an alert. A detailed maintenance report is automatically generated and dispatched to the relevant field teams.

(4) Predictive Maintenance

Data on visual inconsistencies is merged with operational metrics from the equipment. This combined dataset feeds a machine learning model that predicts component degradation and potential failures. This enables the operations team to move from reactive repairs to a proactive, data-driven maintenance schedule.

The entire architecture is designed to scale horizontally, allowing for the seamless addition of hundreds of dispersed sites without a linear increase in the need for field engineers.

Application & Benefit: This use case achieved:

- Massive Efficiency Gains: Daily manual inspection time was reduced from 14 hours to just 15 minutes—a remarkable 98% reduction.
- Freed-Up Expertise: Field engineers are no longer tied up with routine visual checks, allowing them to focus on higher-value maintenance and optimisation tasks.
- Improved Compliance and Accuracy: The AI-verified inventory has slashed discrepancies, ensuring that compliance checks are faster and virtually error-free.
- Enhanced Service Reliability: By enabling proactive repairs and instantly flagging anomalies, the system strengthens the 24/7 service continuity guarantee for customers.
- Ultimately, this innovative use of AI has not only streamlined a critical operational process but has also built a powerful, data-driven monitoring framework, significantly elevating Türk Telekom's overall network agility and resilience.

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/how-turk-telekom-achieved-a-98-reduction-in-site-inspection-time-using-ai-and-computer-vision/)

2.4.2. Use Case: Pioneering the future of telecoms with Edge AI

Challenge: The traditional telecommunications business model, centred on connectivity, is facing increasing commoditisation. To maintain a competitive edge and drive future growth, operators like AT&T must evolve into platforms for innovation, offering value-added services beyond basic connectivity. The explosion of AI and the Internet of Things (IoT) presents a significant opportunity, but also a challenge. Centralised cloud data centres, whilst powerful, introduce latency and data transit costs that are prohibitive for many real-time AI applications.

Solution: The Telco AI Cloud Pilot established a new framework for real-time AI application development and deployment, effectively turning AT&T's network into a distributed AI cloud. The solution is built upon a foundation of powerful, yet flexible, hardware and software components from key technology partners:

- NVIDIA's AI-on-5G Platform: This comprehensive software platform provides a Source architecture for operators like AT&T to build and manage their AI cloud services. It includes NVIDIA's advanced GPUs for accelerated AI computing, the NVIDIA Aerial™ SDK for software-defined 5G virtual Radio Access Networks (vRAN), and the NVIDIA EGX™ platform for secure, high-performance edge computing.
- Dell Technologies' AI Solutions: The physical foundation of the edge cloud was provided by Dell Technologies. The pilot utilised Dell PowerEdge XR8000 servers, which are

specifically designed for demanding telecom edge environments. These ruggedised and compact servers are optimised to house the powerful NVIDIA GPUs, providing the necessary compute power for intensive AI workloads directly at the edge of AT&T's network.

- AT&T's 5G Network: As the lead operator, AT&T's robust and high-speed 5G network provided the essential connectivity fabric for the pilot. This infrastructure was critical for enabling the ultra-low-latency communication required between edge devices, the Dell servers hosting the AI workloads, and the end-users.
- Khasm Labs' Ecosystem Development: Acting as a crucial orchestrator, Khasm Labs (formerly the 5G Open Innovation Lab) cultivated a vibrant ecosystem of AI-focused startups. This collaborative environment facilitated the development of innovative and commercially viable AI solutions built to run on the new platform powered by AT&T.
- Archetype AI's "physical AI" technology: Powered by its Newton foundation model, Archetype's Lenses AI technology was utilised in the Bellevue pilot program for interpreting real-world sensor data. The technology, which processes multimodal sensor data and operates locally at the edge on AT&T's network, enabled real-time incident detection and dynamic traffic signal adjustments for a "Safer Signals" program.

Application & Benefit: The Telco AI Cloud Pilot demonstrated a compelling economic case for the adoption of a distributed AI cloud model by network operators. For AT&T, the key financial and operational advantages include:

- New Revenue Streams: By offering AI processing as a service, AT&T can tap into new, high-growth markets such as smart cities, industrial automation, and connected healthcare. This moves the company up the value chain from being a connectivity provider to becoming an indispensable platform for innovation.
- Reduced Operational Costs: Processing data at the edge significantly reduces the need for expensive backhaul to centralised data centres, leading to substantial savings in data transit costs across the AT&T network. Furthermore, the use of a software-defined, virtualised infrastructure simplifies network management and reduces operational

overhead.

- Improved Capital Efficiency: The modular and scalable nature of the edge AI cloud, built on hardware like the Dell PowerEdge servers, allows AT&T to make targeted investments in infrastructure based on demand, avoiding the high upfront costs associated with building large, centralised data centres.
- Increased Customer Retention: The ability to offer low-latency, high-performance AI services will be a key differentiator for AT&T, leading to increased customer loyalty and reduced churn.

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/pioneering-the-future-of-telecoms-with-edge-ai-with-dell-technologies-nvidia-att-khasm-labs-and-archetype-ai/)

2.4.3. Use Case: Smart beam-tracking antennas, elevating precision O&M

Challenge: This use case solves three core issues:

- At the data perception level: there is the issue of opaque resource management. Traditional antennas are dumb resources—invisible, unmanageable, and uncontrollable. Their topological relationships and attitude parameters rely on manual verification, making accuracy difficult to guarantee.
- At the decision execution level: there is the issue of high operational and maintenance

costs. The traditional "work order - analysis - dispatch - on-site" process has a long adjustment cycle and low closed-loop efficiency. Each network optimization requires prolonged manual tower climbing work, resulting in very high labor costs and safety risks.

- At the service application level: there is the issue of inaccurate demand matching. In scenarios such as tidal traffic, priority assurance, or emergency communication, traditional antennas cannot achieve dynamic scheduling of network resources. Their adjustment capabilities are rigid and cannot provide on-demand services.

Solution: To address the above issues, this use case has developed a comprehensive intelligent solution. First, leveraging built-in signal probes and integrated engineering parameter modules, the smart beam-tracking antennas achieve automatic visualization of topology relationships and real-time multidimensional perception of antenna attitude. This enables digitalization and automation of antenna assets, improving azimuth accuracy by 10 fold and providing a reliable decision-making foundation for AI large models.

Second, the solution establishes an AI-driven closed-loop process. When an optimization demand arises, the AI large model analyzes perception data and, combined with AI multi-frequency collaboration algorithms, generates adjustment strategies. These strategies can be issued remotely and are executed by smart beam-tracking antennas equipped with adjustable arrays. Finally, the wireless operation and maintenance workstation verifies the effectiveness, completing the closed loop. This process reduces the time from 2.5 hours of manual to 5 minutes of backend operation, improving maintenance efficiency by 30 times.

Finally, the solution implements AI-driven dynamic scheduling. By integrating user location awareness capabilities provided by the 5G-A network with the antenna’s beamforming flexibility, the AI large model analyzes user distribution in real time and generates dynamic beam adjustment commands. This mode not only increased tidal region traffic by 20% during pilot but also demonstrated rapid coverage supplementation capabilities in emergency

scenarios, realizing intelligent matching between network resources and user demands.

Application & Benefit:

- Economic benefits: The integration of smart beam-tracking antennas with AI cuts labor costs by 40%, reduces indirect expenses like equipment rental and business travel, and boosts tested area traffic by 20%. This leads to increased data revenue and users willingness to pay more. Overall, the ROI is about two years.
- Social benefits: User perceived downlink speeds improved by around 5%, enhancing daily network experience with reduced buffering and waiting times. Moreover, in emergency communication scenarios such as typhoons and earthquakes, the real-time adjustment capability quickly restore coverage, supporting public communication restoration.
- Industrial impact: smart beam-tracking antennas infuse the industry with core momentum for technological innovation, redefining the manual-dependent operation and maintenance logic of traditional antennas. For operators, it proves that investing in intelligence directly yields commercial returns—this forces the entire equipment supply chain to upgrade technologically, accelerates the elimination of traditional "dumb devices," and thus forms a virtuous cycle of industrial upgrading: driven by operators' needs and equipment vendors' innovation.

2.4.4. Use Case: AI-Assisted Sector Shutdown

Challenge: Turkcell faced growing energy demand, with traditional energy-saving methods offering limited results. Completely shutting down carriers could lead to coverage gaps, impacting service quality.

Solution: Turkcell has developed an AI-assisted sector shutdown algorithm that identifies low-traffic sectors, enabling safe shutdowns while maintaining uninterrupted service. The solution leverages AI/ML to geolocate Layer 3 messages from call trace logs, identify redundant sectors along with their viable alternatives, and perform precise data analysis for energy optimization—ensuring no coverage gaps while safely shutting down sectors.

Impact: The solution helped Turkcell make substantial progress towards its net-zero emissions goal by reducing energy consumption during low-traffic periods. It achieved a 10% improvement in energy savings over existing methods without degrading customer experience.

Application & Benefit: The implementation involved costs related to developing the AI-assisted solution and integrating it with existing systems, but it resulted in long-term energy savings and operational efficiency for Turkcell.

(Source: https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/turkcell-ai-assisted-sector-shutdown/)

2.4.5. Use Case: AI-based channel dimensioning

Challenge: Network operators must continuously balance channel capacity against user demand. Under-dimensioning leads to congestion and poor customer experience, while over-dimensioning wastes valuable spectral resources. Traditional dimensioning approaches based on peak hour traffic cannot adapt to dynamic demand patterns throughout the day.

Solution: Banglalink's AI-based approach:

- Real-Time Demand Analysis: Continuously analyzes traffic patterns across the network to identify current and predicted demand at the channel level.
- Dynamic Capacity Allocation: Automatically adjusts channel configurations to match capacity with demand in real-time.
- Predictive Scaling: Uses machine learning to forecast demand changes based on time of day, location, and historical patterns, enabling proactive capacity adjustments.
- Spectral Efficiency Optimization: Maximizes the utilization of available spectrum by allocating resources precisely where and when needed.

Application & Benefit: The solution has enabled Banglalink to:

- Improve spectral efficiency by dynamically matching capacity to demand
- Reduce congestion during peak usage periods
- Enhance customer experience through consistent service quality
- Optimize network investments by maximizing utilization of existing resources
- Decrease operational costs associated with manual network optimization

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/ai-based-channel-dimensioning-banglalink/)

2.4.6. Use Case: AI-driven Geo-experience-modelling for RF shaping

Challenge: Traditional RF network planning relies on drive tests and static models that cannot fully capture the dynamic nature of user behavior and environmental conditions. This leads to suboptimal network configurations that may not deliver the best possible experience in all locations and scenarios.

Solution: Qualcomm's AI-driven approach leverages:

- Geo-Experience Modeling: Uses AI to analyze vast amounts of geographic and network performance data to create detailed models of user experience across different locations.
- Predictive RF Shaping: Applies machine learning algorithms to predict optimal RF configurations based on historical patterns and real-time conditions.
- Automated Optimization: Continuously adjusts RF parameters to maintain optimal performance as conditions change.
- Experience-Centric Design: Focuses on actual user experience metrics rather than just traditional network KPIs.

Application & Benefit: The solution enables operators to:

- Improve network capacity and coverage through optimized RF configurations
- Enhance user experience in high-traffic areas
- Reduce network planning and optimization costs through automation
- Deploy network resources more efficiently based on predicted demand patterns

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/sim-ai-driven-geo-experience-modelling-radio-frequency-shaping-qualcomm/)

2.4.7. Use Case: Traffic Forecasting Engine & Demand Prediction

Challenge: In 2024, O2 Telefónica's network handled over five billion gigabytes of data, a fivefold increase from 2019. This surge poses challenges like network congestion, capacity management, and maintaining customer experience. To address this, O2 Telefónica is expanding AI technology to accurately predict mobile data usage.

Solution: Network planning team uses AI to accurately predict mobile data usage for 45 million customers. The tool, based on Google Cloud's AI platform Vertex AI, analyses current and historical traffic statistics at 28,000 sites, considering also factors like tariff changes and business forecasts. It processes 250 gigabytes of data in minutes and provides a detailed forecast of expected data traffic for each site for the coming years in a few hours following half a day of training the model.

Application & Benefit: AI enables O2 Telefónica to use its network investments even more effectively in the right places and for a better customer experience. The findings are directly integrated into network expansion planning process. This enables the company to optimally align network growth at each location according to customer requirements and to increase

capacity through additional technologies and frequency bands. Furthermore, O2 Telefónica is making targeted investments through a more accurate planning process. This technology enhances the daily customer experience and provides a solid foundation for network expansion planned for the upcoming years.

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/traffic-forecasting-engine-demand-prediction/)

2.4.8. Use Case: iKeyEvent @Hajj

Challenge: The annual Hajj pilgrimage in Mecca presents one of the most extreme network demand scenarios in the world. Millions of pilgrims converge in a concentrated geographic area, generating massive voice and data traffic. Ensuring network reliability, capacity, and quality during this period is critical for safety, communication, and the overall pilgrim experience.

Solution: Huawei's iKeyEvent solution provided:

- AI-Powered Traffic Prediction: Used machine learning to forecast traffic patterns and demand spikes during the Hajj period, enabling proactive resource allocation.
- Real-Time Network Monitoring: Continuously monitored network performance across thousands of cells, identifying potential issues before they impacted users.
- Automated Resource Optimization: Dynamically adjusted network parameters and resource allocation to maintain quality of service during peak demand periods.

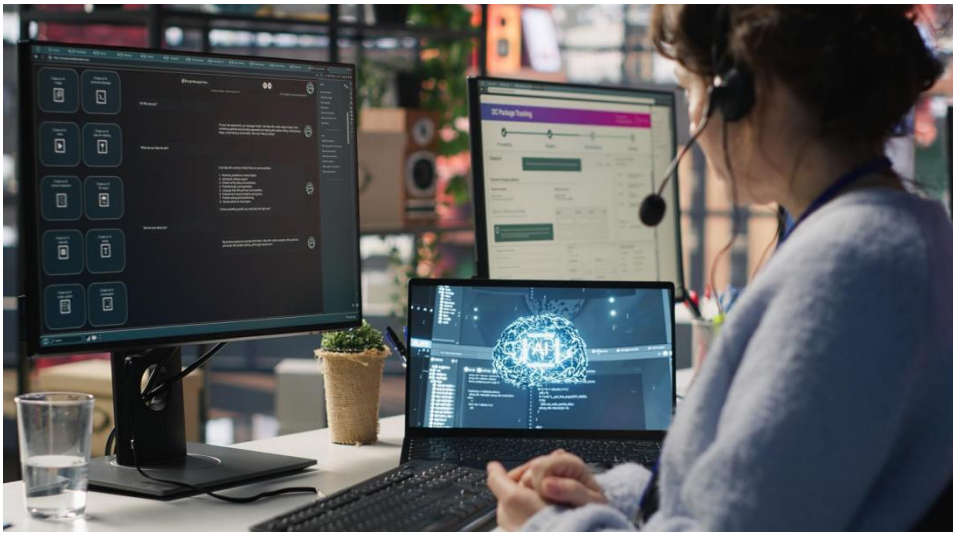
- Emergency Response Coordination: Integrated with emergency services to ensure reliable communications for crisis response.

Application & Benefit: During Hajj deployments, the solution achieved:

- Successful handling of peak network traffic with millions of concurrent users
- Maintained high voice and data quality throughout the pilgrimage period
- Reduced network incidents through predictive monitoring and automated responses
- Enhanced communication reliability for pilgrims and emergency services

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/huawei-ikeyevent-hajj/)

2.4.9. Use Case: Utilizing insights from DX (Digital Transformation) such as generative AI in the customer support domain



Challenge: Customer support operations face increasing complexity as services diversify and customer expectations rise. Traditional support models struggle to handle the volume and variety of inquiries efficiently while maintaining high satisfaction levels. KDDI needed to transform its customer support using cutting-edge AI technologies.

Solution: KDDI's project incorporates:

- Generative AI Assistants: Deploys generative AI-powered virtual assistants that can understand and respond to complex customer inquiries with human-like accuracy.

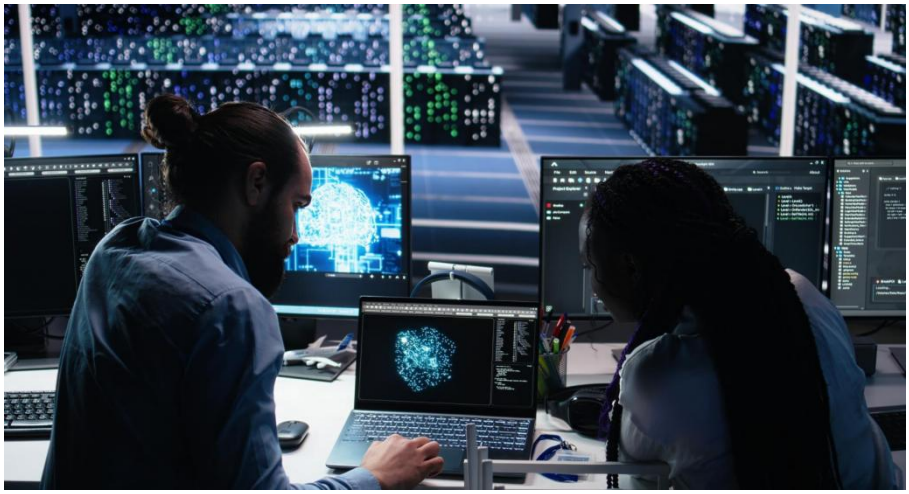
- Knowledge Base Integration: Connects AI systems to KDDI's extensive knowledge bases, enabling instant access to accurate information for customer support.
- Personalized Customer Interactions: Uses AI to analyze customer history and preferences, tailoring support interactions to individual needs.
- Agent Empowerment Tools: Provides customer support agents with AI-powered tools that suggest responses, retrieve information, and automate routine tasks, allowing agents to focus on complex issues.

Application & Benefit: The implementation has enabled KDDI to:

- Reduce average handling time for customer inquiries
- Improve first-contact resolution rates
- Enhance customer satisfaction through faster, more accurate responses
- Empower support agents to handle more complex issues effectively
- Scale support operations without proportional increases in staffing

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/a-new-project-utilising-insights-from-dx-digital-transformation-such-as-generative-ai-in-the-customer-support-domain/)

2.4.10. Use Case: Automated Drive Test Reporting and Accelerated Decision



Challenge: In a global market where telecommunications operators faced increasing pressure to innovate beyond providing basic connectivity, Azercell embarked on a strategic

digital transformation. The company aimed to solidify its position as a key player in Azerbaijan's digital ecosystem by enhancing its technical capabilities and innovating the customer experience. A key operational challenge was the analysis of network engineering drive test reports. These reports, essential for network maintenance and planning, were generated by field engineers across the country and contained vital information. Engineers were overwhelmed by the vast number of reports and data and wanted to be more in a position of wanting to just simply 'talk to the documents' and quickly summarise information and pinpoint criticalities.

· Business Challenges:

(1) The manual process of reading, interpreting, and consolidating these reports was highly time-consuming and resource-intensive

(2) Delays in processing the information from reports slowed down strategic decision-making for network upgrades and maintenance schedules.

(3) Senior executives could not get insight directly from the reports as it would mean scrolling through many PDFs with tables and colour coded maps making it difficult to gain a unified view of network health and performance.

(4) Senior executives could not get insight directly from the report as it would mean scrolling through many PDFs with table and colour coded maps.

· Technical Challenges:

(1) A significant technical hurdle was the multi-language nature of the reports, which required specialised human skills for translation and interpretation, creating data silos.

(2) The information within the reports was largely unstructured text, making it incompatible with traditional data analysis tools that require structured data.

(3) Legacy processes lacked the capability to automate the ingestion and analysis of such diverse and complex source materials efficiently.

Solution: Azercell partnered with IBM to conduct a proof-of-concept (PoC) around drive test improvements leading to network optimisation and ultimately customer service

improvements. The PoC used IBM's watsonx, an Artificial Intelligence (AI) and data platform, to ingest, understand, and automate the analysis of the multi-language site visit reports.

- The Process: The collaboration was initiated through the GSMA Foundry's GenAI Accelerator Pack. This initiative connects mobile operators with technology partners to foster innovation and accelerate the adoption of new technologies. With the exclusive benefits of the GSMA Foundry and IBM GenAI watsonx platform and services, Azercell was granted free access to the IBM watsonx platform and received free technical support from skilled GenAI experts from IBM Client engineering to develop the PoC in co-creation mode. The PoC focused on automating the analysis of the multi-language site visit reports, which was identified as a prime use case for generative AI.
- The Technology: The solution was built on IBM watsonx, IBM's enterprise-ready AI and data platform designed to train, validate, tune, and deploy AI models. For Azercell's challenge, the key feature was the platform's advanced natural language processing and multilingual capabilities. The platform was able to ingest the unstructured text from the drive test reports in various languages, understand the context and technical details within them, and then synthesise the information into a standardised, structured format for analysis. This focus on leveraging AI's ability to understand human language was a game-changer, directly addressing the core technical challenge and unlocking the data that was previously trapped in disparate documents.

Application & Benefit:

- Efficiency Gains: The automation of report analysis delivered a significant reduction in the manual effort and time required by technical teams to process the information
- Optimised CAPEX Planning: Having a single source of data will assist in making smarter decisions on network coverage and expansion; helping to optimise CAPEX
- Enhanced Agility: By transforming a slow, manual process into an automated one, Azercell accelerated its decision-making cycles. Technical teams gained faster, more unified insights, allowing for more proactive network management
- Improved Data Quality: The AI-powered solution standardised the reporting data, eliminating inconsistencies and creating a single, reliable source of truth for analysis of

site visits.

- Future-Proofing: This successful PoC served as a crucial first step, creating a scalable foundation and providing the business case for applying IBM watsonx to other complex challenges, such as smart CapEx allocation, predictive network maintenance, and performance monitoring.
- Faster Insights: The new assistant built with watsonx provides an intuitive natural language based interface to interact with the drive test reports. Senior exectutives looking for quick information don't need to ask IT for DataBase queries, they can simply ask their question to the assistant.

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/azercell-automated-drive-test-reporting-and-accelerated-decision-making-leveraging-gsma-foundry-and-ibms-generative-ai-accelerator-pack/)

2.4.11. Use Case: Autonomous 5G slicing for seamless communication

Challenge: As 5G networks enable a wide variety of use cases—from enhanced mobile broadband to ultra-reliable low-latency communications and massive IoT—the need for efficient network slicing becomes critical. Traditional manual configuration of network slices is complex, time-consuming, and cannot adapt to real-time demand fluctuations. Turkcell needed an intelligent solution that could automatically provision and manage slices to meet

varying service level agreements (SLAs) without human intervention.

Solution: Turkcell's autonomous 5G slicing solution uses AI algorithms to:

- Dynamic Slice Creation: Automatically creates network slices based on real-time application requirements and traffic patterns.
- Resource Optimization: Continuously monitors network performance and adjusts resource allocation across slices to maintain SLA compliance.
- Predictive Scaling: Anticipates demand spikes and proactively scales slice resources to prevent degradation of service quality.
- Closed-Loop Automation: Implements a fully automated, closed-loop system that detects, analyzes, and resolves issues without manual intervention.

Application & Benefit: The autonomous slicing solution has enabled Turkcell to:

- Reduce slice provisioning time from days to minutes
- Improve network resource utilization by dynamically allocating capacity where needed
- Enhance customer experience through consistent service quality across different applications
- Support new revenue-generating enterprise use cases requiring guaranteed network performance

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/turkcell-autonomous-5g-slicing-for-seamless-communication/)

2.4.12. Use Case: Pioneering AI network pilot

Challenge: As networks become increasingly complex with the introduction of 5G and diverse service requirements, traditional network management approaches struggle to maintain optimal performance. Operators need intelligent solutions that can automate complex decisions and adapt to changing conditions in real-time.

Solution: The Telkomsel-ZTE AI network pilot includes:

- AI-Powered Network Operations: Deploys AI algorithms to automate routine network operations, reducing the need for manual intervention.
- Intelligent Fault Management: Uses machine learning to detect, diagnose, and resolve network faults before they impact customers.
- Predictive Maintenance: Analyzes network data to predict potential equipment failures and schedule proactive maintenance.
- Performance Optimization: Continuously optimizes network parameters based on real-time conditions and usage patterns.

Application & Benefit: The pilot project has demonstrated:

- Significant reduction in network incidents through predictive maintenance
- Improved operational efficiency through automation of routine tasks
- Enhanced network performance and customer experience

- Valuable insights for scaling AI across the broader network
- Proof of concept for AI-driven network transformation

(Source:https://www.gsma.com/get-involved/gsma-foundry/gsma_resources/pioneering-ai-network-pilot-telkomsel-zte/)

2.4.13. Use Case: Agentic AI empowered high-level autonomous networks

Challenge: Mobile networks have evolved into an extremely sophisticated system, encompassing multiple domains and subsystems from different vendors, making network operation and maintenance (O&M) highly complex.Current AI capabilities in mobile networks are fragmented across network elements in different domains. Limited interface openness hinders cross-domain and cross-vendor integration, causing network O&M primarily focused on equipment rather than comprehensive service and customer experience assurance.

Solution: To address these challenges, the agentic AI represents the next frontier. It employs sophisticated reasoning and iterative planning to autonomously solve complex, multi-step problems, marking a significant advancement in network automation. ZTE and China Mobile have launched the commercialized Multi-Agent System, with innovations validated through practical implementation.The system decomposes the tasks of multiple workflows into standardized inputs and outputs, so that multiple collaborated agents can be produced. Each

agent focuses on a specific professional field, ensuring precise knowledge bases and targeted training data. This specialization minimizes AI hallucination while delivering consistent, professional outputs.Multiple agents across all network layers form a "digital employee center," enabling seamless cross-domain and cross-vendor collaboration. This structure facilitates automatic workflow planning and dynamic agent orchestration, operating like project management to ensure transparent, traceable, and explainable processes and results.

Application & Benefit: By deploying this Multi-Agent System, operators can dynamically allocate network resources to deliver versatile service models across multiple dimensions including traffic-based services, quality-of-service guarantees, time-based allocations, and network partition-based services for revenue increment. MAS has been deployed in multiple scenarios including Wireless Performance Optimization,Wireless energy efficiency optimization, Wireless Fault Monitoring

3. Summary

As mobile network and AI continues to integrate and evolve, its applications are rapidly expanding, unlocking boundless opportunities for mobile communication industry. This report illustrates 5G-A × AI use cases respectively for manufacturing, life, governance, network optimization and automation, which provide replicable, scalable application templates for stakeholders to use. For more detailed information about those use cases, please contact with GTI Secretariat (admin@gtigroup.org).

In the future, GTI will continue to expand and explore 5G-A × AI use cases with joint effort from GTI members and partners, further creating more business opportunities and value for mobile communication world.