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Inside the AI-Powered Telco

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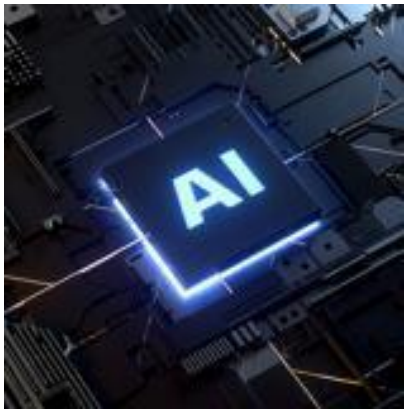

To date, most industry use cases for AI have been limited to extracting insights from customer and network-generated data using big data and machine learning. Now though, GenAI solutions such as ChatGPT and Claude are making it easier than ever for telcos to automate many different processes and offer new services to customers.

A recent survey by AWS found that adoption of AI in telecoms will hit 48 percent in the next two years, but already, many of the world's largest telcos are well on their way to integrating emerging technologies and dedicated language models into their business processes.

For example, South Korea's SK Telecom was well ahead of the curve when it announced mere weeks after ChatGPT's initial release that it was putting AI at the core of its business, partnering with Deutsche Telekom to develop their own telecom-focused Large Language Model (LLM) for CSPs to deploy GenAI models efficiently and quickly. Trained on billions of specialized industry parameters, these models can handle complex tasks, while requiring less power and equipment.

How can communications services providers incorporate AI and LLMs into their everyday processes? Here are three key areas that I think could be radically transformed:

Network Optimization

In the all-AI telco, real-time analytics will continuously monitor every area of the network, which will then adapt to changing conditions seamlessly, self-optimizing and self-healing from faults.

Network quality of service will be dynamically adjusted, easing strain and energy usage on physical networks and reducing capacity at times of lower demand. When needed, autonomous drones

carrying picocells will supplement networks to provide additional capacity when traffic increases or is anticipated to.

As vast quantities of data are created by users, AI can be used to optimize complex operations, improve service assurance and reduce operating costs, using real-time reports to monitor traffic and resolve potential issues before they occur. Analysis of this behavioural data can provide further improvements to services and predict usage trends.

A new model developed by the University of Surrey gives us a look at what such an autonomous network could be, utilizing "constrained combinatorial optimization with deep reinforcement learning" to save 76 percent in resources and decrease energy use, with only a 23 percent increase in compute costs.

For future network planning, digital twins will provide real-time insights into system performance, predict potential failures, and simulate various scenarios to enhance decision-making processes and improve overall efficiency.

Business Operations

Thanks to AI, day-to-day business processes will be largely automated, helping telcos reduce their operational costs, optimise supply chains, improve inventory management, and make suggestions for new business opportunities.

AI agents will oversee billing and revenue management operations, identifying errors and preventing revenue leakage, whilst ensuring that customers are charged correctly. With most processes running automatically, any human interventions would be targeted where they can deliver the most value.

By automating product creation through natural language text or voice commands, users will build new products and packages in seconds. Furthermore, image recognition will auto-create from sketches and drawings, transforming how products are conceived and deployed. Products will also be created dynamically at sale time, tailored to individual customers based on their history, business goals, and margins to maximize profits.

On the network management side, augmented reality will enable technicians to visualize and solve complex issues remotely, leading to faster resolution times and reduced downtime.

Customer Experience

Beginning in the back-end of the AI telco, customer profiles will be generated automatically based on patterns of behavior, with chatbots capable of understanding and resolving inquiries providing highly efficient and responsive customer service,reducing wait times and improving overall satisfaction. All marketing effortswill be data-driven and precisely targeted, matched to customer preferences and behaviors. When dealing with virtualized salespeople or support staff, customers will communicate with individually tailored agents, each with access to every interaction you've ever had with them. This creates in effect a dedicated account manager for every user, who responds to customer queries in natural language and their preferred language, helping with tasks such as top-ups, renewals, upgrades, and more.

Through analysis of customer behavior and preferences, marketing campaigns will be generated automatically, offering fully personalized customer experiences and hyper-personalized products, plans, and device recommendations, based on usage and intent data. Interactions will be monitored and adjusted on an ongoing basis through emotion recognition and sentiment analysis.

AI-generated insights will enable proactive assistance before issues arise, predicting future customer behavior and providing help and support to customers before they even realize that they need it.

Automatic – for the People?

Will we one day see an all-AI telco, with no employees? It's unlikely for now. Even the best LLMs remain prone to logical shortcomings, hallucinations, and bias. However, as refinements continue, and effective business use cases are carefully determined, telcos indeed could function with AI supporting a leaner or more geographically distributed workforce. This need not, however, mean mass layoffs. Already, telecoms is the leading sector when it comes to reskilling its workforce, with 23 percent having retrained at least one group of employees, and Telefónica currently boasting Europe's largest internal retraining program of any industry.

AI can be a powerful companion, automating day-to-day tasks and managing virtualized networks while maintaining a culture of human-driven collaboration. But just because you can reduce headcount doesn't mean you should. By replacing much or all of the customer-facing side of their businesses, telcos might in fact end up negatively affecting the quality of their customer experience.

In fact, for all the possibilities of automating support, surveys reveal that, in general, 88 percent of customers prefer to talk to a human, and are likely to be frustrated by the inability to speak to a real person. Still, if done well, AI chatbots have been shown to achieve similar customer satisfaction scores whilst being much quicker than traditional customer services.

In time, telcos are likely to not need quite as many people to run them. While many new jobs will be created, many more are expected to be lost, for a net reduction of 14 million jobs across all sectors in the next five years.

As everyone waits on the many ongoing legal cases against GenAI providers to be settled, it'll be some time before these technologies start to make significant waves in the industry beyond the current hype. The human element remains crucial for guiding AI in the right direction, and is likely to always remain a major component of any AI-driven system.

Nevertheless, there is a remarkable opportunity for vendors to implement and deploy AI-powered solutions for distinct business use cases, trained on their own organizational data. Right now though, according to AWS, only 15 percent of telcos are looking to build their own models in-house, with the rest opting to feed their proprietary enterprise data into off-the-shelf solutions — probably a wise move considering the rapid evolution of generalist LLMs which are outperforming industry specific solutions.

Telcos that embrace AI and LLMs across various aspects of their operations could see great improvements to their customer satisfaction rates and business efficiency, predicting and preventing issues, and ensuring the highest level of security.

We're still in the very early days of AI, and it'll take some time before suppliers fine-tune their product offerings and commercial models and decide how personal data can be safely used. For now, the all-AI telco remains a distant dream, but with the accelerating rate of change in the technology and its applications, its realization may come sooner than many think — and take those unprepared by surprise.