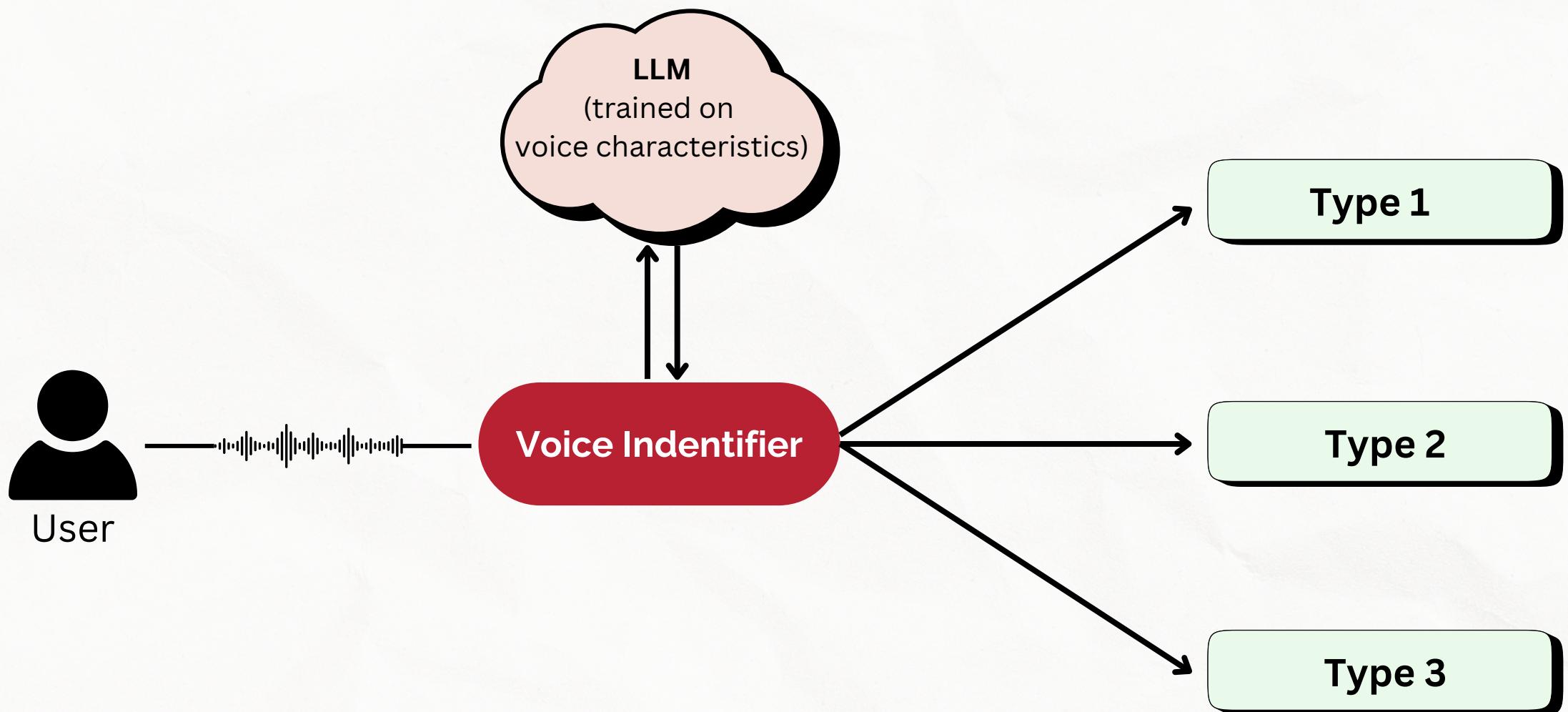




# 1. Subscriber Identification

AI-driven **voice authentication** is enhancing customer service in telecom. **Telefónica** uses **Nuance Gatekeeper** to identify senior citizens calling for support, prioritizing them in service queues.

During COVID-19, traditional age-based screening failed as callers falsely claimed to be seniors. AI solved this by analyzing **voice characteristics**, ensuring only genuine seniors received priority assistance—eliminating queue jumpers and improving service efficiency.



**LLM helps in identifying the voice characteristics of callers in order to prioritize assistance to senior citizens**

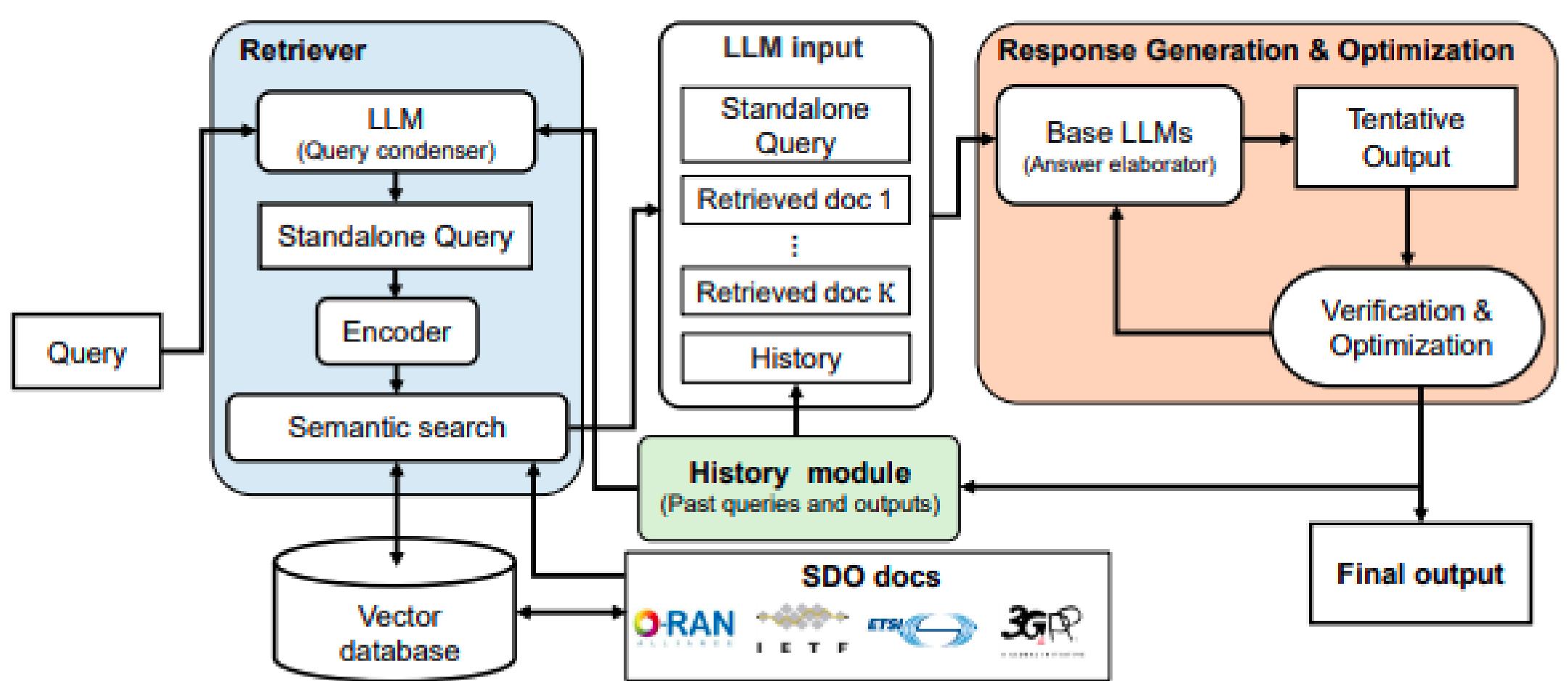
source: telcodr

# 2. 3GPP SPECIFICATIONS

The **3rd Generation Partnership Project (3GPP)** is an organization that creates global standards for mobile networks, including 4G, 5G, and future technologies.

A major application is **AI-powered chatbots** that answer 3GPP-related queries, reducing research time and improving accuracy. This allows engineers to implement new telecom technologies more efficiently.

**TelecomRAG** is one such system made for Q&A related tasks.

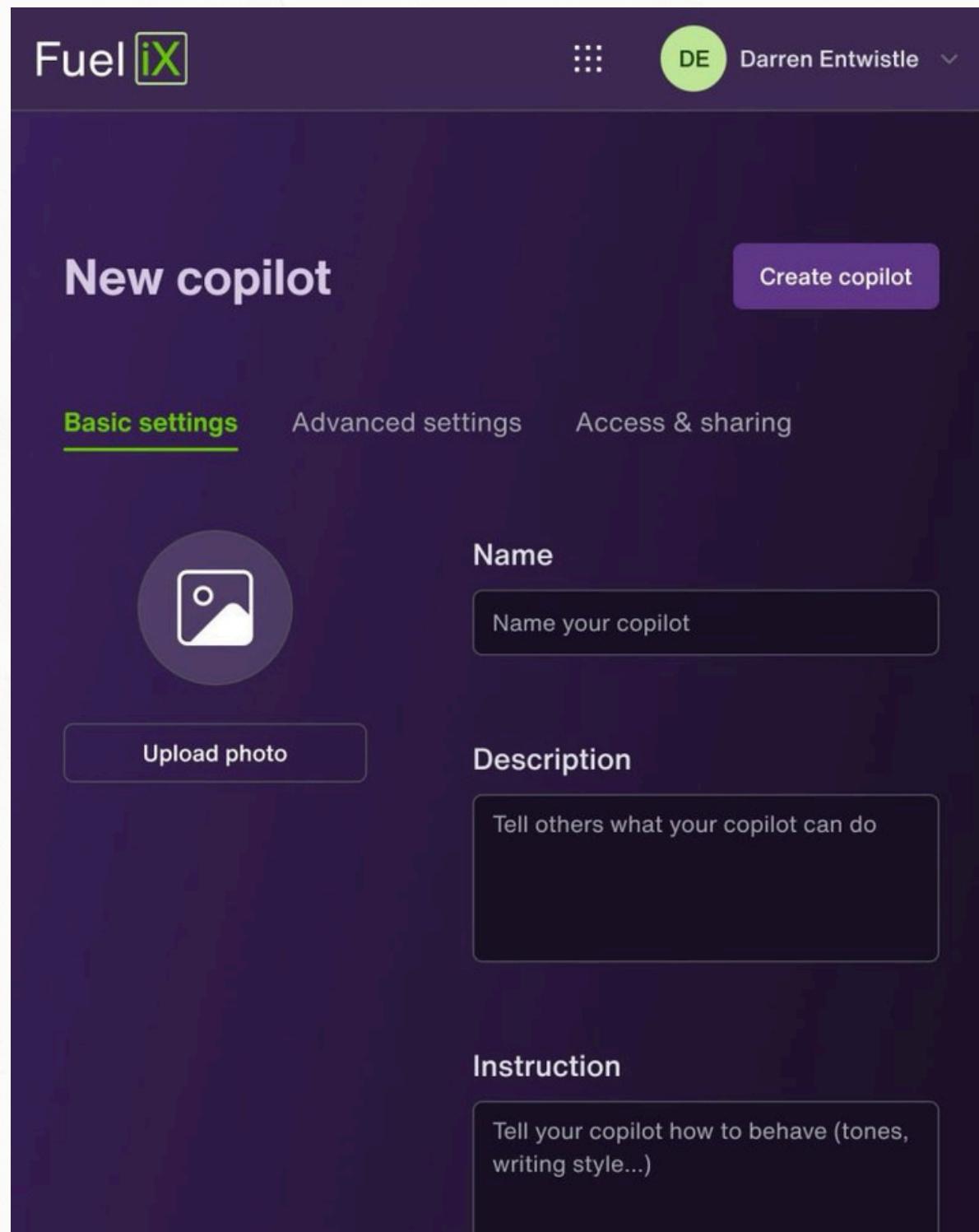


RAG based architecture of TelecomRAG

# 3. EMPLOYEE SUPPORT

AT&T's "Ask AT&T", built with **ChatGPT on Azure**, supports 68,000+ employees with coding, customer service, meeting summaries, and network analysis. The success has led AT&T to expand its capabilities and explore **autonomous assistants** for fraud detection and software development.

TELUS' Fuel iX utilizes **100+ LLMs** to predict network issues, improving forecasting accuracy from **69% to 89%** and cutting network operating costs by **\$15 million**. AI is not just optimizing customer service but also **empowering employees** to work smarter.

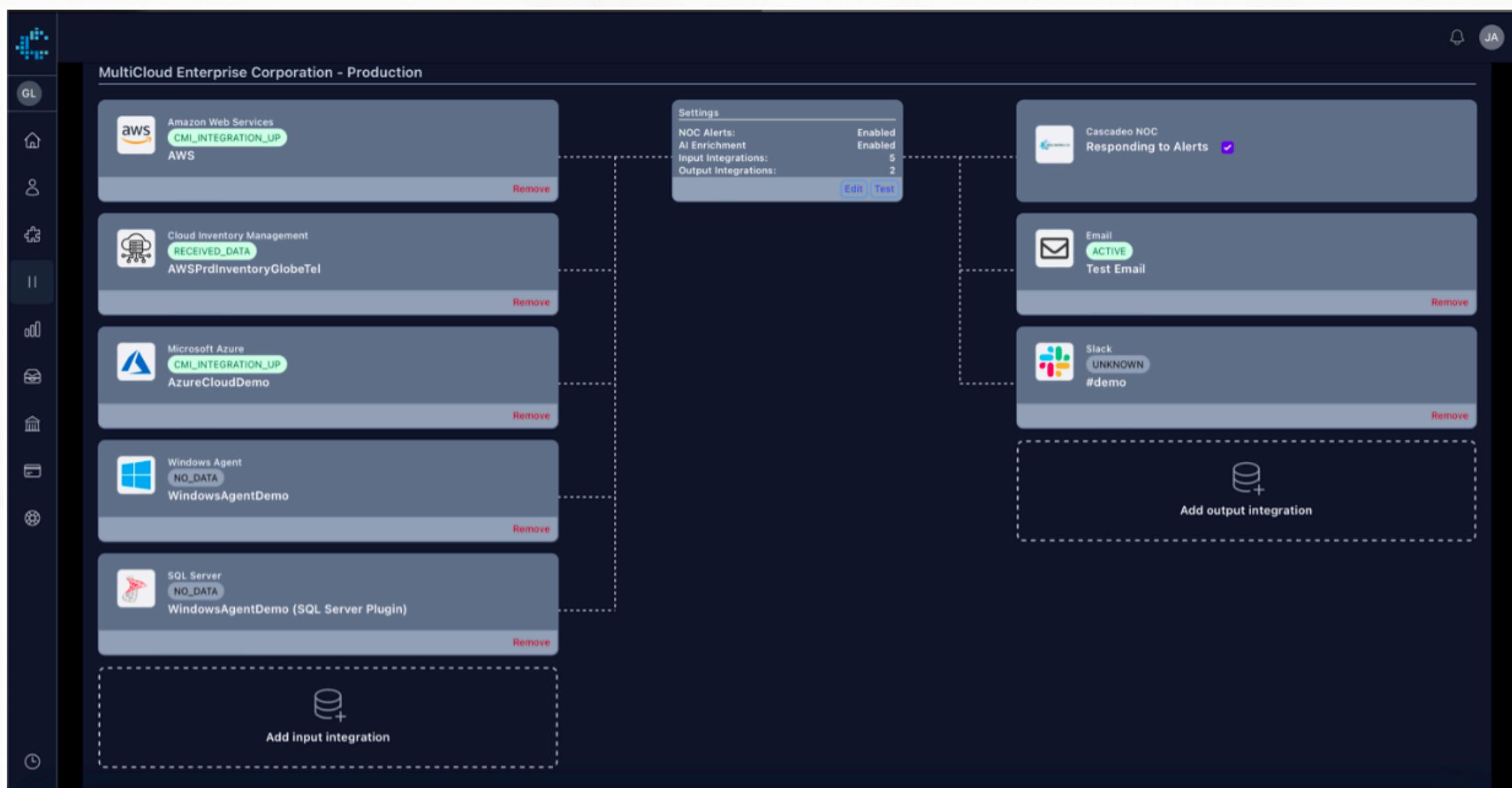


Fuel iX interface

# 4. Cloud Management

AI simplifies **cloud management**, acting like a virtual consultant to ensure smooth operations. Telecoms use cloud for deployments of their services.

**Globe Telecom** recognized the shift to **public cloud** early and acquired **Cascadeo** in 2019. In 2023, it launched **Cascadeo AI v3.0**, integrating **GPT-4, AWS SageMaker, AWS DevOps Guru**, and proprietary AI to **automate, monitor, and optimize cloud deployments**. This AI-powered approach helps enterprises **streamline cloud operations** in real time, making cloud management more efficient and hassle-free.



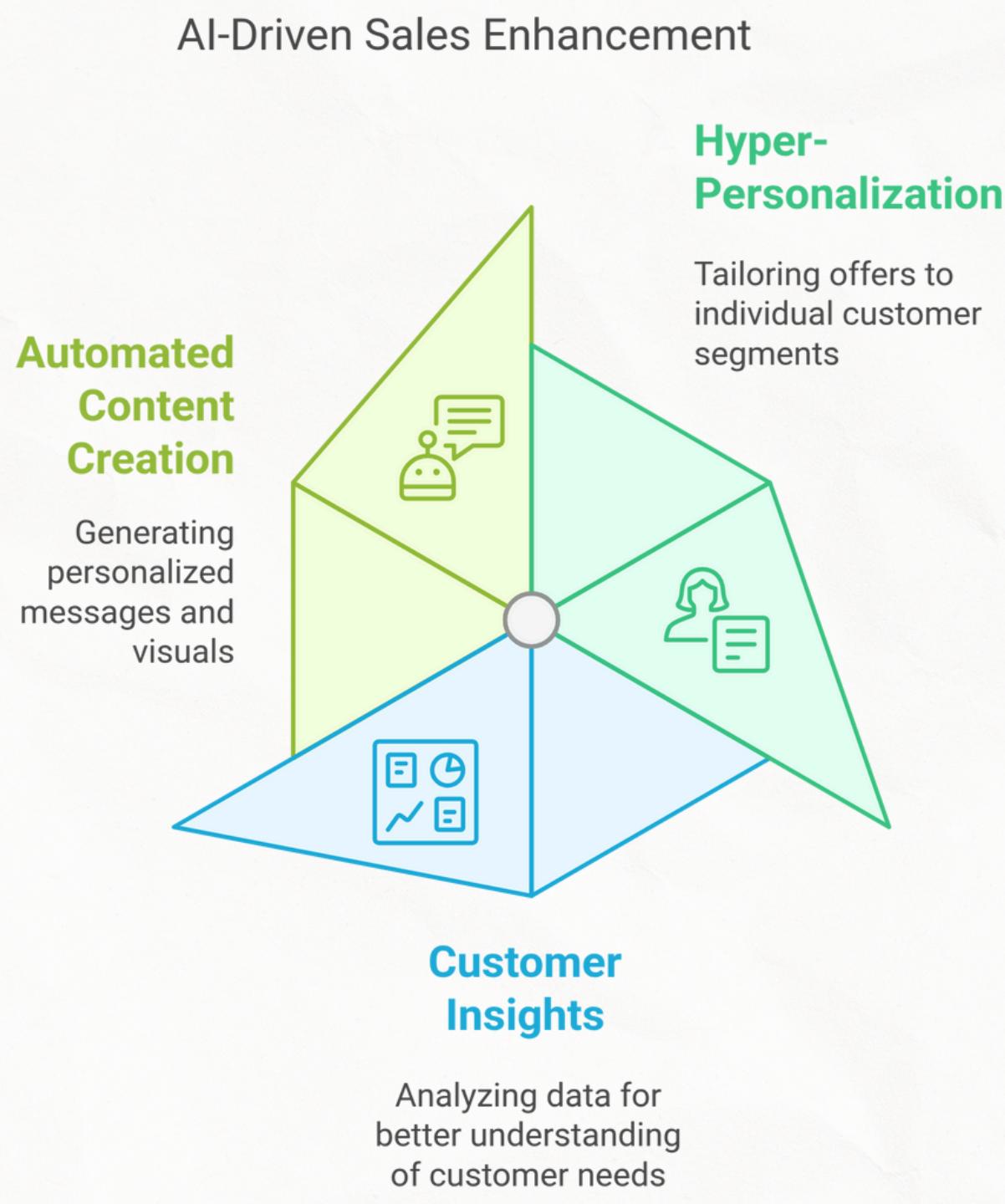
Cascadeo AI event pipeline

source: cascadeo

# 5. Greater Sales Growth

LLMs drive sales growth by enabling **hyper-personalization**, **customer insights**, and automated **content creation**. They analyze customer data, past interactions, and behavioral patterns to craft targeted offers and recommendations.

For example, a **European** telecom company uses **generative AI** to identify potential sales leads from customer calls. This approach has boosted its conversion rate by over **10%**. The company also generates personalized messages and visuals tailored to microsegments, leveraging AI to craft offers based on factors like location, device type, and psychological triggers (e.g., scarcity or authority).

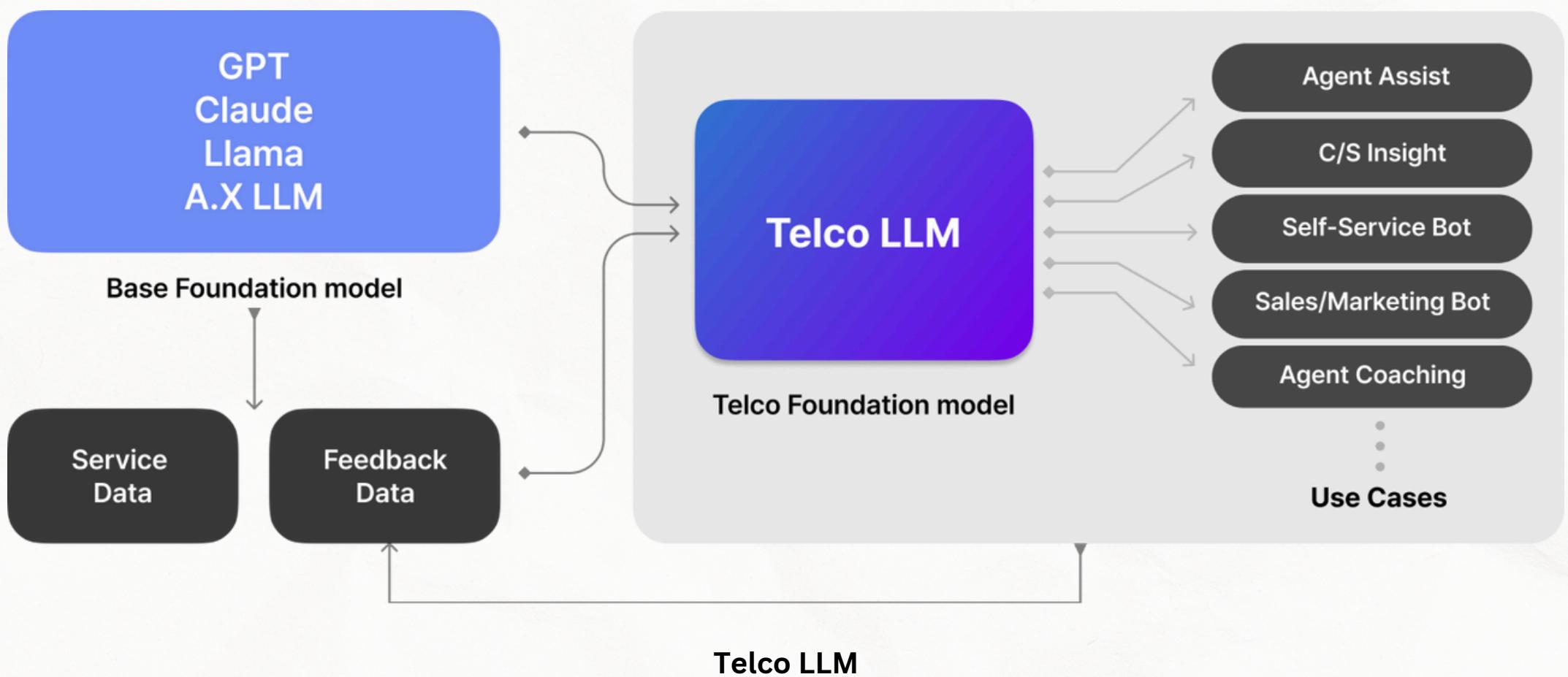


source: mckinsey

# 6. Customer Support

SK Telecom, a leading South Korean telecom provider, has partnered with industry leaders to develop **Telco LLM**, a specialized large language model for telecommunications.

Designed to enhance customer support and query resolution—key aspects of the telecom sector—Telco LLM is fine-tuned on models like **Anthropic Claude** and **Meta LLaMa** for optimal performance.

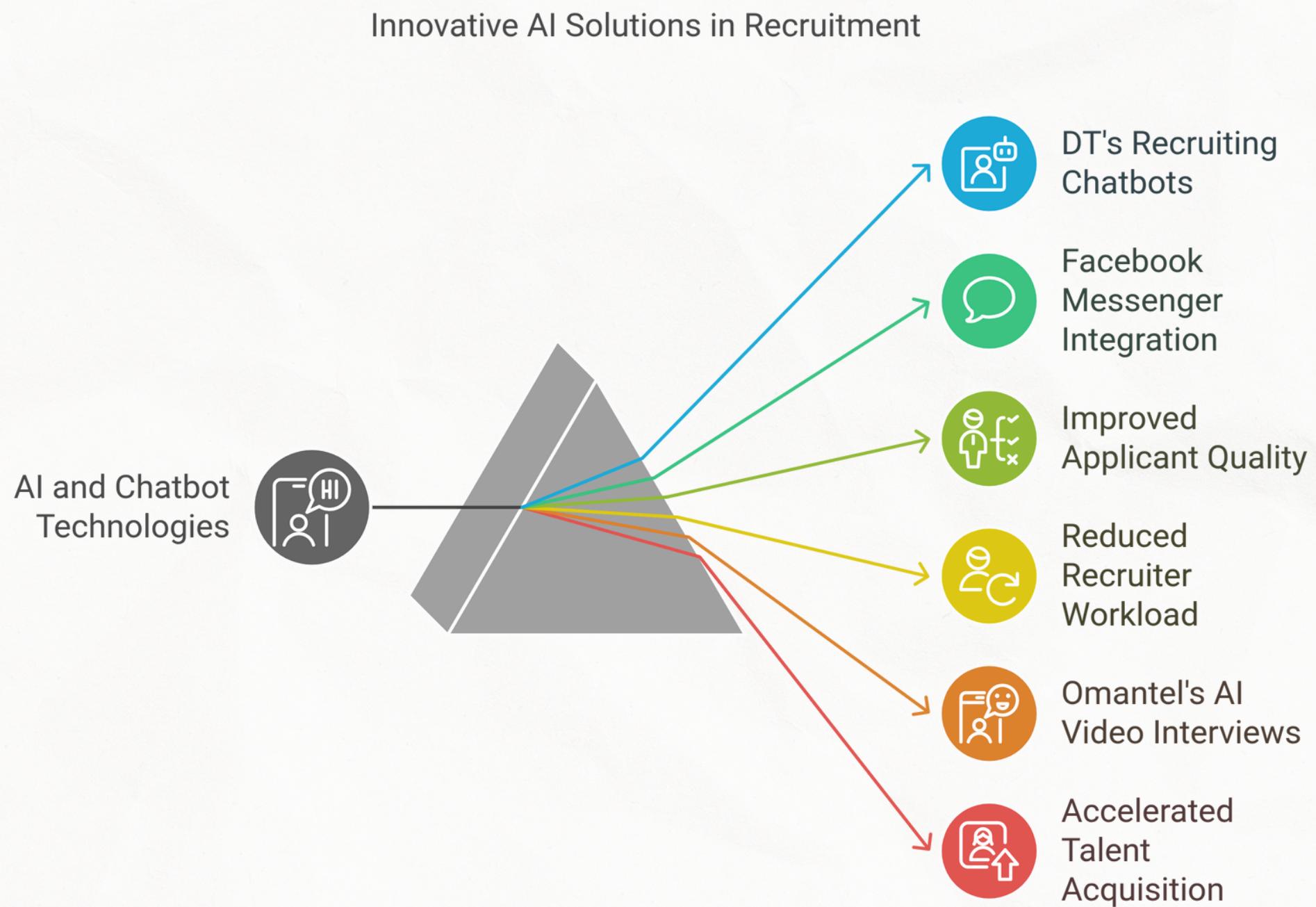


source: SK Telecom

# 7. Recruitment

**DT** pioneered recruiting chatbots, using **Facebook Messenger** to answer job seekers' questions **24/7**. This improved applicant quality while reducing recruiter workload. Now, other DT subsidiaries use AI chatbots to assist with job searches and applications.

**Omantel** leveraged **Elevatus' AI-powered video interviews** to screen **5,200+ applicants in just two days**, streamlining hiring and accelerating talent acquisition.



source: telcodr

# 8. Network Anomalies Resolution

LLMs help mobile network operators (MNOs) quickly detect and resolve anomalies by analyzing past incident reports and equipment manuals. They can identify patterns in recurring issues, suggest accurate solutions, and predict resolution times based on historical data.

By automating troubleshooting, LLMs reduce manual effort, speed up fault detection, and improve network reliability. They can also provide real-time recommendations, helping engineers address problems before they escalate, ultimately ensuring a more stable and efficient network.

```
Troubleshooting_Ticket.JSON =  
{  
    'BS_ID': 'B01'  
    'Alarm_ID': 'RAN_Site01_LTE_RF_VSWR'  
    'Alarm Characteristics': 'BS_Type:BTS5900,  
                             Board_Type=MRRU,  
                             Affected_RAT=GL,  
                             VSWR_Alarm_Threshold(0.1)=14,  
                             VSWR(0.1)=14,  
                             Output_Power(0.1 dBm)=432'  
    'Alarm Time': '4/6/2023 2:10:04 PM'  
    'Dispatch Time': '4/6/2023 3:48:36 PM'  
    'Resolution Time': '4/6/2023 4:36:14 PM'  
    'Diagnose Summary': 'RF Unit Voltage Standing Wave  
                         Ratio threshold crossed due to the  
                         feeder being bent or damaged'  
}
```

**Sample network anomaly troubleshooting ticket. Information related to the anomaly is automatically generated by the system (in blue). Input regarding resolution of the anomaly is provided by the engineer (in orange).**

source:<https://arxiv.org/pdf/2308.06013>

# 9. Plan Personalization

**MobileX**, a US-based MVNO, uses AI to analyze subscriber data and create personalized plans instead of pushing unlimited options. Similarly, **Totogi's PlanAI** leverages AI and ML to optimize revenue by micro-targeting offers, helping telcos increase revenue by up to **10%**.

The screenshot shows the Totogi's PlanAI platform interface for creating a new campaign. On the left, the 'Objective' is set to 'ARPU Optimization'. The 'Campaign Name' field is empty. The 'Budget' field shows '0/50'. Under 'Target Subscribers', there is a '+ Target' section with a checkbox for 'Exclude predicted take up rate less than 10%'. On the right, the 'Select Products' section is titled 'Select Products' and includes a note: 'Selected products will be combined as product bundles. For example, if both Voice and Data are selected, Voice + Data bundles can be generated together with solo Voice and solo Data products.' Below this, there are four tabs: 'Voice' (selected), 'Text', 'Data', and 'Content'. Under the 'Voice' tab, there are eight product options: 'All-net' (Cost: 0.06/min, Margin: 50%), 'On-net' (Cost: 0.02/min, Margin: 70%), 'Off-net' (Cost: 0.1/min, Margin: 30%), 'International Europe' (Cost: 0.32/min, Margin: 40%), 'International Americas' (Cost: 0.27/min, Margin: 35%), 'Roaming Europe' (Cost: 2.3/min, Margin: 15%), 'Roaming USA' (Cost: 3/min, Margin: 10%), and 'Voice-mail' (Cost: 0.01/min, Margin: 85%). Each product has a checkbox next to its name.

**Totogi's PlanAI**

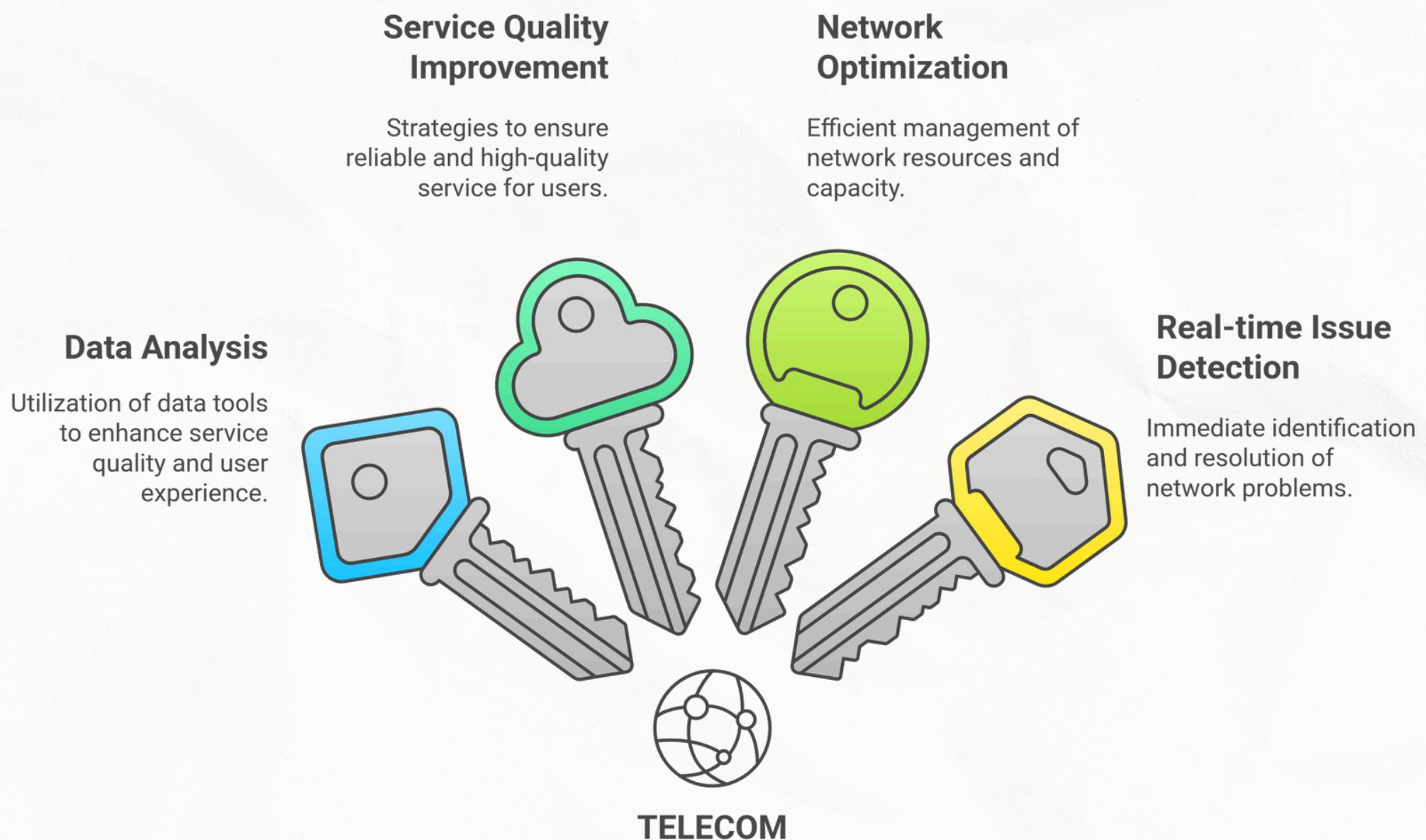
source: Totogi

# 10. Network Optimization

**Telcos** generate vast amounts of data, but leveraging **Gen AI** is now helping them extract valuable insights to enhance service quality and customer experience.

For instance, **Three UK** uses **Microsoft Dynamics 365(LLM based Analytics)** to analyze data, improve service quality, and ensure a smooth experience for gamers and streamers. Similarly, **AT&T** employs **Gen AI**, machine learning, and predictive analytics to optimize network planning, capacity management, and real-time issue detection.

## Enhancing Telecommunications with Data and Network Innovations



source: rcrwireless



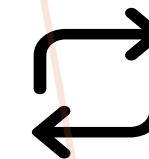
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