

The Race to AI-Native Telco: SK Telecom Leads the Pack



Copyright © Twimbit 2024

Twimbit is a research and advisory firm driven by a singular mission: to empower businesses that are making a difference. We specialise in providing invaluable industry intelligence to executives and teams, acting as a catalyst for innovation and growth.

Table of Contents

<i>The AI Pyramid Strategy</i>	5
AI Infrastructure: Foundation for Innovation	5
AI Transformation (AIX): Infusing AI Across the Business	6
AI Service	8
<i>AI Investments & Partnering for Success</i>	10
<i>Growing the Industry with AI</i>	11
<i>Responsible AI for the Greater Good</i>	13
<i>Future Outlook</i>	17

Introduction

With AI becoming ever more prevalent especially in today's Gen-AI era, it is hard to imagine companies not taking full advantage of this revolutionary technology to change the way they do business. For the telecommunication industry, this has been a persistent challenge.

The telecom AI market was worth USD 2.2 billion in 2022, a fraction of the broader USD 136 billion global AI market. Telcos have yet to fully embrace AI, highlighting the industry's ongoing challenge in transitioning from being opportunistic about AI to becoming truly AI native. Typically, algorithms and models are developed for ad-hoc use cases without the flexibility to adapt to evolving business context. Furthermore, telcos often conduct disjointed, siloed experiments across teams & departments, which further hinder projects from transitioning into real production environments.

As telcos struggle to deploy functional AI use cases at scale – due to reasons including misaligned executive priorities, unclear business value or technical skills shortage – it seems almost impossible for any telco to build a business strategy that centralises around this technology. That was until the industry witnessed SK Telecom (SKT) announce their “AI Pyramid” strategy to position itself as a global AI company, taking the TechCo narrative to a whole new level.



*Image 1 - CEO, Ryu Young-sang's speech at MWC 2023
(Source: The Korea Herald)*

The Korean operator has always been a standout player in the field, with furious forays into adjacent businesses that are now fuelling renewed growth, as the industry plays catch up. As for AI, it shows similar traits. SKT already devotes approximately 12% of investments towards AI and related disciplines and is expected to triple to 33% by 2028. SKT strives to achieve AI-related revenues of

USD 18.5 billion by 2028, up from USD 13 billion in 2022, to account for up to a third of its total revenue.

The AI Pyramid Strategy

SK Telecom's commitment to AI is unequivocal, especially as the average person is expected to actively interact with two to three AI assistants daily in the next three years, referencing a similar scenario in the uptake of global streaming services today. Their strong commitment to AI is supported by a blueprint that unfolds across three key layers:

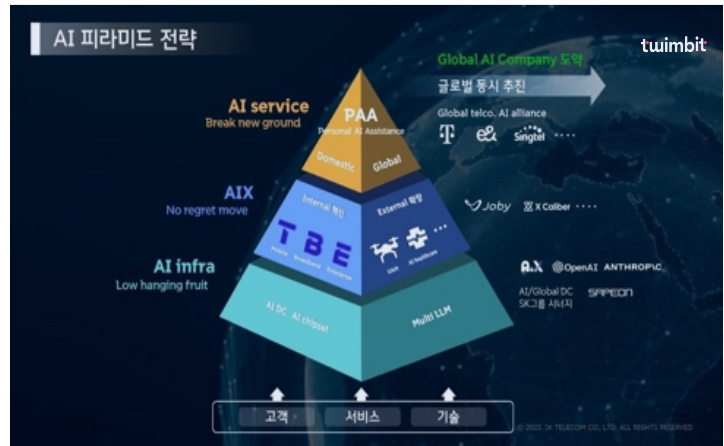


Image 2: SK Telecom's AI Pyramid Strategy (Source: SK Telecom)

AI Infrastructure: Foundation for Innovation

At the base of the pyramid strategy, SKT focuses on building core technology capabilities and platforms, which includes AI semiconductor solutions, data centre solutions and a multi-lingual LLM.



Image 3 - Sapeon's new 'X330' AI Chip (Source: Yahoo Finance)

SKT will leverage AI semiconductor subsidiary, Sapeon, to compete globally with the likes of NVidia and AMD in the AI chipset space, which is primarily used to build and train algorithms and models such as GPT-based LLMs on large datasets – in the initial stages of the [AI value chain](#). The Seongnam-based company recently

launched its newest-generation inference AI chip, 'X330', promising 4x superior performance and 1.3x power efficiency compared to any other 5-nanometer inference chips in the market. The chipmaker will produce newer chips in a 7-nanometer process with Taiwan's TSMC in the first half of 2024 and will most likely be the first AI business to produce tangible results with significant revenue estimated for 2025.

Alongside producing AI semiconductors, SK Telecom will double its data centre capacity by 2030, introducing energy efficiency solutions such as immersion cooling systems and hydrogen fuel cells which will address an upcoming explosion in data centre demand. It will look to expand into the AI hosting business by bundling energy-saving products with Sapeon's neural processing unit and affiliate, SKY Hynix's high bandwidth memory.

Last but not least, SKT will dedicate resources to a multi-LLM strategy collaborating with external partnerships such as Anthropic and Open AI, as well as internal capability building. The vision to develop telco specific, multi-modal LLMs with profound understanding of English, Japanese, Spanish is supported by its large repository of telco data and Titan supercomputer.

AI Transformation (AIX): Infusing AI Across the Business

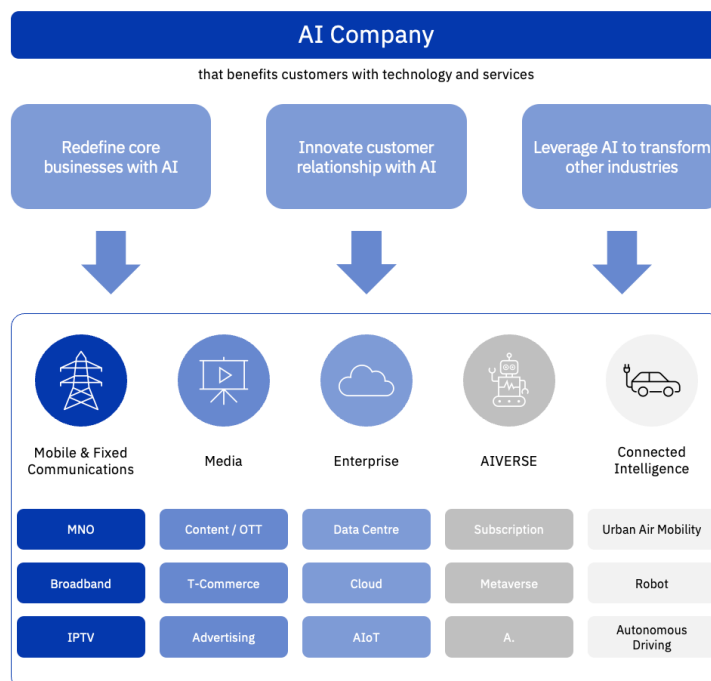


Image 4 - Breakdown of AI Company for AIX (Source: SK Telecom)

In the middle layer, SK Telecom seamlessly integrates AI into core business areas and ventures into new segments such as healthcare, media and advertising. The application of AI applications has already demonstrated an increase in sales and profitability, customer experience and optimisation of network operations, with mid-term goals to reduce cost to serve by 20-30%.

One example is the application of A-Star, a quality management solution equipped in base stations to reduce equipment analysis time by 81%, significantly improving network quality by detecting field anomalies in the field and recommending responsive measures much faster. In marketing, SKT integrated AI in digital channels to reduce distribution cost and improve user experience by streamlining complicated fee selection, device change and subscription contracting for customers. New features such as 'AI Curation' will personalise content of every user of SKT's Btv service.

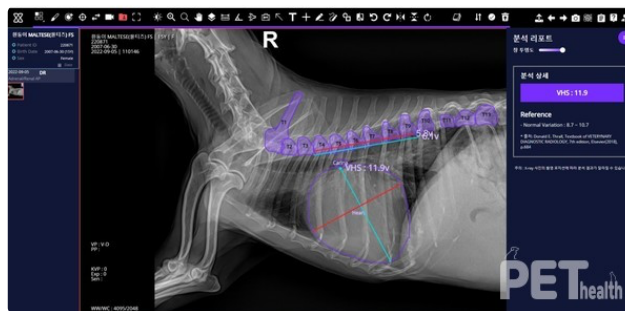


Image 5 - X-Caliber's analysis of X-ray image
(Source: The Korea Herald)

SKT's pursuit of AI innovation in new segments like healthcare have proven fruitful, with X-Caliber, an AI-based veterinary X-ray image diagnosis assistance service, being utilised by ~300 veterinary clinics in Seoul. The platform analyses images of dogs and delivers results back within 30 seconds. In the future, SKT will expand its capabilities to analyse cats, increase usage to 1,000 local clinics and release the service internationally.

Other examples include:

- An AI-based video surveillance solution, developed with Innodp, to monitor and prevent industrial accidents and protect public safety by analysing individuals and vehicles.
- LITMUS, an urban traffic congestion solution implemented in partnership with local governments to reduce pollution, traffic and accidents by linking real-time user location with traffic light status of over 2,000 traffic lights and 700 intersections.

- AI Golf Swing analysis uses vision-based technology to recognise motion and identify main body parts and joints of an optimal golf swing to offer a better golf training experience.
- SUPERNOVA, an AI-based, super resolution solution that scales low resolution media inputs (images, audios and videos) to clear, high-resolution outputs, currently used in museums and smart factories.

AI Service

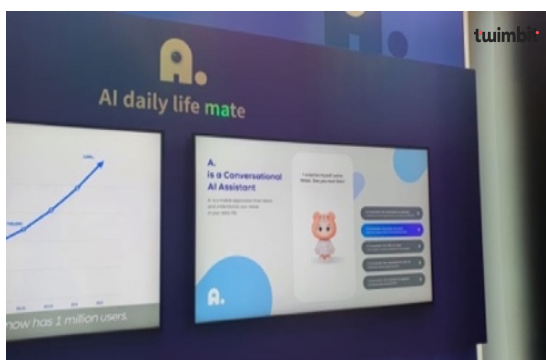


Image 6 - SK Telecom's new AI assistant called A.
(Source: CNBC)

The third layer revolves around A. (pronounced A dot), a personal AI chatbot assistant launched in May 2022. A. assists over 1 million users in their everyday lives by helping them complete different tasks such as playing music Flo, watching videos on Wavve, sending text messages, making phone calls or navigating to a destination using T Map, all via natural language requests. It does so by accessing a range of digital services in SKT's ecosystem and matches personal preferences with understanding of conversational context. A. was recently upgraded with a new feature, 'Chat T' using Microsoft Azure's OpenAI service which the chatbot to facilitate multi-turn dialogues and provide informative responses to inquiries. A. is also able to recommend people to call based on call history and make appointments based on call content. Newer versions will see it offer real-time translation services in Korean, English, Japanese and Chinese with support of up to 11 languages expected by the first half of 2024.

A. is expected to be a core aspect of Koreans daily life with sleep management solutions, English learning tutor, photo management, concierge services and more to be added moving forward, SKT increases service areas from 30 to 100. They also introduce A. friends, AI agents that bring vibrant personalities to the chat experience trained with RLHF to emotionally respond in human-like conversations and provide friendly advice on various topics.



Image 7 - SKT's Nugu AI Voice Service
(Source: The Korea Herald)

The A. brand is focused on delivering personalized services based on big data and machine learning technology directly to customers, unlike Nugu, SKT's AI-based voice assistant service (which means 'who'), which was launched in September 2016. It is a virtual home assistant service that could understand and process the Korean language and was deployed in a cylindrical-shaped device that acted as a home speaker and LED light (similar to Google Home). NUGU is a standalone AI service armed with SKT's self-developed NLP engine and cloud-based deep-learning framework to power functions based on speech recognition. While NUGU directly powers consumer wearables and in-vehicle gadgets, the focus is to offer the AI service to enterprises as SKT offers a developer platform for users and affiliates to build new applications and services on top of its AI capabilities using a variety of tools including APIs, SDK, documentation and business kits.

In partnership with AWS, they co-developed computer vision services by integrating in-house AI models, trained on over 10 years of anonymised video data, and AWS's edge services, IoT, database and storage capabilities. This collaboration resulted in a secure and simple framework to build and scale bespoke computer vision applications with the ability to process and analyse data at the edge, cloud or on-premise.

With these strategic layers, AI-driven growth will propel SKT's valuation to over USD 31 billion by 2026.

AI Investments & Partnering for Success

SK Telecom's strategy to become an AI company involves active partnerships and collaboration with AI leaders and sizable financial investments into key startups on the scene.



ANTHROPIC

SKT invested an additional USD 100 million in Anthropic, a Google-backed, California-based AI company founded by former executives of OpenAI to jointly develop a multi-lingual LLM. The pair will fine-tune the start-up's own AI model, Claude with domain expertise to create a custom version for better performance in telco use cases.

Other investments include a total of USD 7.2 million in Allganize, a leading LLM enabler for enterprise AI solutions in Japan and Imprimed, a California-based biotech startup. SKT will combine its AI cloud with Allganize's suite of LLM applications that serve more than 200 corporations and are distributed through its website, while Imprimed offers a healthcare solution that personalises predictions on treatment success and identifies optimal treatment strategies for specific cancer types. The pair will develop an AI model to predict patient responses to cancer treatments by analysing clinical traits and genetic information before getting into surgery. Imprimed solutions are already available for dogs with blood cancer in over 200 veterinary hospitals in the US, serving as a key entry point for its own X Caliber services.



Image 8 - SKT CEO presenting about K-AI Alliance at MWC 2023
(Source: The Korea Herald)

More notably, SK Telecom backs a group of 16 AI startups, known as the K-AI Alliance of which Allganize and Imprimed joins self-driving solution startup

Phantom AI, Swit Technologies, CMES, MakinaRocks, Scatterlab, FriendliAI, Bepin Global, Moloco, Konan Technology, Tuat and many others. The ecosystem of alliance members specialises in various industries to bring together solutions to enhance its AIX strategy:

- CMES is a Seattle-based AI robotics company that provides 3D vision for factory robots via subscription and is pioneering the robot-as-a-service (RaaS) market for sectors including logistics, delivery, construction and healthcare.
- Scatter Lab is working with SKT to develop an AI-based mobile application to create social chatbots that have “emotions” and personalities, which will be integrated with A.
- MakinaRocks is working on enterprise AI solutions for the manufacturing sector featuring anomaly detection, intelligent control and predictive analytics to increase quality control and equipment maintenance.
- FriendliAI, a Seoul-based Gen-AI engine company has developed an LLM platform called PeriFlow that allows enterprises to develop their own GenAI models.

Working with AMD, SKT is enhancing its real-time AI inference stack and accelerator with purpose-built data centre cards and compute requirements that provide up to 10x higher throughput performance and 16x power efficiency for AI-based speech translation and 3x higher throughput for video analytics compared to GPUs. This allows SKT to increase accuracy for its ‘T View’ theft detection services, monitoring over a million commercial and in-house camera systems in real-time and other AI services such as NUGU.

Growing the Industry with AI

SK Telecom alongside its partnerships with diverse global players will help accelerate its progress towards becoming an AI company, but more importantly, its active participation in AI will develop the industry as a whole.



Image 9 - CEO Summit session at the Global Telco AI Alliance Forum
(Source: SK Telecom)

The establishment of the Global AI Alliance with Deutsche Telekom, e& and Singtel, signals a coordinated effort to accelerate AI-fuelled transformation and development of new AI-powered business models. Central to this open collaboration is the Telco AI platform, serving as a foundation for new services like chatbots and AI applications as well as improvements to existing telco operations in call centres and network management. The alliance includes a working group to identify co-investment opportunities and actively localise platform content and consumer services.



Image 10 - SKT inks AI partnership with Deutsche Telekom
(Source: SK Telecom)

In a Letter of Intent signed with German operator, Deutsche Telekom, the pair will develop a telco-specific LLM with the help of Anthropic and Meta to be made available to telcos globally. A personal AI assistant for roaming services is also in the pipeline to be released to about 1.2 billion telecom users in 45 countries.



Image 11 - SKT's Prompter Day in partnership with OpenAI
(Source: SK Telecom)

In cooperation with Open AI, SKT co-hosted an AI hackathon in Korea, “Prompter Day” that invites anyone with creative ideas for diverse topics around social wellbeing. All participants receive token credits to OpenAI’s technology and gain access to ChatGPT Plus services. Winners received a total of USD 77k and an opportunity to join the SKT Junior Talent program, further encouraging local interest in AI and empowering potential among younger generations.

Responsible AI for the Greater Good

The SKT Tech Gallery located in Pangyo represents a commitment to use AI to advance ESG priorities. An open space for innovation and collaboration, designed to feature its latest technologies for a greener, healthier and safer society such as a smart cooling system management tool, virtual power plant, vision-enable robotic edge devices, AI energy-saving network equipment and many others.

Its ‘AI Care’, a visual aid care service for the socially weak; successfully rescued more than 400 people from life-threatening emergencies and serves over 53,000 elderly households in Korea. In 2022, its AI Spam Filtering System also blocked more than 4 million smishing messages, preventing potential fraud and scam cases, earning impressive ESG ratings from MSCI (AA) and KCGS (A) respectively.

As SK Telecom propels itself into the forefront of AI leadership, it remains committed to responsible AI practices. This forward-thinking governance system is separated into an “AI pursuit value” and “AI conversations execution ethics”.

SK Telecom's AI Pursuit Value

	<p>Social Value We aim for social value SK Telecom will utilise AI to create social value for the public.</p>		<p>Harmlessness We value human safety and life SK Telecom will provide safe AI services by identifying and handling the potential risks arising from the design and deployment of AI</p>
	<p>Technical stability We will develop reliable and stable technology SK Telecom fully understands the importance of stable communication services. As such, we will take responsibility for creating reliable AI services so that our customers can trust and use them anytime, anywhere.</p>		<p>Fairness We oppose social discrimination and embrace diverse opinions SK Telecom will carefully manage AI to prevent unfair discrimination based on gender, religion, nationality, race, etc, and to prevent bias towards specific values.</p>
	<p>Transparency We will do our best to help users understand SK Telecom will continue making efforts to develop technologies that can help users understand and embrace AI.</p>		<p>Privacy protection We will protect personal information and user privacy In the process of collecting and processing data for AI, SK Telecom will strictly comply with the laws on the protection of users' personal information and privacy, and faithfully carry out technical and administrative protection measures to establish a safe data management environment.</p>
	<p>Sustainable innovation We are not satisfied with the status quo and constantly innovate SK Telecom will continue to introduce new technologies and actively accept user feedback to innovate our AI technology and services constantly.</p>		

Image 12 - SK Telecom's AI pursuit value
 (Source: SK Telecom)

It established the 'AI pursuit value' in 2021, consisting of 7 core values to guide employees developing AI technologies in an ethical direction of building people-centred AI services that benefit the world. The core values consist of social value, technical stability, transparency, sustainable innovation, harmlessness, fairness and privacy protection, addressing different aspects of AI-related risks.

SK Telecom's AI Conversation Execution Ethics

Social Values

LLM respects life, society, and diverse relationships within society.

We are striving to create social value for the public by utilizing LLM. We respect the diverse relationships among members of society and constantly study language that has a negative effect on life and society. We hope that such efforts will help people to find solutions to the problems faced by our society.

Technical Stability

LLM takes protective measures to ensure reliability of information.

We faithfully carry out technical and administrative protective measures to make sure that users can always trust and use LLM. We have a sense of responsibility and thus believe that the results achieved by LLM should be of practical benefit to each user's life. We strive to ensure that there are no errors in the information provided by LLM, including professional opinions, science, common sense, and history.

Transparency

LLM sincerely explains to users and reflects diverse feedback.

We hope that LLM will continue to grow while communicating with users. We diligently explain the scope, purpose, and limitations of LLM to users, and cooperate with our stakeholders with an open mind. Furthermore, we will faithfully accept the diverse feedback generated during the use process so that LLM can provide better services and lead positive changes in users' lives.

Sustainable Innovation

LLM is constantly evolving, providing timely utterances.

We are not satisfied with the current technical level of LLM and are pursuing constant innovation. We strive to provide timely utterances by leading the introduction of new technologies capable of meeting the ongoing changes in our social environment. In addition, we manage conversations related to socially and historically controversial events and specific companies and organizations more carefully during the innovation process to deliver neutral information.

Harmlessness

LLM checks for safe use and strives to secure countermeasures.

We are fully aware of the unlimited potential of LLM. At the same time, we also recognize the limitations that it cannot fully understand the moral values expected by society. Until the LLM is fully educated in moral values, it is thoroughly monitored to ensure that it is not exposed to provocative content or extreme expressions that are unacceptable in our society. We strive to protect teenagers from harmful contents.

Fairness

LLM does not discriminate unfairly and is not biased toward any value.

We believe that LLM can move toward embracing diversity in our society. However, we also recognize that the results may not meet our expectations or that misunderstandings may occur in the process. To minimize this, we analyze and prohibit language patterns that attack or express abhorrence of specific objects or the characteristics of objects. We hope that a culture where differences can be acknowledged and respected will be established throughout our society.

Privacy Protection

LLM is constantly evolving, providing timely utterances.

We are not satisfied with the current technical level of LLM and are pursuing constant innovation. We strive to provide timely utterances by leading the introduction of new technologies capable of meeting the ongoing changes in our social environment. In addition, we manage conversations related to socially and historically controversial events and specific companies and organizations more carefully during the innovation process to deliver neutral information.

Image 13 - SK Telecom's AI Conversation Execution Ethics
(Source: SK Telecom)

As they launched the A. service, an 'AI conversation execution ethics' list was prepared based on the 'AI pursuit values' to guide the utilisation of AI language models in the company.

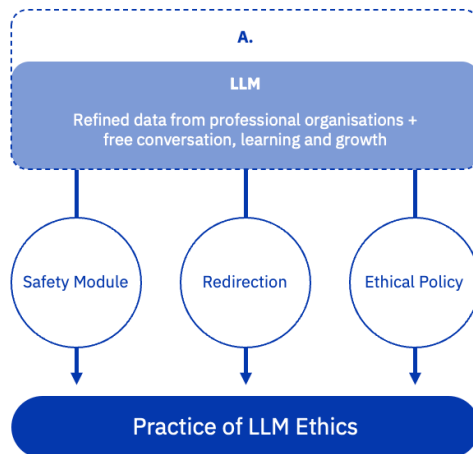


Image 14 - SK Telecom's triple-core model approach to LLM Ethics

With the risk of ethical mishaps occurring with its LLM technology, SKT employs a triple-core model to ensure safe practices of LLM ethics. Firstly, it operates a safety module to ensure the LLM recognises and responds correctly to ethically problematic utterances. Unsafe test data is often generated to train the LLM and further model tuning and patterning is applied.

SKT then employs answer redirection based upon a response policy to guide LLM answers away from unsafe territories to ensure safe natural conversations. Lastly, SKT uses an LLM ethics policy to guide LLM development, ensuring that structural biases are minimized and that continuous monitoring to identify missing compliance requirements is actively practiced.

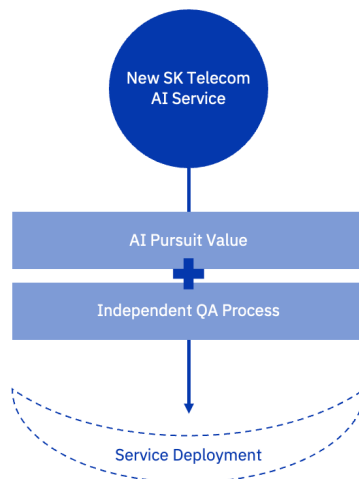


Image 5 - Filtering process of new SKT AI services deployment (Source: SK Telecom)

When a new AI service is released, SK Telecom creates an independent quality assurance process to ensure the service has been planned and developed in line with the pursuit values and AI ethics policies.

Future Outlook



Image 16 - SKT CEO presenting the AI Pyramid strategy
(Source: The Korea Herald)

SKT's ambitious vision to become a leading AI company holds immense promise for the telecom industry and AI as a promising technology. With strong technological leadership, government support and a vibrant entrepreneurial ecosystem in Korea, SK Telecom is poised to spearhead a breakthrough in AI for telecoms globally.

The key will be harnessing existing telco assets, such as customer data and partnerships with technology leaders and AI startups to explore and co-develop new capabilities and use cases tailored for specific markets and use cases. Rather than look at AI as a one-off enabler, organisations should embrace a long-term mindset when it comes to AI, challenging the potential AI could play when implemented at scale.

We believe that AI at Scale is the way to go forward for organisations looking to achieve maximum impact and deliver real organisational value with AI. While there is no one-size-fits-all approach, this shift from disconnected experimentations to committed production is crucial for companies to become sustainably AI-driven.

A comprehensive approach encompassing AI vision & roadmap, talent readiness, operating model, design and engineering maturity, change management, data & platform capabilities and responsible governance will be crucial for organizations embarking on the journey to develop AI at scale.



We help build and grow
purpose-driven businesses

reachus@twimbit.com

www.twimbit.com