

# LEAP

## ---FORWARD

ISSUE #02

**AT THE  
FOREFRONT  
OF INNOVATION**

HOW RIYADH-BASED THE  
GARAGE IS CONTRIBUTING  
TO A FLOURISHING STARTUP  
CULTURE IN SAUDI ARABIA

REACHING  
for the  
**STARS**

SAUDI ASTRONAUTS RAYYANAH  
BARNAWI AND ALI ALQARNI  
MAKE HISTORY IN GIANT LEAP  
FOR THE KINGDOM





# LEAP

## “A DIGITAL DAVOS”

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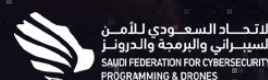
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Saudi Arabia Is Now the MENA Region’s Leading Nation in Venture Capital Fundraising

Startups in Saudi Arabia raised US\$1.38 billion through venture capital (VC) funding in 2023, marking a 33% increase from 2022. This accounted for just over half of all VC funds raised in the MENA region in 2023, according to a report released by Magnitt, a Dubai-based data platform. With this achievement, the Kingdom has secured the first place in terms of VC investments in the region.

According to Magnitt, the surge in VC funding in Saudi Arabia has been driven by government-backed funds increasing their expenditure, particularly in the tech sector. The report highlights the government’s focus on innovation, a dedicated unicorn project, and investments from sovereign funds such as the Saudi Venture Capital Company (SVC), Jada, and Sanabil as key

factors contributing to the sector’s growth.

Notably, the Public Investment Fund (PIF), Saudi Arabia’s primary sovereign wealth fund, has been actively investing in tech firms and startups. Aiming to foster a VC industry that encourages entrepreneurship, the PIF, valued at \$700 billion, has established a \$1 billion fund of funds for VC firms and also invests directly through its subsidiary, Sanabil.

In the fourth quarter of 2023, two major VC deals involving the nation’s leading fintech unicorns, Tabby and Tamara, helped Saudi Arabia secure a top-five spot for emerging market funding alongside Singapore, Turkey, Indonesia, and Vietnam.

“It has been quite remarkable to witness the growth of the Saudi VC

ecosystem, especially considering the Kingdom’s late start in the VC space relative to other MENA countries,” said Philip Bahoshy, founder and CEO of Magnitt. “Closing the year at almost \$1.4 billion with two new unicorns headquartered in the Kingdom sets an exciting stage for development into 2024 and beyond.”

Magnitt’s report also compares Saudi Arabia’s performance with the rest of the region, noting that funding across the wider MENA region dropped by almost a quarter in 2023. This downturn was attributed to rising inflation, global interest rate hikes, and curbs on oil production. Despite initial interest from Silicon Valley and global investors in the region, 45% of investors originated from outside the MENA, according to Magnitt.

Saudi Arabia’s HRH Prince Mohammed Bin Salman Launches US\$200 Million Fund As Part Of A New KAUST Strategy To Support Tech Startups

The King Abdullah University of Science and Technology (KAUST) has unveiled a new strategy aimed at transforming research into economically viable innovations. Announced by HRH Prince Mohammed bin Salman bin Abdulaziz Al Saud, Crown Prince, Prime Minister, and Chairman of the KAUST Board of Trustees in August 2023, this strategy will prioritize areas of national importance within research, development, and innovation (RDI), including health and wellness, sustainable environment and essential needs, energy and industrial leadership, and economies of the future. It is designed to enhance KAUST’s partnerships with the public and private sectors, aligning with the objectives of Saudi Vision 2030.

“Since its foundation, KAUST has distinguished itself with its research, innovations, and faculty, becoming one of the leading research universities globally,” said HRH Prince Mohammed bin Salman. “The new strategy builds on KAUST’s scientific and academic achievements, marking a new era for the University to become a beacon of knowledge, and a source of inspiration and innovation, in harmony with Vi-

sion 2030 aspirations for the betterment of the Kingdom and the world.”

The strategy will adopt a three-pronged approach: launching the National Transformation Institute for Applied Research (NTI) to accelerate technology development and commercialization, restructuring research centers to align with national RDI priorities, and creating a US\$200 million fund to support local and international firms specializing in high-tech. It aims to offer opportunities for KAUST researchers, faculty, and students to participate in creating sustainable global impact by strengthening international and local partnerships.

Key initiatives from these partnerships include the KAUST Reefscape Restoration Initiative, which in collaboration with KSA’s urban area project NEOM, will cultivate and restore hundreds of thousands of coral reefs over an area of 100 hectares on Shushah Island in the Red Sea. KAUST will also continue its collaborations with prominent local and global companies such as Aramco, SABIC, ACWA Power, IBM, Dow, and Boeing.

Additionally, the new KAUST strategy involves forging strategic cooperation agreements with leading academic and commercial institutes in Shenzhen, China, to collaborate on applied research in cutting-edge fields like aerospace, robotics, and microelectronics.

Through these initiatives and partnerships, KAUST aims to contribute to the development of the higher education ecosystem, nurture future scientific research pioneers in the Kingdom, promote research and global innovation, and stimulate the growth of advanced technology startups.







## Saudi Arabia Launches “GenAI for All” Initiative for Digital Cooperation Organization Members

Saudi Arabia's Minister of Communications and Information Technology, H.E. Abdullah Alswaha, has launched the “Generative Artificial Intelligence (GenAI) for All” initiative. This initiative aims to advance artificial intelligence (AI) research, policy governance, and ethical considerations within member states of the Digital Cooperation Organization (DCO). The DCO is a global intergovernmental organization dedicated to fostering digital prosperity by accelerating the inclusive growth of the global digital economy. The unveiling took place at the Third General Assembly of the DCO, held in Bahrain in January 2024.

Spearheaded by the International Center for Artificial Intelligence Research and Ethics (ICAIRE), under the guidance of the Saudi Data and Artificial Intelligence Authority (SDAIA), the “GenAI for All” initiative is in line with the Kingdom's commitment to digital transformation. It will support research and development (R&D) and governance policies for AI across the DCO's member states.

H.E. Alswaha announced the initiative alongside high-level officials from the 16 member states. The program's offerings will include global expansion, investment in AI projects, mergers and acquisitions, institutional maturity, and talent development. The DCO's Third General Assembly



concluded with a series of initiatives aimed at bridging the global digital divide and ensuring inclusive, sustainable growth of the global digital economy. During the event, the DCO Council introduced several initiatives, including the GenAI Center of Excellence, Online Content Integrity, and Data Embassy initiatives.

The next General Assembly of the DCO is slated to take place in Jordan in February 2025.

## Saudi Arabia Ranks Second Among G20 Nations in the Telecommunication and Technology Development Index 2023

The Kingdom of Saudi Arabia has secured second place among the G20 countries in the Telecommunication and Technology Development Index (TTDI) 2023, an annual ranking by the International Telecommunication Union (ITU). This ranking measures the development of the telecommunication and technology sectors across 169 countries.

The TTDI evaluates a nation's progress in communications and technology services through a series of sub-indicators, which are divided into comprehensive and effective communication axes. The index aims to gauge the strength of infrastructure and the ability to provide safe and effective communication for all.

Saudi Arabia ranked at least 10 places ahead of the next G20 country in the 2023 edition of the index, highlighting the Kingdom's robust communications and technology infrastructure, the wide availability of its services, and its

significant impact on the growth and development of the national digital economy.

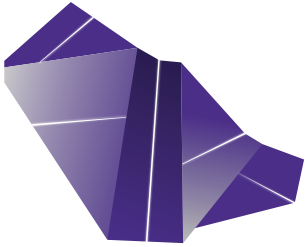
Reflecting the Kingdom's rapidly growing telecommunications market—reported to be the largest in the MENA region—the index also illustrates how its communications and technology infrastructure and services have positively influenced economic growth and created new opportunities.



## Saudi Arabia's Ministry of Communications and Information Technology Launches Technology Champions Program to Boost Saudi Tech Companies

To elevate the global presence of Saudi Arabia's tech industry, the Kingdom's Ministry of Communications and Information Technology, in collaboration with partners in the National Program for Information Technology Development, unveiled the Technology Champions program on the sidelines of the TechXpand Forum in December 2023. This initiative aims to empower Saudi Arabian technology companies, enabling them to thrive on the international stage. With Technology Champions, the Ministry thus outlined its commitment to supporting local tech firms in a variety of strategic technology sectors.

With a support package of US\$53.3 million for the first phase, the program offers a suite of services to assist with global expansion, investment in company projects, mergers and



## TECHNOLOGY CHAMPIONS

acquisitions, institutional maturity, research and development, and talent development. The Technology Champions program will target local tech companies across 28 specialized fields, with revenues expected to surpass \$26.6 million by 2025.

Designed to elevate medium to large-sized local tech enterprises, the program targets a diverse range of digitally enabled sectors including fintech, logistics tech, social media, entertainment, e-gaming, media, and edtech, among others. It also focuses

on key technology domains such as artificial intelligence, big data, cloud computing, cybersecurity, and more.

The impact of this initiative on Saudi Arabia's economy will be significant, contributing to gross domestic product growth, job creation in the tech sector, and the export of technology products and services. The program's offerings also include international expansion, corporate ventures, mergers and acquisitions, enterprise maturity, research and development, and talent development.







## TechXpand 2023 Unveils A Series of Initiatives to Propel Saudi Arabia’s Tech Sector Forward

TechXpand, a technology event powered by Saudi Arabia’s Ministry of Communications and Information Technology (MCIT) that took place in December 2023, unveiled several programs and accelerators aimed at shaping the future of the tech landscape in Saudi Arabia.

Bringing together technology leaders, innovators, investors, and visionaries from around the world, TechXpand showcased initiatives aimed at fostering innovation, supporting entrepreneurship, and driving digital transformation in the Kingdom.

Key announcements made at the event include the Technology Champions program, launched in partnership with the National Technology Development Program (NTDP). Additionally, the DeepTech Mission Initiative was revealed, a collaborative effort to create and enhance an ecosystem that embraces emerging talent in deep technology solutions. The first phase, targeting more than 165 companies in this space, was launched at TechXpand. Building on the success of its first phase, the AdopTech initiative was also confirmed to begin its second phase; this aims to boost enterprises on their journey towards digital transformation.

TechXpand also saw the announcement of the Technical Excellence Award winners, where companies contributing to the development of local technical content were recognized and honored. Also revealed at the event was the Digital Entrepreneurship Center, which introduced various programs and accelerators aimed at empowering digital entrepreneurs, both male and female.

Speaking at the event, Mohammed Al Robayan, Deputy Minister for Technology at MCIT, said, “The Kingdom has become a main part of the fabric of the national and global digital economy. Testament to this is the US\$4.4 billion investment attracted by the Kingdom for cloud computing alone. Another important milestone that we have reached—and I am proud to announce it today—is that Saudi Arabia is now number one in venture capital investment in the MENA region.”



## Saudi Arabia’s Generative Artificial Intelligence Accelerator (GAIA) Opens Applications For Fourth Cohort



Saudi Arabia’s Generative Artificial Intelligence Accelerator (GAIA) is now accepting applications for its fourth cohort, following the successful completion of its second cohort’s demo day in February 2023, which showcased the best of the Kingdom’s startups in this sector.

GAIA stands as the world’s first generative artificial intelligence (AI) early-stage accelerator program in the Middle East and North Africa (MENA) region. Led by the Saudi Data and Artificial Intelligence Authority (SDAIA) and the National Technology Development Program (NTDP), in collaboration with New Native Inc., the GAIA program unfolds over 10 weeks at the King Abdulaziz City for Science and Technology (KACST) in Riyadh.

The program closed applications for its third cohort in December 2023, selecting 18 diverse AI startups poised to make significant impacts across various industries, including education, business, fashion, food, construction, gaming, and more.

GAIA offers coaching sessions and training to equip startups with the tools and knowledge necessary to turn innovative AI ideas into successful businesses. Aiming to establish 300 new AI companies within 36 months, the program’s budget, totaling US\$30 million, underscores the Kingdom’s commitment to empowering startups specializing in generative AI.

The inaugural batch, launched in July 2023, saw the participation of 15 startups, with an investment fund valued at \$200 million earmarked to support early-stage companies.







## Saudi Arabia’s HRH Mohammed Bin Salman Launches Alat To Make Saudi Arabia A Global Hub For Electronics And Advanced Industries



February 2024 saw HRH Prince Mohammed bin Salman bin Abdulaziz Al-Saud, Crown Prince and Prime Minister of the Kingdom of Saudi Arabia, and Chairman of the Board of Directors of the country’s sovereign wealth fund, the Public Investment Fund (PIF), announce the launch of Alat, a new tech-focused company backed by the PIF. Besides being tasked with the goal of creating 39,000 technology and manufacturing jobs within Saudi Arabia, Alat is expected to contribute US\$9.3 billion to the Kingdom’s non-oil gross domestic product (GDP) by 2030. Aligning with Saudi Arabia’s mission to become a global hub for sustainable technology manufacturing, Alat will focus on manufacturing products that serve local and international markets within nine key business units: advanced industries, semiconductors, smart appliances, smart health, smart devices, smart buildings, and next-generation infrastructure. The company’s products will thus be categorized into 30 distinct areas, which will include robotic systems, communication systems, advanced computers, digital entertainment products, and advanced heavy machinery used in construction, building, and mining. The establishment of Alat aligns with the PIF’s strategy to expand into high-priority sectors, while also strengthening local supply chains to enable economic diversification and sustainable growth, which is in line with Saudi Arabia’s Vision 2030.

Alat has already inked partnerships with four of the world’s leading technology companies- these include Softbank Group, Carrier Corporation, Dahua Technology Ltd., and the Saudi Technology and Security Comprehensive Control Company (Tahakom). With Softbank Group, Alat will be working alongside the enterprise -one of the world’s largest technology investment groups- to establish a next generation industrial automation business in the Kingdom that will manufacture ground-breaking industrial robots. Meanwhile, Carrier Corporation, a global leader in intelligent climate and energy solutions, will, in collaboration with Alat, develop a cutting-edge manufacturing and research and development (R&D) facility in the Kingdom aimed at decarbonizing emissions in buildings, and dramatically increasing their energy efficiency. As for Dahua Technology Ltd., a professional manufacturer in the security and safety field, it will start manufacturing technology products in the region, through a new joint venture to produce and market solutions for safety and surveillance use that are applicable in intelligent cities, as well as intelligent buildings and enterprise applications. Finally, in partnership with the Saudi Technology and Security Comprehensive Control Company (Tahakom), which already develops intelligent transportation systems, artificial intelligence, and cutting-edge safety solutions, Alat aims to combine their resources and capabilities to advance smart mobility and intelligent cities solutions, in alignment with Saudi Arabia Vision 2030.



## KSA-Based Startup Tamara Becomes The Newest Fintech Unicorn in the Kingdom With Its US\$1 Billion Valuation

Fintech platform Tamara has made history by becoming Saudi Arabia’s newest fintech unicorn, achieving a valuation of US\$1 billion after securing \$340 million in a Series C equity funding round. The round was led by Public Investment Fund (PIF)-owned SNB Capital and financial company Sanabil Investments. Other investors such as Shorooq Partners, Pinnacle Capital, Impulse participated in the round, joining existing investors including Coatue, Endeavor Catalyst, and Checkout.com. With this transaction, Tamara has raised \$500 million in equity funding and above \$400M in debt financing since its inception. Founded in late 2020 by Saudi entrepreneurs Abdulmajeed Alsukhan, Turki Bin Zarah, and Abdulmohsen Al Babbain, Tamara was also one of the first companies to be granted a permit to provide buy-now-pay-later (BNPL) services by the Saudi Central Bank (SAMA). The platform offers a range of shopping, payment, and banking services, operating in Saudi Arabia, the UAE, Bahrain, and Kuwait. It has garnered more than 10 million users and over 30,000 partner merchants, reporting a six-fold increase in annual run rate revenue in less than two years.

Abdulmajeed Alsukhan, co-founder and CEO of Tamara, stated, “Saudi Arabia deserves its place on the world stage for financial technology. Created by local entrepreneurs and nurtured by a supportive ecosystem and market regulators, we stand today, humbled and ambitious, ready for our leapfrog moment. This achievement is a testament to the ecosystem, our incredible team, investors, and the collaborative spirit that makes this region a great place for talent to flourish. As we aim to become a major player in shopping, payments, and banking, we remain grateful for the significant opportunity in this underpenetrated and underserved landscape. Furthermore, SAMA has been instrumental in creating an environment that enables Saudi companies like Tamara to grow and innovate in the fintech sector.” This funding will drive Tamara’s growth initiatives, including the development of new products and services and the expansion of its market presence. The company recently decided to remove late payment fees, highlighting its dedication to offering financial solutions that align with Sharia principles, customer centricity, and transparency. A spokesperson from SNB Capital added, “Leading the Series C raise for Tamara through SNB Capital’s Closed-Ended Fintech Fund aligns with our objective to invest in companies achieving long-term capital appreciation. Fintech is a core investment sector for SNB Capital, aligned with the Kingdom’s Vision 2030 to support fintech entrepreneurs. As a Saudi unicorn, Tamara requires significant funding options, which SNB Capital is ideally positioned to provide, backing the development of fintech infrastructure to support further growth.” A spokesperson from Sanabil Investments said, “Our continued investment in Tamara underscores our confidence in its remarkable growth trajectory. At Sanabil, we aim to empower visionary ideas into impactful realities, seeking innovations that address market demands while ensuring scalability and sustainability. In Tamara, we see a team with the potential to revolutionize financial services, not only within Saudi Arabia but also on a regional scale.” BNPL is growing rapidly in Saudi Arabia, with the number of customers registered with a service increasing from 76,000 in 2020 to 3 million in 2021, and reaching 10 million in 2022, according to the SAMA Fintech 2022 report.







# REACHING for the STARS

SAUDI ASTRONAUTS RAYYANAH BARNAWI AND ALI ALQARNI MAKE HISTORY IN GIANT LEAP FOR THE KINGDOM BY MEGHA MERANI

## From earthbound dreamers to cosmic voyagers

Four decades on since the Kingdom's first foray into space, Saudi Arabia's narrative took another historic leap in 2023 as Rayyanah Barnawi and Ali Alqarni joined the Axiom-2 mission's four-person crew, marking a successful visit to the International Space Station (ISS).

For the uninitiated, the ISS is a multi-national collaborative project and orbiting laboratory that enables scientific research in the unique microgravity environment of space, crucial for advancing space exploration, technology, and our understanding of Earth and the universe. Only 263 individuals from 20 countries have ever visited the ISS.

"Space and I, we ran in parallel, until we crossed paths," Alqarni says, reflecting on his journey that began beneath the starlit skies of Saudi Arabia's southern region. "You can see whole stars there, and that triggered my curiosity as a child. I remember asking my science teacher at school

why one star is brighter than the other. He gave me an initial answer but did not fulfill the depth of my inquisitiveness. I researched how to be an astronaut, but back then, we didn't have an astronaut program in Saudi Arabia."

Alqarni's pursuit of knowledge beyond the confines of classrooms and textbooks drove him to join the Royal Saudi Air Force as a fighter pilot, aiming to soar as close as possible to the skies. But his quest took a pivotal turn during his training with the US Air Force. A trip to the Houston Space Center and a discussion with an ex-fighter pilot who had transitioned into an astronaut with the US' National Aeronautics and Space Administration (NASA) about the pathway to becoming one changed the course of his life. Years later, his childhood dream became a reality when he was chosen to train as an astronaut by the Saudi Space Agency. >>>





“Understanding the potential side effects on the human body is fundamental for **mitigating risks** on extended missions to the moon or Mars.”

Parallel to Alqarni's story is that of Barnawi, whose curiosity was nurtured from a young age. “As a little kid, I was like a little explorer who loved to know more about my surroundings and how things worked,” she says. Her father, a chemical engineer, became her greatest advocate, instilling in her the ethos to seek answers independently. “He taught me that you have to look for the answers yourself, not wait for someone to feed them to you,” she says. “That built the explorer's spirit in me, and it made me interested in trying to solve things in a creative way. Throughout my education, I was really

interested in doing research because it fulfilled that feeling in me.”

This foundation of exploration and problem-solving led her to earning a master's degree in biomedical sciences, and further dedicate herself to research pressing medical challenges, particularly focusing on breast cancer and cancer stem-cell studies. Yet, an unexpected chance beckoned, promising to extend her impact beyond terrestrial confines. “This opportunity made it possible to not only help patients in Saudi Arabia, but also to conduct research and experiments in the most advanced lab in the world— orbiting Earth,” she says.

Conducting research in space serves the “mutual benefit of all human-kind,” she adds. As such, Barnawi's engagement in these experiments not only distinguishes her as a trail-blazing researcher, but also sets her apart as the first Saudi –and the first Arab– woman to be on board the ISS, marking a profound leap forward for women and the region in space exploration.

#### Pursuit of the unknown

The term “astronaut” derives from the Greek words meaning “star sailor,” painting a vivid image of voy-

Rayyanah Barnawi and Ali Alqarni aren't your typical heroes. —



agers navigating the cosmos. But what is often misunderstood about space exploration is its vast potential to solve major challenges on earth, and the profound economic benefits derived from its technological advancements.

Since 1976, NASA has identified over 2,000 spin-offs, impacting diverse sectors including health and medicine, food production, agriculture, transportation, manufacturing, and public safety. Here, a “spin-off” refers to technology initially developed for NASA missions that has subsequently found commercial application, enhancing various aspects of everyday life.

Notable examples of spin-offs include water filtration systems, prosthetic limbs, solar panels, memory foam, and

lenses that resist scratching, now commonplace in eyeglasses and smart-phone displays. Other contributions include cochlear implants and, more recently, the development of ventilators critical in treating COVID-19 patients that aided in pandemic response, illustrating the ongoing impact of space research.

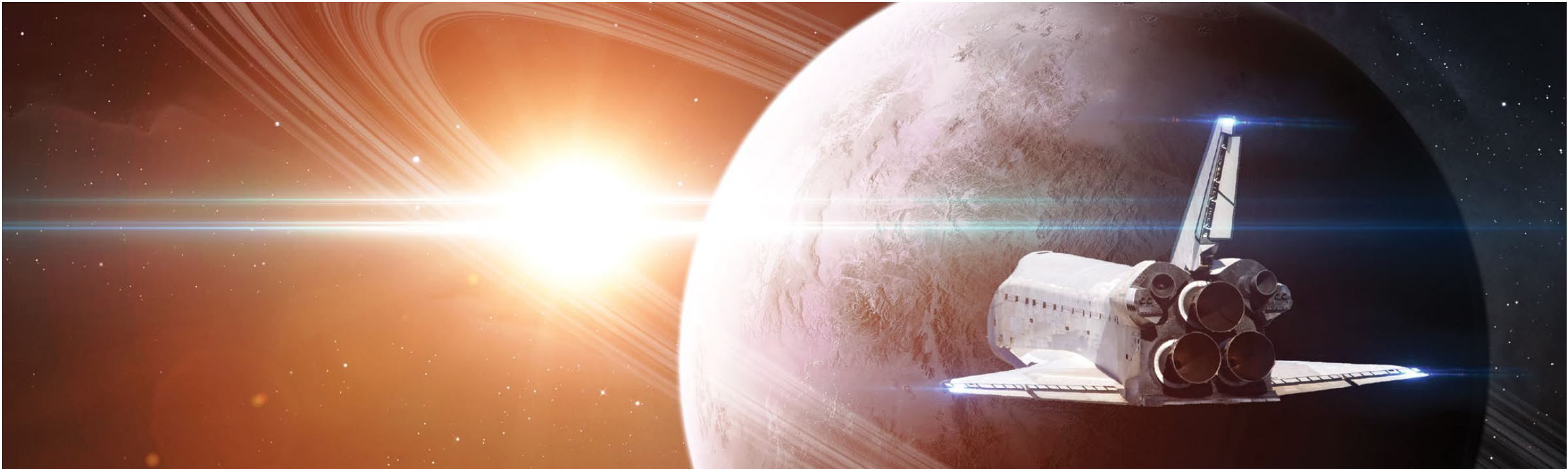
**The Saudi astronauts** conducted groundbreaking research during their mission to the ISS last year including work in health sciences and weather technology. Among the diverse experiments was an exploration of cloud seeding, a process being studied in space for the first time under microgravity. >>>





This research aims to pave the way for weather control technology to generate artificial rain in future colonies on the Moon and Mars. The team also leveraged the unique conditions of space to advance the reprogramming of skin cells into pluripotent stem cells. This technique, which transforms fibroblasts to produce a variety of tissue types such as heart, brain, and blood cells, holds promise for regenerative medicine. The mission also included investigations into stem cell models to enhance cancer prediction and prevention strategies. Additionally, experiments focused on the behavior of bioengineered liver and kidney tissues in space, particularly examining how microgravity affects the development of vascular networks within these tissues. The success of these experiments could revolutionize the bioengineering of tissue “building blocks,” offering new solutions for organ transplantation by bridging the gap for patients waiting for donor organs.

“If 60 years ago humans were not curious enough to explore space, we wouldn’t have some of the technologies that we’re using today,” Barnawi says. “Each year, nearly 80 million people are infected with immune diseases that are incurable. During



“As a little kid, I was like a little explorer, who loved to know more about my surroundings and how things worked, my father, a chemical engineer taught me that you have to look for the answers yourself, not wait for someone to feed them to you.” - Rayyanah Barnawi



our mission, we have worked on immune cells that we have grown in the ISS for the first time in history. We also subjected those cells to different unique treatments to understand the behavior of cells in microgravity and how that technology could be developed in space to help humankind to overcome chronic diseases such as inflammations and cancers.”

Alqarni worked on experiments delving into the effects of microgravity on the human body, particularly focusing on the brain and nervous system. “Understanding the potential side effects on the human body is fundamental for mitigating risks on extended missions to the moon or Mars,” he explains. Additionally, Alqarni contributed to a physics experiment on cloud seeding. “We explored the feasibility of generating artificial rain on the moon or Mars,” he says, emphasizing the importance of water as a resource for future extraterrestrial settlements. “With desertification affecting 70% of countries on earth, if we increase the efficiency of making artificial rain, that could also help us benefit humanity.”

On the broader impact of space exploration, he added that venturing into space satisfies a deeper purpose of discovery. “I think we are naturally curious as human beings,” he says. “We need to go to space to fulfill our curiosity, to try to look for answers, and try to figure out our place in the universe. And, the big question: is there life beyond earth?”

**‘A country for dreamers’**

PwC predicts the global space sector will exceed \$1 trillion by 2030, reflecting a growth of 186% from 2020’s market size. Projected to surge to \$75 billion by 2032, the Middle East’s space industry’s value is on an upward trajectory, according to a white paper published by Euroconsult in January.

In fact, the sector is poised for a 92% increase in investment over the next decade. Having already tripled over the past decade to an impressive \$25 billion in 2023, the regional space economy is anticipated to represent 8.5% of the global market by 2030. This growth underscores the urgent need for talent development within the region’s industry. »»»

“If 60 years ago humans were not curious enough to explore space, we wouldn’t have some of the technologies that we’re using today.”





**Space** and **I**, we ran in parallel, until we crossed paths. You can see whole stars there, and that triggered **my curiosity as a child.**

opportunities for both men and women in Saudi Arabia in both education and employment. "This is one of the misconceptions," she says. "I was able to study the major that I wanted, and I am only one of many, many smart and accomplished women here in Saudi Arabia, who have represented the Kingdom in amazing ways in every sector, especially in engineering. We have lots of female innovators, researchers, and scientists who have been working for many years, are still working for the prosperity of Saudi Arabia. The support is mutual for women and men. All youth in Saudi Arabia are offered equal chances to pursue their dreams regardless of gender, and we can now see that is true even when we want to go to space."

#### Giant leap for the Kingdom

But Barnawi and Alqarni believe the journey has brought them more than just scientific insights from experiments. The Saudi astronauts found profound perspectives from their unique vantage point of the cosmos aboard the ISS. "It was night time, so everything was glowing with the

lights of the cities," Barnawi says, vividly recalling her first sight of the Kingdom from space. "We were able to see the west coast of the Red Sea. And a few minutes later when the sun rose again, it's a different view, because you are able to see how a thin layer of atmosphere is protecting the earth. We have been trained for all kinds of emergencies on the ISS, which have to do with simple things that we take for granted here on earth like breathing and protection from radiation. So, I guess for me, that was the takeaway: to protect our home planet, and that this planet is for all humankind, and our every single act will affect it."

Echoing Barnawi's poignant sentiment, Alqarni called the experience "like a dream."

"It's surreal to see earth [from space], like brown and green and blue and then suspended in the darkness," he says. "I never stopped smiling after I saw it, because you kind of come to peace with yourself, and want everybody to be peaceful and work together. I think this is the beauty of space— that it unifies people, and countries, and that nations hold hands to work together to achieve one common goal, which is to benefit humanity. That is a noble message, I think, to spread out there."



In response to this need, the Saudi astronauts team also worked to encourage young Arabs towards careers in science, technology, engineering, and mathematics (STEM). Their efforts included direct interactions with approximately 12,000 students spread over 47 different locations throughout the Kingdom, with the astronauts' activities reaching millions more through online platforms.

"I always like to say that Saudi Arabia is the land of opportunities, and it's the

country for dreamers," Barnawi says. "It's our job now to spread that culture and spread that awareness, making sure that students understand that dreams could come true and that they should focus on any of the STEM fields that could help the space sector, and that the space sector is connected with all other sectors. Everything that we do in life is connected to space in some way."

Dispelling prevalent stereotypes, Barnawi also underscored the parity of op-



Megha Merani is an independent journalist with more than 10 years of newspaper, magazine and web reporting experience in the Middle East, writing hard news, investigative reports, features and opinion pieces. Her passion for storytelling coupled with a proven instinct for identifying talk-generating issues has resulted in breaking stories and insightful features that have made local, regional and international headlines. Her work has been published across Thomson Reuters, Zawya, Bloomberg Middle East, Gulf News, former local daily 7DAYS, and government publications.





# AT THE FOREFRONT OF INNOVATION

## HOW RIYADH-BASED THE GARAGE IS CONTRIBUTING TO A FLOURISHING STARTUP CULTURE IN SAUDI ARABIA

BY DEVINA DIVECHA

In the heart of Riyadh, nestled within the King Abdulaziz City for Science and Technology (KACST), lies a space entirely focused on entrepreneurship: The Garage. What was once an underutilized parking structure has transformed into the largest startup district in the Middle East. Achieving this milestone is, simply put, no small feat.

The inception of The Garage was unveiled to the world during the inaugural LEAP conference in 2022, which revealed the transformation of the 28,000 sq. m. site from parking garage to startup campus. "Many of the big cities that are tech hubs worldwide have similar structures or locations, so Station F (the Paris-based startup incubator) was cited as one of the inspirations," says Omar Al-Shabaan, CEO of The Garage. "But the unique part about The Garage is that it's bringing a new business model combining a workspace, combining incubation and acceleration as programs to be delivered, in addition to a co-living place."

Collaboratively developed by the KSA Ministry of Communication and IT (MCIT), KACST, and the Saudi Federation for Cybersecurity, Programming and Drones (which is also the operator of the campus), The Garage officially opened doors in September 2023. And yet, before that, the team worked tirelessly to ensure that everyone knew what the brand stood for. The team created a temporary Garage. They took three floors in the Innovation Tower in Riyadh, and created a temporary location there, where it launched the first cohort of the accelerator called The Garage Plus. The team also started hosting a monthly event called the Garage Disrupt, which aims to bring the ecosystem together, bring startups to pitch in front of investors, and take part in networking and thought leadership. This allowed the creation of the brand and the awareness around the brand. By the time The Garage was launched in September 2023, the community of startups already knew about it. »»



**Upon opening,** The Garage essentially became a bustling startup campus, adjacent to all of the national labs in KACST. And it's not just about adjacency. All the startups that join The Garage have the opportunity to access to these labs, and to utilize them based on the protocol and the agreement with KACST, which gives innovators and entrepreneurs a very distinctive edge, and be able to test their innovations or their products. With 26 meeting rooms, an event space of 4,000 sq. m. that can accommodate up to 1,000 people at a time, plenty of food and beverage options, and even a napping zone, The Garage offers startups a conducive atmosphere to innovate. Here, it's important to note that The Garage focuses on early-stage startups that are in post-ideation, which means the startups that already finished the ideation process, and now are in the process of establishing their startups, or are already selling and have the revenue, and they are already trying to grow.

Such startups can join The Garage through the diverse range of programs it offers, which are both operated by The Garage, as well as hosted by the venue. It is a noteworthy list of initiatives, which includes names like The Garage Plus, Garage Incubator, GAIA, MVP Lab, Antler, Boost, and Garage Disrupt. The Garage Plus is the flagship accelerator,

in partnership with Google for Startups. It's a post-ideation, post-revenue growth accelerator that is sector-agnostic and global, meaning that it hosts startups from all around the world. So far, three cohorts have completed this non-equity program, with 49 startups having graduated from more than 14 countries in different sectors. The fourth cohort is currently in the process of starting its journey; the mandate is for the program to accelerate 100 startups a year.

Complementing this is the Garage Incubator, which focuses on deep tech startups. "We have incubated 24 startups from eight countries, and recently we changed the format of the incubator to become cohortbased where we are committed to incubate 25 startups in deep tech every year," Al-Shabaan says. "And we're launching the first cohort during Q2 of 2024." Another collaborative program is in partnership with the Kingdom's National Technology Development Program (NTDP), and it's called the MVP Lab. Its mandate is to graduate and train 1,000 minimum viable products (MVPs) in the next three years. Armed with an idea or a prototype,



The **Garage Plus** is the flagship accelerator, in partnership with Google for Startups. It's a post-ideation, post-revenue growth accelerator that is sector-agnostic and global, meaning that it hosts startups from all around the world."



The Garage supports these locally based startups to turn those dreams into reality, with funding and grants in the offering from NTDP upon completion of the program. "We have graduated 150 MVPs or startups across three cohorts, and now, we have accepted the fourth and the fifth cohort with the total of 110 new startups," Al-Shabaan adds.

Additionally, The Garage hosts programs like GAIA, focused on generative artificial intelligence (AI) startups, which was launched by NTDP and the Saudi Data and AI Authority (SDAIA), the Antler program, which originated from Singapore and is a day zero investor, the Thousand Miles program by the Saudi National Industrial Development and Logistics Program (NIDLP) to support SMEs in the industrial and logistics fields, and, the Boost Initiative, also by NTDP, to support tech entrepreneurs in this sector. Here, it's important to note that post-incubation, startups will continue to benefit from being part of The Garage's ecosystem. Alumni can retain access to the location, along with access to the community's networking opportunities.

Networking is an important element of what The Garage does. It hosts the Garage Disrupt event, where it encourages all startups -whether part of any of the campus' programs or not- to join and network. The event takes place on a monthly or bimonthly basis, and it hosts between 400-500 individuals from the startup ecosystem. ➤➤







In addition, Al-Shabaan states that the venture capital (VC) community is an integral part of The Garage, where they meet startups during investor events, and they are also invited to all the networking opportunities. "Since we opened, we have hosted more than 20 events, attracting investors and showcasing startups," Al-Shabaan notes.


Other benefits of being part of The Garage's community are manifold. The venue has full-time programmers on board who support any startup with any task required to enhance their technology- free of charge. Additionally, with the requirement for international entrepreneurs to set up their startup in Saudi Arabia to be part of some of the programs,

The Garage has a partnership with the Ministry of Investments Saudi Arabia (MISA) to assist them with this process. With all this and much more in place, it's clear that it's full steam ahead for The Garage and its future. "What's keeping us busy right now is first of all, making sure that the community that we are cultivating is a community of the best startups

from all around the world, and supporting them with the right services," Al Shabaan says. "Secondly, increasing the number of programs and creating new programs that can cater to a larger audience of startups and entrepreneurs. Also, creating more partnerships that can add value, whether on the VC scene or on others." This is integral for The Garage, Al-Shabaan notes, and it is evident in the existing partnerships it has with the likes of NDTP, MISA, Google and more. "You can never work alone in the startup ecosystem," Al-Shabaan declares. "You need to collaborate."

Governed by such a mindset, Al-Shabaan believes that the future is bright for the startup scene in Saudi Arabia. "In 2023, Saudi Arabia ranked first when it comes to VC funding in the MENA region for the first time, which shows that there's a huge growth and interest and excitement about startups," he says. "There are multiple unicorns that were made, and there are more to come, which means that the startup ecosystem in Saudi Arabia is

We have incubated 24 startups from eight countries, and recently we changed the format of the incubator to become cohort-based where we are committed to incubate 25 startups in deep tech every year.

growing at a very fast pace. This means creating jobs. This means wealth. This means contribution to gross domestic product. This means finding disruptive innovations that would make people's lives better- and to be part of all of this, to be one of the enablers to for this to happen, is definitely very exciting." 



What's keeping us busy right now is first of all, making sure that **the community that we are cultivating** is a community of the best startups from all around the world, and supporting them with the right services."

Devina Divecha is an independent writer, editor, emcee and media consultant. With more than 10 years of experience under her belt, her work has appeared in a number of publications including Skift, SUPPER, HOTELSmag, Destinations of the World News, Spinneys Magazine, Entrepreneur Middle East, and more. She holds a BSc in Business from the London School of Economics and an MA in Magazine Journalism from the University of Sheffield. [devinadivecha.com](http://devinadivecha.com)





# GAME ON

## SAUDI ARABIA'S JOURNEY TO BECOMING A GLOBAL GAMING HUB IS GOING STRONG

(And its economic impact is set to move from being mere pixels to tangible prosperity)

BY DEVINA DIVECHA

**T**he global gaming market was valued at anywhere from US\$225 billion and \$250 billion in 2022, depending on which report you look at- and projections state that it will be worth more than \$600 billion by 2030. Whichever way you look at it, it's a lucrative business.

Looking to level up in this field is the Kingdom of Saudi Arabia- and this should come as no surprise with the nation's Vision 2030 aiming to diversify beyond oil. The National Games and Esports Strategy hopes to make the country a global gaming hub by 2030, and concrete steps have been taken to achieve that. From the formation of Savvy Games Group, backed by the Public Investment Fund (PIF), and launching the Saudi Esports Federation, to becoming the biggest outside investor in Nintendo (currently holding 8.26% of shares), and acquiring stakes in Korean-founded gaming company Nexon and American gamemaker Activision Blizzard- there has certainly been plenty of activity.

PIF's Savvy Games Group has earmarked \$39 billion to inject into the gaming industry, with the aim of

establishing 250 companies in the sector over the next six years, and create upwards of 40,000 jobs. The group has already made forward moves, purchasing the likes of American game creator Scopely and UK-based ESL FACEIT, and investing in Chinese esports startup VSPO. And there's a lot more brewing.

The Saudi Arabian gaming market is, therefore, not one to twiddle one's thumbs at. Boston Consulting Group's Game Changer report released in June 2023 shows that Saudi Arabia represents approximately 45% of the Middle East and North Africa's gaming market with a value of \$1.8 billion. Furthermore, the 2023 Saudi Gaming Market Outlook report released by AstroLabs in

partnership with asset management firm IMPACT46 and esports platform PLAYHERA showed that 81% of surveyed gamers and developers are optimistic about the growth of the industry in the coming year, with more than 60% attributing this growth to the state investment in the sector.

From the consumer perspective, gaming is a cultural phenomenon. "With around 70% of population under the age of 35 and around 23.5 million gamers comprising about 67% of the total population, gaming has become a staple of the daily lives of many Saudis," says Ralf Reichert, CEO of the Esports World Cup Foundation. "This surge in gaming is not limited to

traditional demographics; nearly half of new gamers in the country are women. Events like Gamers8, which attracted over 1.4 million visitors to Riyadh and tripled global viewership year-over-year, highlight gaming's immense popularity and cultural impact in the Kingdom. Furthermore, the Saudi government's plan to invest over \$6.4 billion in future technologies, including esports and gaming, emphasizes the sector's significance in both the cultural and economic realms. Key local players, like Savvy Games Group, have invested heavily in the landscape, and 75% of their allocated funds have still yet to be deployed- signaling that the growth won't stop anytime soon." ➤➤







### MULTIPLAYER MENTALITY

The mandate to launch local gaming companies and create jobs, as well as produce games that Saudi Arabian nationals and the wider region can identify with, has meant the widespread support of establishing companies and training people in the ecosystem. Additionally, 51% of those surveyed for the Astrolabs report believe that there is a high demand for locally developed mobile games. This is evident in the rise and success of local developers.

One such firm involved in this sphere is asset management company Merak Capital, which is actively promoting local game development. To this end, amid the staging of the seventh edition of the Future Investment Initiative in October 2023, the firm also hosted a Gaming Investment Night, in collaboration with the Ministry of Communications and Information Technology of Saudi Arabia (MCIT) and gaming-focused venture capitalist firm Griffin Gaming Partners. The event, attended by industry leaders, showcased the potential of the Saudi gaming sector, and it also served as a platform for discussing business opportunities, trends, and the future of gaming in the Kingdom.

Ahmed AlJabreen, Partner in Merak Capital, notes that the government support for this industry will result in tangible results, saying, "There will be programs that cover entire funding cycles from seed, and perhaps pre-seed where the entire value chain is covered. We believe that this strategy eventually will create an ecosystem that is able to organically produce heavy hitter AAA games [high-budget games with prominent marketing, typically created by large publishers] that appeal to a worldwide audience. These are going to be created by Saudi-based people, supported by Saudi-based people, and funded by Saudi-based people... It's not only going to create economic sense, it's going to create social sense."

AlJabreen also emphasizes the importance of telling stories through games that resonate with the local



Benjamin Lee is the co-founder of Blowfish Studios



This Middle East launch experience aligns with our global market launches, but what sets it apart is the region's **distinctive enthusiasm for the game** and its innovative features."

audience, especially when it comes to challenging the historical portrayal of Middle Eastern characters in global games. "I grew up playing games where the villain was somebody who

looked like me, and I had to shoot this guy to progress to the next level," AlJabreen says. "Looking back, it made me uncomfortable. As a kid, it made me feel disconnected from



my culture, to hear stories about my culture from a different perspective that wasn't necessarily favorable." But AlJabreen notes that change is happening in this regard. "We went to demo days supported by Ignite [the initiative being driven by Saudi Arabia's Digital Content Council to boost the Kingdom's participation in the online content sphere] and MCIT, and looking at the early productions of games- the feeling when you see someone who looks like you, talks like you, and is actually interesting, and not just a side note in the game [was exhilarating]."

On this front, Abdulrahman Alshareef, Senior Investment Associate at Merak Capital, also notes the building blocks that are aiding the growth of the game development ecosystem in the Kingdom. "The Saudi Digital Academy (SDA) is doing an amazing job by teaching people game development, game design, graphics, and all the aspects of the supply chain that goes into gaming," he says. "I remember there was a game development bootcamp seven years ago, where there were the first steps at trying to reach people who are passionate about game development. When I look at the size of what we had then, and what we have right now, [the industry has] immensely grown- through Ignite and MCIT with their incubation programs, acceleration and investments

programs, education program, their graphics lab, virtual reality and augmented reality labs and their work with universities. The Esports Federation is teaching people how to be coaches. On the commercial side, when you look at what Savvy

"The establishment of structured esports leagues and tournaments offers professional avenues for gamers, and creates clear paths to pro play, further legitimizing esports as a career."

Ralf Reichert, Esports World Cup Foundation

Games Group is doing with Steer Studios [its game development studio], and the knowledge transfer that's happening with top tier talent across the world coming to Saudi through Savvy, it's very exciting to see." >>>



Ahmed AlJabreen, Partner in Merak Capital.





Reichert doubles down on the significance of this development. “The establishment of structured esports leagues and tournaments offers professional avenues for gamers, and creates clear paths to pro play, further legitimizing esports as a career,” he says. “At the same time, educational platforms and gaming academies are emerging, nurturing the next era of talent.” However, viewing gaming as a career option is still in its nascent phases- according to the Astrolabs’ report, 33% of professional gamers earned some form of income from content, while 58% of respondents said they were not generating consistent or sporadic income from gaming professionally just yet.

Meanwhile, mobile games publisher Tamatem is another firm actively contributing to the growth of the Saudi gaming industry with its

work in nurturing local talent. “We do this by running game development workshops and training programs to help aspiring game developers learn the skills they need to succeed by partnering with many Saudi organizations,” says Hussam Hammo, founder and CEO of Tamatem. “We also host game development competitions and events and participate in them whenever possible.” At the same time, the company is also actively on the look-out for developing or publishing new mobile games that are tailored to the tastes of not just Saudi Arabian gamers, but the entire region. “We’re also working on expanding our esports offerings, and partnering with international game developers to bring more global hits to Saudi Arabia,” he adds.

#### TRENDS AND OPPORTUNITIES

When it comes to esports, Saudi Arabia is truly emerging as a powerhouse on this frontier. Esports World Cup Foundation’s Reichert highlights the unprecedented commitment of the Kingdom to gaming, and indicates it stands as the next global leader in esports.

Here, it’s worth noting that establishing a National Gaming and Esports Strategy reflects the Kingdom’s ambition to lead the global gaming landscape, with esports forming a crucial part of the sector. From big corporations actively sponsoring esports tournaments, to the MCIT focusing on the sport’s infrastructure, as well as the formation of the Saudi Esports Federation (SEF), and the eight-week long Esports World Cup on the cards in

summer 2024 in Riyadh, there is plenty to look forward to.

Reichert says, “The idea that a country would set a National Gaming and Esports Strategy, and basically make it a national priority, is unprecedented. Unless you’ve visited the country recently, it’s hard to understand this ambition. This, combined with the launch of Savvy Games Group as the industry flagship for the wider games industry, the success of Gamers8, and now the transformation to the Esports World Cup chaired by the Crown Prince himself, the launch of an Esports and Gaming Authority, and many, many more grassroots activities initiated across the Kingdom supported by the Saudi Esports Federation (SEF), is something no country has seen in such a short time- especially at such an inflection point in gaming and esports.”



The idea that a country would set a **National Gaming and Esports Strategy**, and basically make it a national priority, is unprecedented.”

The esports scene in Saudi Arabia is also a conduit for a wealth of opportunities for local players. “You can already see strong potential for Saudi Arabia’s esports athletes today,” Reichert notes. “The Saudi national team just won the Overwatch World Cup, local esports clubs like Team Falcons or Twisted Minds are becoming more competitive on the world stage (such as Team Falcons’ Saudi Rocket League roster finishing 5-8th in the RLCS Championship after losing to Vitality, the eventual champions), and Saudi esports athletes are thriving in FIFA, one of the most popular games in the region, as well as other top

titles. I see this as the starting point, and the next few years are going to be even more exciting for everyone who is interested in the sport- players, fans, corporate stakeholders, and more.”

With all this, is it any wonder then, that international studios and gamers are flocking to the Kingdom? Sydney-based Blowfish Studios, for example, has found compelling opportunities to thrive and contribute to Saudi Arabia’s gaming landscape. Indeed, Blowfish Studios’ co-founder Benjamin Lee has expressed keen interest in the Kingdom’s gaming market. “With projected revenues set to hit \$998.20 million by 2024, as per Statista, and an impressive annual growth rate of 8.53%, we view Saudi Arabia as a compelling expansion opportunity,” he says. “Strategically leveraging this significant market growth, we are making sure to position Blowfish Studios effectively in the Saudi gaming landscape. Late last year, our parent company Animoca Brands and the NEOM Investment Fund further amplified our commitment to regional Web3 development by announcing a strategic investment of \$50 million. Anticipating a surge in users to 2.8 million by 2027 and an increasing average revenue per user (ARPU) of \$392.50 in 2024, we are dedicated to connecting with this growing player base. Our excitement lies in contributing to the flourishing Saudi gaming ecosystem, introducing innovative gaming experiences with Phantom Galaxies, and establishing a robust presence in this dynamic market.”

On this note, the recent launch of Blowfish Studios’ Web3 game Phantom Galaxies in the Middle East has been met with remarkable success, particularly in Saudi Arabia. “This Middle East launch experience aligns with our global market launches, but what sets it apart is the region’s distinctive enthusiasm for the game and its innovative features,” Lee notes. “The positive response from both traditional and Web3-focused media underlines the success of our strategic approach, and the wide-



“As more and more Saudis have access to high-speed internet, they will be able to play more demanding games online. I would go further and say that Saudi Arabia has infrastructure that could rival most of the planet, especially in terms of the internet.”

spread excitement Phantom Galaxies has generated in the Middle East gaming community.”

Lee confirms that to strengthen Blowfish Studios’ presence in the Middle Eastern gaming scene, the team is committed to localizing its games, understanding cultural nuances, and actively engaging with the gaming community through

events and partnerships. “We aim to collaborate with regional influencers and organizations to create a lasting impact on the gaming culture in Saudi Arabia and the broader Middle East,” he reveals. “Longer term, we are also investigating the possibility of a regional office in Saudi Arabia through our parent company, Animoca Brands.” ➤➤

Tamatem’s team runs game development workshops and training programs to help aspiring game developers







“With projected revenues set to hit \$998.20 million by 2024, as per Statista, and an impressive annual growth rate of 8.53%, we view Saudi Arabia as a compelling expansion opportunity.”

It should be clear by now that the gaming industry in Saudi Arabia is experiencing substantial growth, and according to Reichert, all of this is driven by a confluence of government initiatives, socio-cultural shifts, and technological advancements. “Firstly, increased government investment and strategic initiatives highlight the state’s commitment to the industry— not only by hosting first-of-its-kind events like the Esports World Cup, but contributing to the broader sustainability and growth of the global landscape,” he explains. “We’ve seen this in Qiddiya, which has recently announced its plans to build a dedicated district for gaming and esports fans. This roadmap blends gaming fandom with innovation, such as building dedicated esports arenas with industry-first technology like 4D haptics, which deepens how fans experience competition.”

Technological advancements—both in Saudi Arabia and in the world of gaming—are also great markers for success of this sector in the Kingdom. Blowfish Studios’ Lee says throughout the Middle East’s gaming sector, there is rapid adoption of new gaming technologies as well as a strong appetite for immersive experiences. “Blowfish Studios aims to capitalize on this trend by consistently delivering cutting-edge games that leverage emerging technologies,” he adds. “Our future projects will be designed to cater to the unique preferences of the Middle Eastern audience, ensuring that we remain at the forefront of the region’s dynamic gaming landscape.”

Continuing with this line of thought, Lee says the evolution of Web2 and Web3 technologies will be in line with what’s happening in the gaming industry globally. “In the Middle East, particularly in

Saudi Arabia, we anticipate a surge in demand for games that seamlessly integrate these technologies, offering players new levels of immersion, ownership, and interaction,” he notes. “Challenges may arise in educating the audience about the benefits of Web3 gaming, but we see this as an opportunity to pioneer innovative solutions, and establish Blowfish Studios as a leader in the ever-evolving gaming landscape.”

Tamatem’s Hammo adds, “The increasing availability of high-speed internet is also an important aspect to look into. As more and more Saudis have access to high-speed internet, they will be able to play more demanding games online. I would go further and say that Saudi Arabia has infrastructure that could rival most of the planet, especially in terms of the internet.” Reichert agrees, and says, “Technological advancements—especially in terms of internet speed and access, as well as innovative gaming infrastructure like what cities

like Qiddiya have planned—are set to improve the gaming experience for casual and competitive fans, attracting more international events to the Kingdom. This also fuels diverse career opportunities, extending beyond gaming to roles in content creation, marketing, and event management.”

#### GAMING GLORY

All signs thus point to Saudi Arabia advancing to the “boss” level in the global gaming and esports arena. “Saudi Arabia’s gaming industry is on the verge of a significant transformation, aligning with Vision 2030’s goals for economic diversification where gaming is a key sector,” Reichert declares. “The focus is on developing local gaming content that showcases the Kingdom’s rich cultural heritage, providing a platform to share regional stories with a global audience. This initiative not only enhances cultural representation, but also promotes the establishment of local game development studios

and other infrastructure critical to scaling the industry in Saudi Arabia and beyond. The nation’s ambition to become a global esports hub is further highlighted by its hosting of the inaugural Esports World Cup in 2024, demonstrating its commitment to the international gaming community. This move, coupled with strategic international collaborations, positions Saudi Arabia as a key player in the global esports arena, and a hotspot for innovation.”

Blowfish’s Lee also maintains a similar belief, saying that the gaming market in the Kingdom is mirroring global growth trends. “The increasing availability of government-backed funding,

high-speed internet, advancements in gaming technology, and a rising gaming culture all contribute to this growth,” he adds. “We see the Kingdom at the forefront of these global gaming trends, presenting exciting opportunities for both local and international game developers like Blowfish Studios.” And while specific details are not available, Merak Capital’s AlJabreen expects significant capital influx into the Saudi gaming ecosystem in 2024. “We are going to see a lot of capital pouring into the ecosystem in Saudi Arabia,” he says. “Within the next two or three years, you will see the results. There are going to be quick wins, but this is not a short-term thing. It’s going to be a big industry in Saudi Arabia, and hopefully will carry on contributing to the economy for many decades.”

The road ahead is thus looking bright, AlJabreen says. “We see the opportunities, and we believe that out of all media platforms today, this is definitely the largest, and it’s going to be the most influential in the future,” he says. “It makes sense for us to invest in gaming, and we would love to be a part of that journey in Saudi Arabia’s plan to be an ecosystem for gamers.” His colleague, Alshareef, concludes, “All the forces are in place. All the stars are aligned. What remains is for passionate executors to seize the opportunity, and to start building across all aspects of gaming—be it developers, be it people in esports, be it organizers. It’s the absolute best time to start building these companies and communities.”

*Devina Divecha is an independent writer, editor, emcee and media consultant. With more than 10 years of experience under her belt, her work has appeared in a number of publications including Skift, SUPPER, HOTELSmag, Destinations of the World News, Spinneys Magazine, Entrepreneur Middle East, and more. She holds a BSc in Business from the London School of Economics and an MA in Magazine Journalism from the University of Sheffield. devinadivecha.com*

CEO and founder of mobile games publisher Tamatem, Hussam Hammo



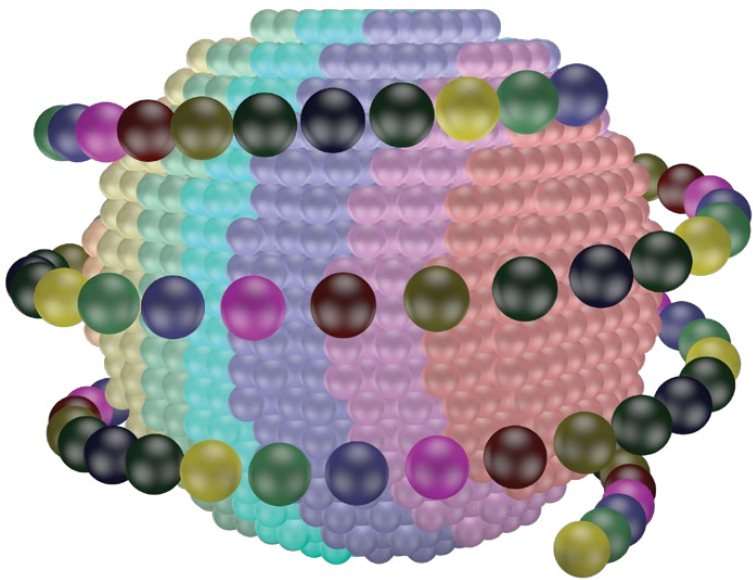




# RISING STARS

HERE IS OUR SELECTION OF THE TOP FIVE SAUDI ARABIA-MADE TECH PRODUCTS THAT HAVE MADE QUITE A SPLASH—BOTH IN THE KINGDOM AND BEYOND

AS PIONEERS IN THEIR FIELD, THE COMPANIES PRESENTED IN THIS ARTICLE FOCUS ON LEVERAGING TECHNOLOGY AND INNOVATIVE SOLUTIONS TO ADDRESS CONTEMPORARY CHALLENGES AND MEET THE EVOLVING DEMANDS OF THE MARKET—WITHIN SAUDI ARABIA AND BEYOND. POSITIONED AT THE FOREFRONT OF TECHNOLOGICAL ADVANCEMENT WHILE SUPPORTING VISION 2030, THESE COMPANIES ARE DRIVING SAUDI ARABIA TOWARDS A DIGITAL FUTURE. FOLLOWING A REVIEW OF THEIR OFFERINGS, THEIR POTENTIAL, AND OTHER FACTORS, HERE'S OUR SELECTION OF THE TOP FIVE COMPANIES IN SAUDI ARABIA PRODUCING HOMEGROWN TECH INNOVATIONS, PRESENTED IN NO PARTICULAR ORDER.



## NANOPALM

A Saudi biotechnology company that creates next-generation nanomedicines for affordable and accelerated pharmaceutical R&D activities.

[smartproductx.com](https://smartproductx.com)

**Founded in 2022**, and headquartered in Riyadh, NanoPalm is a spinoff from the King Abdulaziz City for Science and Technology (KACST) that went on to be incubated by the NextEra initiative, run by the KSA Ministry of Communication and Information Technology in partnership with The Garage, the startup district also based out of Riyadh. As an enterprise focusing on the development of deep nanotechnology-based, next-generation nanomedicines, NanoPalm was founded with a vision to revolutionize the biotech industry. It specializes in low-cost and accelerated pharmaceutical research and development, thereby promising to transform the landscape of drug development. As founder and CEO Dr. Ali Alhasan puts it, “Our mission is clear: to bring new trends of technologies for Vision 2030 Kingdom’s digital vision, providing transformational solutions that deliver next-generation technologies and high-end frameworks.”

At the heart of NanoPalm’s mission lies the power of artificial intelligence (AI)-driven manufacturing of next-generation lipid nanoparticles

(NG-LNPs), heralding a new era in gene therapy and clinical trial acceleration. These biorobots represent cutting-edge developments in drug discovery, with Dr. Alhasan adding, “Our vision is to become a pioneering force in the field, transforming pharmaceutical research and making major contributions to advancing healthcare.” According to Dr. Alhasan, NanoPalm’s competitive edge in the market stems from its deep-rooted values of affordability, proficiency, and innovation.

The company aims to significantly improve the success rate of clinical trials to 85%, reduce development costs from US\$1 billion to \$100 million, and accelerate commercialization from 15 years to just five years.

“Leveraging advanced nanotechnology, our biorobots are

designed to address critical challenges in medicine,” Dr. Alhasan explains. “By enabling targeted delivery of therapeutic agents, these NG-LNPs enhance efficacy while minimizing side effects. For instance, in the realm of genetic diseases, NanoPalm’s biorobots targeting sickle cell disease aim to clear patients’ DNA from the mutated gene, offering a promising new approach to treating this debilitating condition. Similarly, for retinitis pigmentosa, a disease causing blindness, NanoPalm offers an alternative to surgeries in current therapies by delivering the therapy directly to the affected cells in the retina via a simple intravitreal injection. By pushing the boundaries of what is possible with its innovative technology and unyielding focus on healthcare outcomes, NanoPalm sets the stage for shaping the future of medicine, one biorobot at a time.”

Dr. Ali Alhasan, founder and CEO, NanoPalm







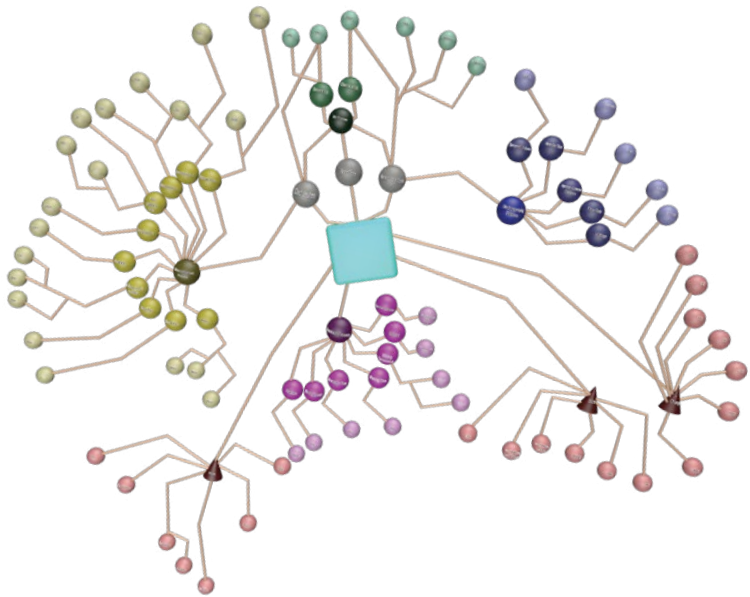
It should thus come as no surprise that NanoPalm's technology has received a positive response both within Saudi Arabia and internationally. Leveraging the supportive ecosystem in Saudi Arabia, including regulatory bodies, investors, and research facilities, NanoPalm has made significant strides in the creation of nanomedicines.

"The response we've received in the Kingdom and beyond has been overwhelmingly positive, with stakeholders recognizing the potential impact of our technology on the pharmaceutical industry," Dr. Alhasan says. "However, we have also faced challenges, such as navigating regulatory processes, securing funding for research and development, and building a skilled workforce in a relatively nascent biotech sector. Nonetheless, these challenges have served as opportunities for growth and have strengthened our resolve to succeed."

When it comes to advice for other entrepreneurs and startups considering the Kingdom as a base for their operations, Dr. Alhasan emphasizes the importance of leveraging the supportive ecosystem in the country, which includes government grants, incubators, and accelerators, and stresses the necessity of building strong partnerships while staying abreast of regulatory requirements. Such a support system is also why Alhasan believes there are significant growth opportunities in Saudi Arabia—also driven by ongoing government investments in diversifying the economy and fostering innovation—particularly in sectors

like biotechnology and healthcare. Plus, the Kingdom's commitment to entrepreneurship and technological advancement creates a conducive environment for startups to thrive. "The availability of funding, supportive regulatory frameworks, and initiatives like The Garage incubator have played pivotal roles in fostering a vibrant startup ecosystem," Alhasan declares. "There is a solid sense of enthusiasm and optimism among entrepreneurs, with a growing community of innovators contributing to various sectors, including biotechnology. Saudi Arabia is on the path to becoming a center of innovation and technological transformation, driven by the spirit of collaboration and the readiness to accept change, and NanoPalm takes pride in being a participant in this fascinating journey."

In terms of the road ahead, Alhasan says that his goal for his business is not to merely expand within the Kingdom but rather, to position NanoPalm as the "frontrunner in the biotech industry." "Operating out of Saudi Arabia provides numerous advantages, including access to a rich pool of talented researchers and scientists, strategic geographical positioning, and robust government support for innovation and entrepreneurship," Alhasan continues. "With these advantages, Saudi Arabia holds the promise of emerging as a global hub for biotechnology and healthcare innovation, a prospect that drives our commitment to establishing NanoPalm as a leader in this transformative landscape."



ENVNT

A Saudi Arabia-based information technology (IT) consultancy that uses the latest technologies to help companies along their digital transformation journeys. envnt.co

In a landscape marked by continuous technological innovation, one enterprise that's definitely on the rise is Envnt (formerly known as Codelab), which was founded in 2013 by Saudi Arabian software engineer Hamad Al Saleh.

Al Saleh's ambition with the concept was to establish a software development company that serves both the public sector and leads the charge when it comes to technological advancement in the Kingdom. The company's flagship products include both a low-code solution integrator

as well as a field inspection management solution. "Our offering is simplified into two major product or service lines," Al Saleh explains. "Our low-code solution integrator enables digital transformation at a speed that provides clear customer value and lower total cost of IT ownership to our government sector partners and selected non-government partners. At the same time, Enspct is a field service management solution developed by Envnt, and currently being used by 10 government agencies. The solution is 'built for purpose,' highly configurable, and supports our government partners to ensure compliance, increase the quality of service, and reduce the time required to complete inspection or conformity journeys for all beneficiaries. Use case examples include

value-added tax (VAT) compliance, road safety inspections, and the monitoring of healthcare workers in Ministry of Health facilities during the COVID-19 pandemic."

Now, it's important to note here that the aforementioned positive use cases and accolades were not an overnight achievement; that said, Al Saleh is happy to explain why Envnt has seen success in the market. "Saudi Arabia is the largest economy in the Middle East and North Africa region, with a gross domestic product of over US\$1 trillion," he says. "The country has a young and growing population, with over 70% of the population under the age of 30. Saudis are also increasingly tech-savvy, with over 80% of the population having internet access. Envnt followed the best practices for launching and building new digital products and services. Such practices included detailed market research, understanding consumer needs and culture, analyzing the competition, and carefully studying government regulations. While considering the success factors in the Saudi market, we took into account the Saudi government's support programs, local knowledge and partnerships, and the localization of our products and services for market suitability." >>>



Hamad Al Saleh, founder, Envnt

**Saudi Arabia** is the largest economy in the Middle East and North Africa region, with a gross domestic product of over US\$1 trillion.



It is thanks to this foresight and dedication that, more than a decade after it launched, Envnt has more than 450 employees across three continents, with offices in Saudi Arabia, as well as the UAE, Egypt, and France. The company's commitment to excellence has also been rewarded, with Al Saleh saying, "For five consecutive years, Envnt has received prestigious awards from its global technology partner Outsystems, and it has also been recognized by its customers as a trustworthy partner for success to whom they have recommended to other government departments. Envnt is now the largest partner for Outsystems in the EMEA."

This, of course, is a massive change from what the company had to deal with when it had just started out in the market. "10 years ago, when Envnt was launched, the market response was slow, and the competition was tough," the founder admits. "However, in recent years, following the launch of Vision 2030 programs and initiatives, the market response has become receptive, fast, and demanding. Our current growth is greatly enhanced by several initiatives from the KSA Ministry of Communication and Information Technology (MCIT) and other government programs, such as the Saudi Export Development Authority."

Here, Al Saleh also emphasizes the advantages of operating within the Kingdom, citing access to government projects, proximity to customers, and favorable government regulations as key catalysts for success. "The Saudi government is investing heavily in IT projects, and IT services providers that are based in Saudi Arabia have a better chance of winning these projects," Al Saleh adds. "Being based in Saudi Arabia also allows IT service providers to be closer to their customers, which can improve communication and service delivery. The Saudi government has created several regulations that are favorable to IT services providers. For example, the support of the Saudi Export Authority and MCIT to include local companies in local content lists, and simplifying product registrations."

Al Saleh believes that there are also plenty of factors that will contribute to the long-term growth of Envnt. "The increasing importance of low-code

technology will continue to play an increasingly important role in the development and deployment of software applications in the years to come," he notes. "As low-code platforms become more sophisticated and easier to

**"ENVNT IS VERY FOCUSED ON CONTINUED SUCCESS THROUGH DIFFERENTIATION, AND POSITIONING TECHNOLOGY AND THE EMPOWERMENT OF OUR PEOPLE TO MEET FUTURE CUSTOMER DEMAND."**

use, they will be accessible to a wider range of users, and they will be used to develop a wider range of applications. There is an increasing demand for inspection software, considering recent changes in Saudi Arabia; global regulatory compliance is becoming essential for the government of Saudi Arabia to ensure quality, safety, and cost optimization." He also highlights

the importance of cloud computing and artificial intelligence (AI) for the future of Envnt. "Cloud computing is becoming increasingly popular in Saudi Arabia, as it allows businesses to access IT resources on demand without having to invest in their own hardware and software," he explains. "This is creating new opportunities for Envnt to help businesses with their cloud management needs. AI is another rapidly growing technology that is creating new opportunities for Envnt, and our clients are increasingly looking at us to help them with AI development and deployment."

Highlighting that most of Envnt's projects in the Kingdom have been directly linked to Vision 2030's objectives, Al Saleh says the company's vision is to be a regional leader in deploying leading-edge technology solutions that help customers accelerate achieving their own ambitious goals. Citing that Envnt has a plan for the next three to five years, Al Saleh says, "Our plan is to diversify and expand the company into new industry verticals, geographies, and technologies that leverage the wealth of young people's talent in the Kingdom. Envnt is very focused on continued success through differentiation, and positioning technology and the empowerment of our people to meet future customer demand."



"AS WE EVOLVE, [ATM] IS DEDICATED TO BEING A PIVOTAL FORCE IN THE REALIZATION OF THESE NATIONAL ASPIRATIONS, FOSTERING GROWTH AND PROSPERITY, BOTH LOCALLY AND GLOBALLY."

**Yasser AlFarhan**, founder and CEO, [ATM]



**[ATM]**  
A Saudi Arabia-based technology company specializing in innovative digital solutions that enhance operational efficiency and customer satisfaction.  
[atm-global.com](http://atm-global.com)

Since being founded in 1997 by Yasser AlFarhan, Advanced Systems & Technologies—or [atm], as it stylizes itself—has championed digital transformation, carving out a niche by delivering cutting-edge digital solutions tailored to meet the evolving needs of Saudi Arabia and beyond. "Our expertise spans the Middle East and extends to Europe and America, underscoring our global impact and local insight. We focus on developing and deploying business solutions for iconic and large-scale digital transformation initiatives," AlFarhan says. "[atm] is making its presence known in the business world by collaborating with leading technology partners."

Specializing in innovative digital solutions, [atm] is at the forefront of pioneering advancements in robotics and artificial intelligence (AI), as well as championing sustainability and cybersecurity—all of which will play a crucial role in shaping the future of Saudi Arabia. "[atm]'s mission is to introduce new trends in technologies to support the Kingdom's Vision 2030 digital vision, provide transformational solutions, and deliver next-generation technologies and high-end frameworks," AlFarhan declares. "Our goal is to blend cutting-edge information and communications technology (ICT) solutions with sustainable practices, supporting the nation's objectives in creating a thriving economy, vibrant society, and an ambitious nation. As we evolve, [atm] is dedicated to being a pivotal force in the realization of these national aspirations, fostering growth and prosperity, both locally and globally."

The technology space that [atm] operates in is vast and forward-looking—and the founder insists on ensuring his company is well-prepared for it. According to AlFarhan,

[atm] is constantly refining and developing the right mix of capabilities and knowledge across multiple areas to assist in realizing Vision 2030. These areas include robots and AI in health, industrial, and logistics sectors, sustainability, environment, social, and governance (ESG), net-zero or beyond net-zero solutions, cybersecurity for critical assets in information technology (IT) and operational technology (OT), the Internet of Things (IoT) for energy management, water and air quality, Industry 4.0, future cities solutions and autonomous mobility, and B2B marketplaces or decentralized procurement. Thus, [atm]'s journey across these tech landscapes is marked by innovation, resilience, and adaptation.

"While leveraging the opportunities presented by Saudi Arabia's robust economic environment, we have navigated challenges such as the regulatory landscape and the need for continuous innovation," AlFarhan says. "This balance of seizing advantages and overcoming obstacles has cemented [atm]'s position as a dynamic, resilient global leader in engineering ICT."

Resting on these laurels, however, is not in the cards for AlFarhan and his team at [atm]. Looking to the future, [atm] envisions significant growth within Saudi Arabia, fueled by the Kingdom's commitment to technological advancement and economic diversification. "The strategic location of Saudi Arabia, combined with its proactive approach to fostering

**WHILE LEVERAGING THE OPPORTUNITIES PRESENTED BY SAUDI ARABIA'S ROBUST ECONOMIC ENVIRONMENT, WE HAVE NAVIGATED CHALLENGES SUCH AS REGULATORY LANDSCAPES AND THE NEED FOR CONTINUOUS INNOVATION.**



innovation, presents distinct advantages for [atm]," AlFarhan says. "These include access to a thriving market, a supportive business environment, and a gateway to regional and global markets. Saudi Arabia's emphasis on digital transformation, its investment in infrastructure, and the fostering of a skilled workforce are further advantages that bolster our confidence in long-term growth within the Kingdom. Our commitment to Saudi Arabia is steadfast, and we anticipate not only being a part of the Kingdom's growth but also contributing significantly to it. By leveraging the unique

advantages that the Kingdom offers, [atm] aims to solidify its position as a leader in engineering ICT, not just regionally but on a global scale." When asked to share lessons from [atm]'s upward trajectory, AlFarhan advises other entrepreneurs to leverage opportunities in alignment with Saudi Arabia's Vision 2030 and to adapt their businesses to the cultural and market specifics of the Kingdom. "Focus on networking and stay adaptive to market changes while ensuring regulatory compliance," he adds. "Also, think globally, act locally—that is, balance a global outlook with strategies suited to local needs."



While there is a range of products and services to come out of Azm's portfolio, among its most innovative is Edaat. Collaborating with Saudi-based investment platform Abyan, Azm created a service known as Edaat, which delivers advanced digital payment and e-collection solutions tailored for billers. These services simplify financial operations management by incorporating various features that enhance transaction handling efficiency and effectiveness. In addition the partnership with various entities for public and private partnership for statement management including partnership, distribution and fees calculation

Alqhtani says, "Abyan employs artificial intelligence and machine learning to digitize and manage know-your-customer (KYC) and know-your-business (KYB) forms, including legal and personal identities. The platform integrates with government services for electronic data control and authentication, facilitating efficient application processing from submission to approval.

Transitioning from being merely consultants to digital experts, Azm's product suite is aimed at creating a future where technology simplifies lives and propels the Kingdom into a digitally empowered society. Alqhtani adds, "With a wealth of experience developing and operating national platforms

like Jood Al Eskan, and Shefaa, we have finely tuned our products to address critical needs in the Saudi market. The response to our products has been overwhelmingly positive, particularly with FSM, which has garnered interest from individual borrowers, financial institutions, and SMEs. The Kingdom's commitment to Vision 2030 aligns seamlessly with our goals, fostering an environment where digital solutions like FSM and Oqoud, a digital signature platform, are embraced."

Azm envisions a future deeply rooted in Saudi Arabia, capitalizing on the Kingdom's potential for digital transformation and aligning with its values and goals, with Alqhtani adding that Saudi Arabia is "ripe for innovation, especially in sectors like fintech, e-commerce, and artificial intelligence." He concludes, "As a partner in building a smarter, more inclusive, and digitally empowered future, we commit to contributing to the Kingdom's success. Our focus remains on developing the Azm Product Suite, tailored to the specific needs of the Saudi market, particularly in fintech and digital solutions. The dynamic and evolving Saudi market presents both challenges and opportunities, and our agility and adaptability position us to stay ahead, innovate, and develop solutions that address emerging needs. Our growth trajectory in Saudi Arabia



Ali Albalaa, CEO, AZM

will be characterized by continuous innovation, strategic partnerships, and a steadfast commitment to contributing to the Kingdom's digital transformation journey."

Ismaeel AlQahtani, Vice President, AZM



## AZM

A KSA-based information technology company that provides solutions in business and technology, including executive consulting, human resources services and fintech. [azm.sa](http://azm.sa)

**With a vision** to become the preferred partner for clients seeking top-tier information technology services and executive consulting, Azm aims to contribute to Saudi Arabia and its welfare. As Azm Vice President Ismaeel Alqhtani put it: "As a cornerstone of our national aspirations, we aim to contribute significantly to our country's thriving economy, vibrant society, and ambitious nation through the implementation of high impact, quality projects marked by efficiency and flexibility."

At the heart of the company's offerings is its Financial Services Marketplace (FSM), which is meant to be a solution for all financing needs. FSM as a solution eliminates the hassles of traditional processes, offering a seamless, fully digital experience that connects users with banks and lenders. What sets FSM apart is its speed, transparency, and the ability to provide much-needed working capital efficiently. The layers to this solution include the Marketplace, which connects banks with clients; the Loan Origination Platform, which manages loan requests and makes the process more transparent and accessible; the Settlement Platform, a robust financial system that introduces escrow account management. These layers work together to streamline the lending process.





MASTER WORKS

A KSA-based tech company specializing in data, digital transformation, and photo & video analysis using artificial intelligence. [master-works.sa](https://master-works.sa)

Having secured US\$40 million in private equity financing in 2022, backed by the Saudi Arabian investment firm Merak Capital, Master Works stands as a pioneering force in Saudi Arabia. We empower companies with innovative solutions that enhance operational efficiency and provide real-time information to decision-makers.

Founded in 2010 by Hani Al-Lehaibi and Bandar Al-Amri, and having served over 170 organizations, Master Works offers a comprehensive range of products and services. Our expertise spans data management, artificial intelligence, data strategy, application program interface (API) management, software development, robotic process automation (RPA), and video analysis using AI algorithms. “As a cornerstone of our national aspirations, we aim to significantly contribute to our country’s thriving economy, vibrant society, and ambitious nation,” says Vice President Ismaeel Alqhtani. “With a clear vision, we founded a company to excel in data management and have since evolved into a forerunner of AI, with Saudi Vision 2030 at our core.”

One of our flagship innovations is the Baseer platform, a national initiative harnessing AI and computer vision’s power. Accredited by the KSA Communications, Space, and Technology Commission, Baseer offers rapid data



Our goal is to blend cutting-edge information and communications technology (ICT) solutions with sustainable practices, supporting the nation’s objectives in creating a thriving economy, vibrant society, and an ambitious nation.”

insights by processing vast amounts of visual content. Currently, the platform provides services for monitoring visual distortion, managing airplane turnaround, queue management, facial recognition, crowd management, and more. >>>



Hani Al-Lehaibi, CEO, Master Works

Baseer has significantly enhanced operational efficiency at King Khalid International Airport in Riyadh by providing real-time monitoring of air-plane turnaround activities. Its versatility extends to sectors like smart cities, event management, and security, supporting Saudi Arabia’s giga-projects by providing data-driven insights. “Our goal is to blend cutting-edge ICT solutions with sustainable prac-



Bandar Al-Amri, CBDO, Master Works

tices, supporting the nation’s objectives to create a thriving economy, vibrant society, and ambitious nation,” Alqhtani adds. Moreover, as part of the Sandbox initiative by the KSA Ministry of Communication and Information Technology (MCIT), Baseer aligns with the government’s commitment to introduce advanced technologies to the Saudi market, thereby enhancing



Mohammed Own, COO, Master Works

agility and adaptability position us to innovate and develop solutions that address emerging needs. Our growth trajectory in Saudi Arabia is characterized by continuous innovation, strategic partnerships, and a steadfast commitment to contributing to the Kingdom’s digital transformation journey.

“In Saudi Arabia, the local product market is thriving with high demand. We are actively contributing to Saudi Vision 2030, aiming to improve urban living and the quality of life for Saudi citizens,” co-founder Al-Amri adds. “This is a great time to invest, especially with strong government backing and the economy on the rise. The combination of this support, trust, and our team’s potential is set to make a significant impact.”



While leveraging the opportunities presented by Saudi Arabia’s robust economic environment, we have navigated challenges such as regulatory landscapes and the need for continuous innovation.”



Othman Al-Hokail, Chairman, Master Works

consumer experiences and contributing to economic diversification. “The advantage of operating in Saudi Arabia lies in alignment with Saudi Vision 2030,” says Chairman Othman Al Hokail. “We are actively contributing to Saudi Vision 2030, aiming to improve urban living and the quality of life for Saudi citizens.” As we prepare for an initial public offering, our focus remains on developing the Azm Product Suite, tailored to the specific needs of the Saudi market, especially in fintech and digital solutions. The dynamic and evolving Saudi market presents both challenges and opportunities, and our







# BUILDING MOMENTUM

**ZOHO ACCELERATES SAUDI ARABIA'S DIGITAL TRANSFORMATION WITH US\$100+ MILLION INVESTMENT** BY HYTHER NIZAM

In the heart of the Kingdom of Saudi Arabia, a hub of innovation is emerging.

Driven by a young, tech-savvy population and a government committed to digital transformation, the Kingdom's information and communications technology (ICT) sector has shown remarkable growth. Saudi Arabia has become the largest and fastest-growing market in the Middle East and North Africa (MENA) region. With a value of US\$48 billion as of 2023, the ICT sector is poised to play a pivotal role in shaping Saudi Arabia's future.

Zoho has made Saudi Arabia a focal point of its regional expansion strategy. Recognizing the Kingdom's unique market potential, Zoho has embarked on a long-term expansion

plan that will help businesses and government entities embrace new technologies and tackle complex challenges. With steady steps and a clear vision, Zoho is navigating the Saudi market, investing in local talent, opening new offices, and forging partnerships with key stakeholders. Along the way, Zoho is tailoring its products and services to meet the unique needs of Saudi businesses, offering localized solutions and Arabic UI/UX.

Zoho is set to invest in setting up digital infrastructure in Saudi Arabia, a significant milestone in the company's commitment to the Kingdom's digital transformation and data privacy. This investment aligns with the local Personal Data Protection Law (PDPL), and reflects Zoho's

dedication to safeguarding user data. Zoho's unique business model, devoid of ad-based revenue, and complete ownership of its technology stack ensure complete oversight of customer data, privacy, and security.

But Zoho's journey in Saudi Arabia is not just about pixels and bytes; it's about building bridges, empowering communities, and weaving a tapestry of trust and innovation.

## PUBLIC AND PRIVATE PARTNERSHIPS

Zoho, recognizing the intrinsic link between a nation's prosperity and the well-being of its people, is actively enabling Saudi citizens and entrepreneurs to thrive in the digital economy and contribute to the nation's ambitious goals. Through strategic partnerships with private and public sectors, Zoho is accelerating the digitalization of businesses and upskilling the Saudi workforce.

Zoho has committed over \$100 million in investments to support the growth of the SME sector, educate and train the workforce, and collaborate with leading public entities like the Ministry of Communication and Information Technology (MCIT) and

THE COMPANY HAS ESTABLISHED A STRONG LOCAL PRESENCE, OPENING OFFICES IN RIYADH AND JEDDAH, AND DOUBLING ITS LOCAL WORKFORCE IN A TESTAMENT TO ITS COMMITMENT TO ESTABLISHING ROOTS IN THE KINGDOM.



Hyther Nizam is President of Zoho Middle East and Africa. Zoho.com

Monsha'at, the Small and Medium Enterprises (SMEs) General Authority. Zoho's training and development programs on its technology solutions are further enhancing digital literacy, and fostering a digitally empowered workforce.

Zoho is forming similar partnerships with key private and public stakeholders in other countries in the region such as the UAE, Jordan and Lebanon. Through these partnerships, the company has gained a deep understanding of the region's unique needs and challenges.

## TRANSNATIONAL LOCALISM AS A GROWTH STRATEGY

Zoho's "transnational localism" strategy, a harmonious blend of global reach and local adaptation, has guided its expansion into Saudi Arabia. The company has established a strong local presence, opening offices in Riyadh and Jeddah, and doubling its local workforce in a testament to its commitment to establishing roots in the Kingdom. Zoho has also prioritized hiring local talent, with over 78% of its current Saudi workforce composed of Saudi nationals.

The transnational localism strategy has also seen Zoho launch nine products with Arabic User Interface (UI) to open up its solutions to a large and

growing population of Arabic speakers in the region. At the heart of it is Zoho Books, the VAT-compliant accounting software, which has been localized to ensure compliance with the Zakat, Tax and Customs Authority (ZATCA) requirements.

Furthermore, Zoho has been enabling Saudi retailers in setting up online stores by offering native Right-to-Left (RTL) capabilities in its e-commerce platform, Zoho Commerce, as well as international and regional payment gateway options. Zoho is one of the few vendors in the market that offers RTL capabilities.

## GLOBAL GROWTH MOMENTUM

Zoho's journey to 100 million users has been marked by a relentless pursuit of

excellence in research and development. By constantly adapting to the evolving needs of customers and staying ahead of the curve, Zoho has cemented its position as a trusted partner for businesses of all sizes.

The growing demand for Zoho's cloud-based business solutions saw a significant 40% revenue growth and 43% increase in partner channel network in Saudi Arabia in 2022, making it the company's fastest-growing markets in the region.

As Zoho celebrates this remarkable milestone, it remains steadfast in its mission to empower Saudi businesses with cutting-edge technology solutions. With a dedicated team of experts, local investments, strategic government collaborations and a strong emphasis on continuous improvement, Zoho is poised to lead the digitalization of businesses with purpose and heart. **T**







# DRIVING GROWTH

## HOW HPE IS HELPING SAUDI ARABIA BUILD ITS POSITION AS A GLOBAL INNOVATOR

BY MOHAMMED ALREHAILI

At LEAP 2022, Hewlett Packard Enterprise (HPE) made two significant announcements with the aim to support the development of Saudi Arabia's digital economy. Through our new Middle East organization headquartered in Riyadh, and our partnership with manufacturer and digital solutions provider, Alfamar, HPE aims to help the Kingdom meet Vision 2030 objectives. HPE has made a long-term multi-million dollar investment that will support critical national initiatives in the public and private sectors, including education, health, oil and gas, financial services, and manufacturing. The investment will strengthen HPE's deep rooted commitment to Saudi Arabia, which goes back more than 30 years.

HPE and Alfamar are planning to produce thousands of units annually

from the leading HPE ProLiant Gen11 server family in the Kingdom. This is helping to support Vision 2030's Made in Saudi Program, which helps local businesses increase their visibility, promote their products to a wider audience, and connect with consumers interested in purchasing from Saudi companies.

A lot has changed since LEAP, particularly following the sudden artificial intelligence (AI) boom. Chatbots have long been considered one of the most promising applications of AI. The fact that ChatGPT today demonstrates capabilities that even exceed some of the boldest expectations is essentially the result of innovations in supercomputing.

By enabling AI at scale, supercomputers dramatically accelerate the training of large language models—neural networks with several hun-

dreds of billion parameters. As a result, we're witnessing a fast evolution from the original idea of natural language processing to what is today called generative AI and currently inspires the imagination of millions of people.

Who better to support the Kingdom in this AI revolution than HPE, the creator of the world's first, fastest, and currently only exascale supercomputer. We have already announced that King Abdullah University of Science and Technology (KAUST) has selected HPE to build its next-generation supercomputer, Shaheen III, to deliver state-of-the-art supercomputing and AI capabilities for advancing research in fields such as food, water, energy and the environment.

This is a vital investment by the Kingdom to build its position as a global innovator, for industry competitiveness and economic growth. From accelerating vaccine discovery to fighting a pandemic, advancing clean energy systems to increase sustainability, to enabling new possibilities in AI, supercomputing is a core technology to solving Saudi Arabia's, and the world's, most challenging scientific and engineering problems.

Shaheen III will advance the nation's global standing in the below areas, helping to drive humankind forward and achieving Vision 2030's ambition to make Saudi Arabia a vibrant, ambitious society with a thriving economy:

**1. Drug development:** Significantly reduce the time needed to discover drug treatments and cures for disease. By applying AI and machine learning to physics-based models we can fundamentally change how new drugs are designed and tested. During the pandemic, Lawrence Livermore National Laboratory in the US worked with an HPE supercomputer to create an AI-driven modelling platform to narrow down the number of potential antibody candidates from 1,040 to just 20. Supercomputing can power these AI models at scale, which presents the opportunity to extend breakthroughs to cancer, heart disease, and the development of new antibiotics. This can help Saudi Arabia achieve its Saudi Genome Program, an extraordinary journey to construct a pioneering database that will not only capture the genetic blueprint of Saudi society, but also revolutionize healthcare by enabling personalized medicine, driving down healthcare costs, and uplifting the overall quality of life.

**2. Extreme weather prediction:** Save lives by predicting extreme weather more quickly. Weather and climate predictions are a combination of



chemistry, geology, and physics- and all of these calculations happen on a sphere that's spinning at about 1,000 miles per hour. Thankfully, this is exactly the type of problem supercomputers were built to solve, helping forecasters today do a far better job of predicting extreme weather, such as where a hurricane will hit land- from within 200 miles 50 years ago to just 50 miles today.

**3. Fighting food scarcity:** Help feed the world's population by increasing crop yields. With advances in supercomputing, we'll see the onset of a new agricultural revolution that uses genomics and bioinformatics, along with new genome-editing techniques to create new varieties of crops. Powered by supercomputers and

advanced genetics techniques, work is already underway to map the genome for wheat so that we can create a heartier and more diverse variety that offers higher yields and can better adapt to environmental challenges.

**4. Enhance sustainability:** Reduce the environmental footprint of things we use every day.

We can use supercomputing technology to invent next-generation batteries that are safer, cheaper, and run longer. We can use it to design better nuclear fuels for clean energy or develop new polymers that degrade naturally when exposed to light so we don't put more plastic into the ocean. This technology will significantly enhance the products we use each day- and reduce their impact on the environment.

HPE's significant commitment to Saudi Arabia highlights how we are contributing to the achievement of its Vision 2030 objectives, and helping positioning the nation as a technology hub. Recent progress with KAUST sets Saudi Arabia up to power the next generation of AI technology, as well as ensuring that vital building blocks of critical IT infrastructure are being manufactured within the country. **T**



Mohammed Alrehaili is the Managing Director of Hewlett Packard Enterprise (HPE) in Saudi Arabia, Oman, Bahrain, and Egypt. [hpe.com](http://hpe.com)





## FUTURE FORESIGHT

### HOW WIPRO IS REALIZING TECHNOLOGY-LED GROWTH AMBITIONS IN SAUDI ARABIA

BY KHALED AL-OFAYSAN

Saudi Arabia is making significant strides toward achieving the Saudi Vision 2030 across all three pillars: a Vibrant Society, a Thriving Economy, and an Ambitious Nation. With a sharp focus on technology-led advancements to drive innovation and economic growth, Saudi Arabia has become a global economic development leader.

Over the last 20+ years, Wipro has partnered with both private and government sector enterprises in Saudi Arabia on several strategic technology-led engagements of national, economic, and socio-economic significance. Wipro continues investing in Saudi Arabia to drive technology-led innovation, create a thriving localized talent pool and deliver impactful sustainability outcomes. In addition to Wipro's core businesses, the company seeks to foster new businesses that will increase the long-term reliability and competitiveness of the company's ecosystem, and contribute to the Kingdom's economic development.

Today, Wipro is one of the world's largest, most trusted, purpose-driven technology companies, and is taking

forward the rich legacy of its impact in Saudi Arabia, thus contributing to the Saudi Vision 2030.

#### INVESTMENTS AIMED TO DRIVE EXPONENTIAL GROWTH

Wipro is helping clients in Saudi Arabia reshape their business models and leverage disruptive and cutting-edge technologies to increase productivity and drive innovation. The company targets six strategic domains- cloud computing, data and artificial intelligence (AI), sustainability, cybersecurity, engineering solutions, and nurturing local talent development. These complement Wipro's transformational approach to generating business value to support companies and partners and contribute to the KSA economy.

Within this context, Wipro remains steadfast in its purpose to create value for its clients, people, shareholders, partners, and communities

#### WIPRO FULLSTRIDE CLOUD (FSC)

Wipro FSC is critical in assisting enterprises with their digital and cloud transformation efforts, particularly in

the ever-evolving Saudi Arabian business context. This region prioritizes banking, utilities, and telecommunications, and it is undergoing significant technological changes with varied levels of digital maturity. Wipro's primary goal is to assist enterprises in harnessing the power of clouds by converting promises into real solutions. FSC focuses on rejuvenating existing systems rather than simply relocating them. It works with prominent brands in financial services, communications, mobility, logistics, and the public sector, and employs specialist teams that have significant industry and domain knowledge. By investing in hyperscalers who embrace software engineering, cloud migration, and AI or machine learning (ML) technologies, FSC ensures end-to-end value delivery. FSC's offerings include core business transformation, a cloud-agnostic platform, and stakeholder partnerships, all with the goal of accelerating customers' cloud-native enterprises. Wipro aims to accelerate customers' cloud-native enterprises, and establish its cloud global business line (GBL) as a trusted partner in Saudi Arabia's digital growth.

WIPRO AI360 Building on our decade-long investments in AI, we have launched our artificial intelligence-first innovation ecosystem, Wipro ai360, with investments worth US\$1 billion.

Wipro has built AI Centers of Excellence throughout the region to demonstrate their commitment to adopting AI-driven solutions across many industries. Wipro's ai360 is fueling the next wave of AI-driven innovation by infusing AI across its ecosystem- every tool, platform, business function, process, and practice. Wipro has pioneered its responsible AI framework, which is now part of how it delivers client work, and underlies its rigorous, responsible AI compliance program. In the year ahead, AI is expected to have a significant impact on businesses, particularly in the retail, consumer goods, healthcare, and technology industries. Here are the top three impacts AI will have on the industries that we serve: increased efficiency and productivity, improved customer experience, and innovation

and growth. AI can also contribute to the rise of the metaverse, creating interconnected virtual experiences. Wipro is working with many clients on generative AI projects in Saudi Arabia, with AI systems that protect personal and company data.

WIPRO IMPACT As a services portfolio, Wipro Impact strives to help clients with digital transformation and leadership in sustainability. It is committed to four core values: being an Exemplar, an Enabler, a Responsible Supplier, and as a co-founding member of Transform to Net Zero, an Influencer. The Innovation Center, Lab45, serves as a hub for collaborative sustainable innovation through strategic partnerships and state-of-the-art facilities. Wipro's sustainability practice has gained popularity in industries such as banking, financial services, and insurance (BFSI), energy, aviation, and consumer goods, where it provides a wide range of integrated solutions. These solutions range from assessment and roadmap development to Impact intelligence, zero transition management, responsible finance, and sustainable technology services.

Wipro also remains a committed supporter of the Saudi Green Initiative (SGI)- a massive reforestation program and clean energy deployment in Saudi Arabia. We advocate the Kingdom's aim to reach net-zero emissions by 2060 through the circular carbon economy approach, which is supported by our ambition to achieve net-zero greenhouse gas emissions across the value chain by 2040. Wipro is proud to partner with clients in the Kingdom to transform business models, decarbonize value chains, and embark on a sustainable future

#### FUTURE-READY TALENT POOL

Wipro recognizes the need to prepare its workforce for the future, thereby ensuring the company's capabilities match the requirements of its strategy. The company's growth ambitions in KSA are to advance technical and professional skills, develop commercial and leadership competencies, and support the progress of localization. Wipro signed a memorandum of understanding (MoU) with the National IT Academy (NITA) to equip Saudi

youth with the requisite information and communications technology (ICT) skills through advanced and accelerated training and certification programs to accelerate job-readiness and create a thriving talent pool with future-ready skills. Women's Business Park (WBP) in Riyadh, a state-of-the-art business center, is the result of a joint venture between Princess Nourah University (PNU), the largest women's university in the world and Wipro. The WBP is the first all-women business and technology park in Saudi Arabia and aims to provide knowledge-based employment for women. Through state-of-the-art training programs and a supportive learning environment, the WBP is working towards creating a more diverse, high-performing workforce to drive forward Saudi Vision 2030, while also serving as a showcase for women's empowerment throughout the region and the world.

#### TOPCODER

Wipro's crowdsourcing platform Topcoder is the world's largest on-demand digital tech gig platform with over 1.7 million developers, designers, data scientists, testers, and more. Topcoder platform highlights include native graphics processing unit (GPU) support and the ability to develop advanced analytic solutions with any tool, library or cloud application service. Topcoder platform empowers companies with unprecedented ways to process and secure data, increase analytics speed, and avoid costly recruitment and retention challenges associated with staffing in the information technology (IT) sector.

#### WIPRO ENGINEERING EDGE (WEE)

Wipro Engineering Edge provides a full stack of engineering services from chip to cloud, supporting next-generation products and services that enable organizations to take full advantage of growth opportunities using the latest technology. By working with Wipro, clients worldwide have quickly pivoted their businesses, built competitive edges, and become future-ready.

"Integrated Services from Chip to Cloud" and "Engineering DNA" reside their core capabilities in industry 4.0, 5G engineering, cloud products

engineering, data and AI engineering, embedded software development, very large-scale integration (VLSI) and hardware chip design. With a strong presence in automotive, hi-tech semiconductor and software and internet, manufacturing, energy, and natural resources and communications, the service range includes from strategy to execution around end-end product development.

Wipro Engineering Edge has a dedicated team of professionals for Saudi Arabia, supported by engineers spread across various global development centers and nearshore centers. WEE sees immense potential in Saudi Arabia, especially in industry sectors like manufacturing, communications, and healthcare. In addition, the Wipro Women Business Park (WBP) at Riyadh and Khobar nurtures local female talent, and delivers new-gen technology services to its client base. WEE is devoted to delivering end-to-end solutions, while leveraging its worldwide skills to satisfy the specific needs of Middle Eastern clients. WEE further aims to enhance its strategic partnerships with regional clients, to enrich local skills through global experience, and to grow their footprint into new areas.

Wipro empowers business at the intersection of strategy, design, and technology. Centered around the customer journey, we deliver continual enterprise transformation at speed and at scale. Together with Designit, we are an innovation-led, enterprise transformation partner built for today's digital challenges.

At Wipro, we believe ambition has the power to unite us, inspire us, and move us forward. By bringing together consulting, design, engineering, implementation, and operations, we make our clients' ambitions a reality, orchestrating a holistic portfolio of capabilities that enable digital transformation. [T](#)



Khaled Al-Ofaysan is the Country Head and General Manager for the KSA at Wipro. [wipro.com](http://wipro.com)



# THE DAWN OF A NEW ERA

EXPLORING SAUDI ARABIA'S AMBITIOUS LEAP INTO THE DOMAIN OF ARTIFICIAL INTELLIGENCE BY MECHA MERANI

**S**audi Arabia is at the dawn of a technological renaissance, transitioning from its traditional reliance on oil, to a future focused on data and artificial intelligence (AI).

This striking pivot is not just a shift in resources but a redefinition of the Kingdom's development path, anchoring AI as a key driver of its growth. And the shift is marked by substantial investments, research and development efforts, and strategic global partnerships.

An International Data Corporation (IDC) report on global AI expenditure predicts Saudi Arabia will become one of the world's biggest spenders on the technology. The trend is also part of a broader regional surge in investment with estimates that the Middle East and Africa will spend US\$6.4 billion on advancing AI-related technologies by 2026, up from \$3 billion in 2023—“the fastest growth rate worldwide over the coming years,” IDC analysts note.

“While many governments around the world have lagged in implementing AI compared to the private sector, the Saudi government has led the charge,” Carrington Malin, a Gulf-based AI consultant who is the Editor of Middle East AI News, says. “Saudi Arabia intends to be a world leader in AI, and it obviously has the ability to use oil revenues to invest heavily where needed. The Kingdom has very ambitious objectives for AI and the value that it can deliver, so AI, data and digital transformation programs are being pushed forward at speed.”

While Gulf states are increasingly investing in AI to reshape their economies, Saudi Arabia, in particular, stands out for its ambitious use of AI in the development of Neom, a \$500 billion giga-project that will feature cognitive cities, ports, research centers, entertainment venues, and tourist spots. This futuristic development, dwarfing New York City 33 times over, will converge data-driven intelligence with urban living.

During a visit to Riyadh in November, Satya Nadella, Chairman and CEO of Microsoft, observed the transformative impact and growing influence of AI in Saudi Arabia, affecting both everyday life and business. “It's great to see so many Saudi organizations across the public and private sector already applying this technology to drive innovation and create new economic opportunities,” he said then. “This next generation of AI will fundamentally transform productivity for individuals and spur innovation for businesses, and industries everywhere— including in Saudi Arabia.”

Nadella also cited examples of local applications of AI across sectors, underscoring their role in opening up new economic opportunities. Among these, the King Faisal Specialist Hospital and Research Center, one of the top hospitals in the Middle East, stands out for its trial of AI in clinical documentation. This speech-to-text solution is three times faster than typing, and it is helping clinicians at King Faisal Hospital to increase their productivity, reduce documentation errors, and spend more time with patients.

Other entities (and industries) are stepping up too. Saudi Airlines is innovating with Saudia, an AI travel companion developed using Azure OpenAI GPT-4, which is poised to revolutionize personalized travel experiences, with the airline also becoming the region's first to launch an AI travel companion. Meanwhile, ACWA Power, the Kingdom's largest private sector power and water entity, has adopted Azure AI and Microsoft's Intelligent Data Platform to enhance employee safety and refine water desalination processes.

Fintech company Sindbad.Tech is utilizing Azure cloud, AI, and automation for auto-trading bots in financial markets, offering a novel approach to retail investment without fund transfers, highlighting a shift in investment strategies. On the healthcare front, the Ministry of Health, which receives up to 20,000 calls per day through its call center, is also leveraging Azure AI for its call center operations, enhancing online medical consultations, case escalations, and automating AI

diagnosis reports and summarization for medium-low cases.

Additionally, Saudi Arabia ranked second globally in societal awareness of AI, according to the prestigious Stanford University International Index for Artificial Intelligence. And in a striking illustration of its future aspirations, the National Center for Mental Health Promotion in Saudi Arabia has teamed up with UK-based AI mental health startup Iona Mind, to co-develop AI-driven digital therapeutics that support the psychological well-being of the Saudi population—a move towards positioning the Kingdom at the forefront of technological and societal transformation. The partnership stands out in a region where traditional values profoundly shape society, marking a significant cultural evolution. »»

“WHILE MANY GOVERNMENTS AROUND THE WORLD HAVE LAGGED IN IMPLEMENTING AI COMPARED TO THE PRIVATE SECTOR, THE SAUDI GOVERNMENT HAS LED THE CHARGE.”

the planet to achieve more



↑ **Satya Nadella,**  
Chairman and CEO  
of Microsoft

← **Carrington Malin,**  
Gulf-based AI consultant  
& Editor of Middle East  
AI News





“AI ALLOWS US TO OFFER HIGHLY PERSONALISED SUPPORT AND INSIGHTS 24/7 USING THE IONA MIND PLATFORM, CULTURALLY ADAPTED VERSIONS OF CORE IONA PRODUCTS WILL BE CO-DEVELOPED TO ENSURE THEY ARE ACCEPTABLE AND EFFECTIVE IN SAUDI ARABIA.”



Iona Mind signed a deal with Saudi Arabia's Ministry of Health and the National Center for Mental Health Promotion to expand its digital therapeutics offering to support the diverse mental health needs of Arabic speaking people across the MENA.

Iona Mind was created to use AI and cutting-edge technology to advance the state of psychological interventions and make them widely accessible. The startup's co-founder and clinical director, Professor Paul Farrand, is a world-leading expert in low intensity cognitive behavioural therapy (CBT), as well as a national advisor to the UK's National Health Services (NHS) Talking Therapies. “We use AI to provide automated support to users completing self-therapy programs,” Jonathan Baker, co-founder and CEO Iona Mind, says. “AI allows us to offer highly personalised support and insights 24/7. Using the Iona Mind platform, culturally adapted versions of core Iona products will be

co-developed to ensure they are acceptable and effective in Saudi Arabia.” Over 30,000 people globally have successfully completed Iona Mind Wellbeing Courses so far, and Iona believes the partnership with Saudi will extend its reach across the wider region. “Our experience has been that there's a thriving startup and investor ecosystem in Saudi Arabia and we are excited about the possibilities for the future,” Baker adds. “This is a significant long-term relationship where we intend to develop a variety of products for the

Saudi population and also other Gulf countries. We will be working to deploy cutting-edge AI within the Kingdom to support a variety of offerings promoting psychological well-being. The intention is that Saudi Arabia become a world leader in evidence-based digital mental health.” Bashayer AlJanad, founder of AlBain Marketing Agency and the Kindi AI system, highlights the opportunity for AI in niche markets. Her AI-based perfume recommendation system, Kindi, attempts to address the main obstacle of purchasing perfumes online: the inability to smell a fragrance before buying it. Kindi helps online stores in increasing their perfume sales by analyzing customer tastes,

and suggesting the best perfumes to meet their preferences. “The combination of government support, market demand, a young population, and data availability positions Saudi Arabia as a promising landscape for AI startups to flourish and make a significant impact in the region and beyond,” AlJanad says. “AI solutions increase from the efficiency and optimize operations. If the AI startups focus on needs in each industry and how to find a solution to its obstacles, it will make a revolution in the market. In addition, Saudi Arabia's Vision 2030 has the objective of broadening the country's economic base and lessening its reliance on oil. AI startups are in line with this vision and have the potential to play a role in advancing the growth of Saudi's non-oil industries.” In the corporate realm, Karl Crowther, VP at Alteryx, says businesses in Saudi Arabia are already moving quick to embrace generative AI. “With self-service analytics, organizations can unleash generative AI to its full potential, empowering teams to solve business problems efficiently,” Crowther says. Indeed, PwC

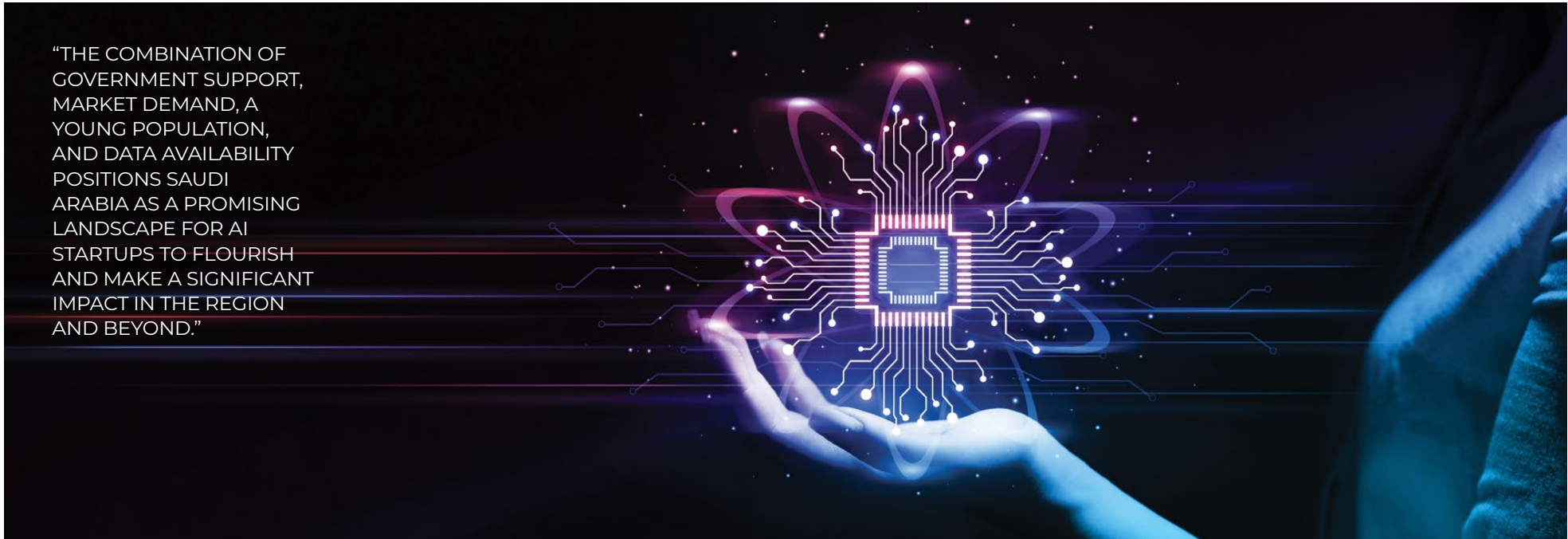
estimates that AI is expected to contribute more than \$135.2 billion in 2030 to the Saudi economy, equivalent to 12.4% of gross domestic product (GDP). Ankita Dhawan, Senior Associate Designate at KARM Legal Consultants also points out the Kingdom's leading role in AI governance. “Saudi Arabia is emerging as a global leader in setting benchmarks in AI regulation,” she notes. “Globally, AI experts are having their ‘Oppenheimer moment,’ and are sounding alarm bells about the ethical and legal concerns related to AI— such as data privacy violations, misinformation, copyright infringement, among many others. In this background, Saudi is emerging as a global leader in setting benchmarks in AI regulation. Saudi has taken a proactive approach to regulating AI responsibly, in a manner where the incentive to innovate and the need to regulate are duly balanced. For example, uniquely, in KSA, data and AI are regulated by the same dedicated regulator- the Saudi Data and Artificial Intelligence Authority (SDAIA). Further, SDAIA recently published its AI Ethics Principles to build a principle-based framework for the development and use of AI that is based on fairness and transparency. In the field of intellectual property, KSA is in the process of revising its laws, to become one of the first jurisdictions globally to discuss works created by AI.” In 2023, Saudi announced the creation of an International Centre for AI Research and Ethics, which aims to advance legislative frameworks. Alongside, the Kingdom also established the Global Cybersecurity Forum Institute in Riyadh to harness the potential of cyberspace and support efforts to boost cyber safety on a global scale. It also established the Saudi Data and Artificial Intelligence

→ Ankita Dhawan, Senior Associate Designate at KARM Legal Consultants



Authority (SDAIA) in 2019 as the central authority responsible for organizing, developing, and overseeing all AI-related matters. In conjunction with Accenture, SDAIA

established a national cloud infrastructure and National Data Bank, to enables secure, efficient data sharing between government entities. ➡➡



“THE COMBINATION OF GOVERNMENT SUPPORT, MARKET DEMAND, A YOUNG POPULATION, AND DATA AVAILABILITY POSITIONS SAUDI ARABIA AS A PROMISING LANDSCAPE FOR AI STARTUPS TO FLOURISH AND MAKE A SIGNIFICANT IMPACT IN THE REGION AND BEYOND.”





Today, the National Data Bank is connected to more than 200 government systems and has led to the establishment of Estishraf, a national insights and analytics platform that supports data-driven decision making and

planning. In 2023, more than 85 government entities benefited from Estishraf's services, resulting in financial savings exceeding \$13.3 billion.

For one, King Abdullah University of Science and Technology (KAUST) now operates the Middle East's most powerful supercomputer, Shaheen III. And two-thirds of KAUST's faculty groups currently engage in supercomputer activity, and that percentage is expected to increase.

According to Dr. Tony F. Chan, President of KAUST, the new supercomputer takes KAUST's world-class research capabilities to the next level through its processing power, and ability to create models across many fields in a short period of time. Faculties will use Shaheen III to support the construction and testing of predictive mathematical models, for scientific discovery, engineering design, and to support national projects and policies.

State oil giant Saudi Aramco is also ramping up its R&D efforts through a deal with Nokia Bell Labs and plans to expand AI research teams. The collaboration is expected to develop advanced Industry 4.0/4IR digital use cases and validate proof of concept solutions for various industrial sectors. Commenting on the move, Nabil Nuaim, Senior Vice President of Aramco Digital and Information Technology, said, "This MoU signifies a major step towards digitalizing our industries and transforming our national talent

capabilities." At the same time, Aramco's \$500 million VC fund Wa'ed Ventures had also led a \$9 million funding round in Dubai-based cybersecurity startup SpiderSilk to fuel the expansion of its cyber defense technology offering in Saudi Arabia. "For long, KSA has been seen as a traditional, industrial economy," Karm's Dhawan adds. "With the sharp focus on technology, we strongly believe that is changing. Saudi is actively encouraging innovation led sectors to prosper by encouraging industry, academia and government partnerships."

For her part, Kindi AI's AlJanad points out that the Kingdom's technology ecosystem is often misunderstood. "Contrary to the perception of limited innovation, the country actively promotes technological advancements through initiatives like Vision 2030, showcasing its commitment to fostering a thriving ecosystem," she says.

"Infrastructure is robust, with state-of-the-art technology parks and innovation hubs providing an ideal environment for startups and entrepreneurs. Market opportunities are abundant across sectors such as healthcare, finance, energy, and Smart cities. Cultural barriers are actively addressed, and policies encourage diversity and inclusion. Saudi Arabia invests in developing local talent while attracting global professionals. Recognizing these developments and dispelling misconceptions can unlock greater engagement and collaboration with Saudi Arabia's dynamic technology ecosystem."

Echoing this sentiment, Malin concludes by saying, "Saudi Arabia intends to be a world leader in AI, a goal that seems increasingly attainable given its current trajectory."

→ **Bashayer AlJanad,**  
founder of AlBain  
Marketing Agency &  
the Kindi AI system



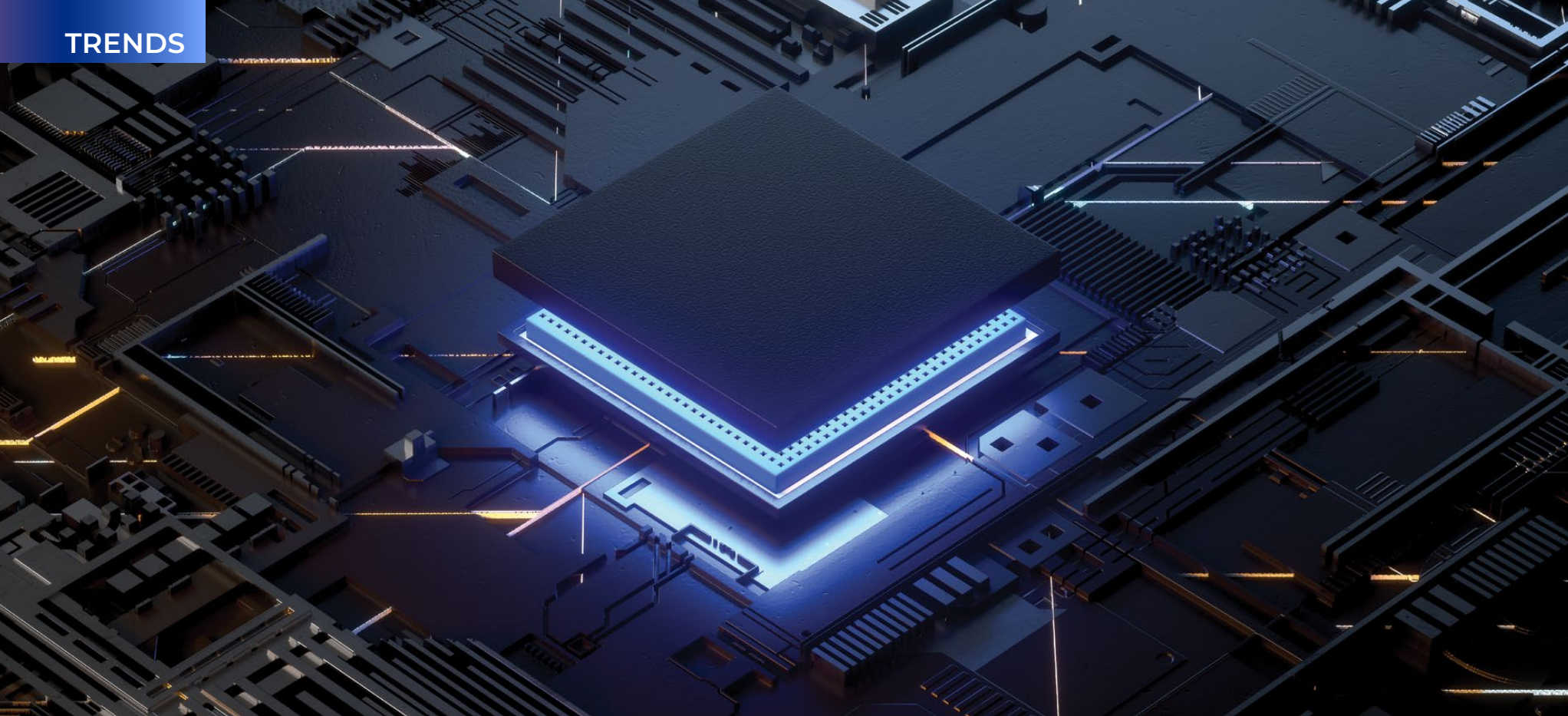
← **Karl Crowther,**  
VP at  
Alteryx



**With self-service analytics, organizations can unleash generative AI to its full potential, empowering teams to solve business problems efficiently.**

Megha Merani is an independent journalist with more than 10 years of newspaper, magazine and web reporting experience in the Middle East, writing hard news, investigative reports, features and opinion pieces. Her passion for storytelling coupled with a proven instinct for identifying talk-generating issues has resulted in breaking stories and insightful features that have made local, regional and international headlines. Her work has been published across Thomson Reuters, Zawya, Bloomberg Middle East, Gulf News, former local daily 7DAYS, and government publications.





SAUDI ARABIA AIMS TO BECOME A REGIONAL HUB FOR AI, NOT ONLY BY DEVELOPING DOMESTIC AI CAPABILITIES, BUT ALSO BY ATTRACTING INTERNATIONAL TECH COMPANIES AND EXPERTS TO COLLABORATE AND INVEST IN THE SAUDI AI SECTOR.

“Wa’ed Ventures’ approach to investing in AI is based on studying the implications of AI adoption in the region and assessing market readiness for these products, which in turn affects our investment returns in these companies,” Bakhsh says. “Our early investments in AI have largely been in the AI applications layer, but we’ve also invested in the infrastructure level, which are basically startups the support the entire AI space rather than a specific application or vertical.

We are also very keen on exploring investments in technically differentiated foundational level AI tech, or companies that build the models the industry depends on.”

Wa’ed has also aimed to support AI companies with more deep tech strategic applications. Examples of this include SpiderSilk, a cybersecurity threat detection and management platform utilizing AI, which closed a \$9 million funding round in 2023 led by Saudi fund. »»

# REINVENTING INDUSTRIES

WA’ED VENTURES’ MOHAMMED BAKHSH ON WHY SAUDI ARABIA IS BETTING ON ARTIFICIAL INTELLIGENCE BY MEGHA MERANI

There’s change afoot in Saudi Arabia- the Kingdom is making a dramatic transformation with it moving away from its traditional energy empire, and instead striving to become a leading character in the global artificial intelligence (AI) race.. But the shift is more than just a strategy within its economic diversification plan; it’s also a blockbuster move that could redefine the Gulf state’s global identity.

“The country is effectively on rocket fuel for AI innovation,” says Mohammed Bakhsh, Investment Manager at Wa’ed Ventures, the \$500 million innovation-focused venture capital fund backed by Saudi Aramco. “On one hand, [Saudi Arabia] is undergoing a rigorous economic diversification exercise, leaning heavily towards

technology. The way we view it, AI’s role isn’t just about automation, it’s about reinventing these industries. It’s about revolutionary changes.”

“Saudi Arabia aims to become a regional hub for AI, not only by developing domestic AI capabilities, but also by attracting international tech companies and experts to collaborate and invest in the Saudi AI sector,” Bakhsh says. “The success of Saudi Arabia’s long-term adoption of AI lies in the strong establishment of a reciprocal global-local stream. Entrepreneurs aiming to shape the local AI market in the long run should focus first on developing localized solutions that can be adapted across industries.”

Amidst the national push towards technological innovation, Wa’ed Ventures has also positioned itself as

a catalyst for the country’s AI ambitions and been channeling capital into AI startups, signaling the fund’s foresight in leveraging cutting-edge technology. Its early AI application investments include Elevatus, an AI-powered human resource and talent management solution, Twinn Health which offers computer vision powered magnetic resonance imaging (MRI) analysis, Tenderd, an AI platform to convert data from equipment into actionable insights, and Intella which is a data-tech, Arabic speech to text startup.

The VC fund was birthed from oil giant Aramco’s entrepreneurship center that originally provided end-to-end support to early-stage entrepreneurs in the early 2010s. Today, it is one of the most active investors in the region with more than 50 portfolio companies, and is investing in the next generation of transformative startups that are taking advantage of disruptive technologies. By investing in AI startups, Aramco not only taps into innovative solutions for energy efficiency and operational excellence, but also positions itself at the forefront of the AI revolution.

Mohammed Bakhsh,  
Investment Manager  
at Wa’ed Ventures



The unique opportunity for **AI startups in Saudi Arabia** is effectively the speed at which the Saudi ecosystem is developing. »»





The move comes as Saudi Aramco CEO Amin Nasser's has been calling for globally recognized standards and regulations to match AI's rapid evolution, highlighting the critical need to shield businesses from security threats. He warned the Global Cybersecurity Forum last year that the energy sector is vulnerable to attacks, particularly with the advent of new technologies such as generative AI. Saudi Aramco was the victim of one of the biggest cyberattacks in 2012 that threatened to shut off 10% of global oil supply. Today, Aramco's new supercomputer, Dammam-7, is among the top 10 supercomputers in the world, and the most powerful in the Middle East, managing some of the largest proven global reservoirs.

Meanwhile, Wa'ed has also invested in infrastructure plays that support the wider AI space such as PASQAL, a French-based quantum computing startup localizing their technology to Saudi Arabia to support critical AI infrastructure, which will empower any data-tech based startup.

**“THE LONG GAME FOR AI IN SAUDI ARABIA IS ULTIMATELY IN FOUNDATIONAL AI TECH, WHICH IS BASICALLY DEVELOPING THE TECHNOLOGY INFRASTRUCTURE BEHIND MARKET-DOMINATING AI MODELS SUCH AS CHATGPT AND GEMINI.”**

“The introduction of quantum computing has the potential to revolutionize AI outputs by enabling faster and more efficient processing of complex algorithms, leading to advancements in problem-solving tasks,” Bakhsh says. “As a leading Saudi-based investor, [we are] committed to the localization of technologies. This includes both investing locally and supporting world-class tech to migrate to Saudi Arabia to introduce their cutting-edge technologies to the local market and

sharing knowledge with local talent.” He added that AI startups targeting the Kingdom enjoy an “unparalleled advantage” when it comes to early-to-market trial testing, owing to expansive governmental support for emerging and disruptive tech. “The unique opportunity for AI startups in Saudi Arabia is effectively the speed at which the Saudi ecosystem is developing,” Bakhsh says. “We remain highly optimistic about the AI sector as both founders and regulators continue to navigate use cases and applications. We are making a public announcement to the global startup community that we are willing and ready to empower AI-related startup efforts targeting Saudi Arabia. We want to see more technically differentiated efforts, and our team is diligently looking at emerging startups to help make it happen.”

Strong government support for technological advancement is one of the characteristic elements of the Saudi entrepreneurial landscape, Bakhsh notes.

Saudi also achieved a global second-place ranking in societal awareness of AI, as per Stanford University's International Index for Artificial Intelligence. However, despite having strong AI applications such as the energy industry, Bakhsh said the universal nature of AI tech means that talent alone will effectively make a difference.

“The establishment of authorities such as SDAIA, however, and other government initiatives is encouraging, but the challenge is legitimate,” he says. “Early adoption of AI innovation in the region does not mask the fact that, on the whole, the lack of specialized local talent still compromises the market-readiness for such solutions. Our startup sector is still in the nascent phase when it comes to deep tech and AI innovation.”

One reason for this, Bakhsh explained, is the fact that the entrepreneurship scene in the region is still being built, starting by digitizing the traditional sectors such as logistics, banking services and consumer services.

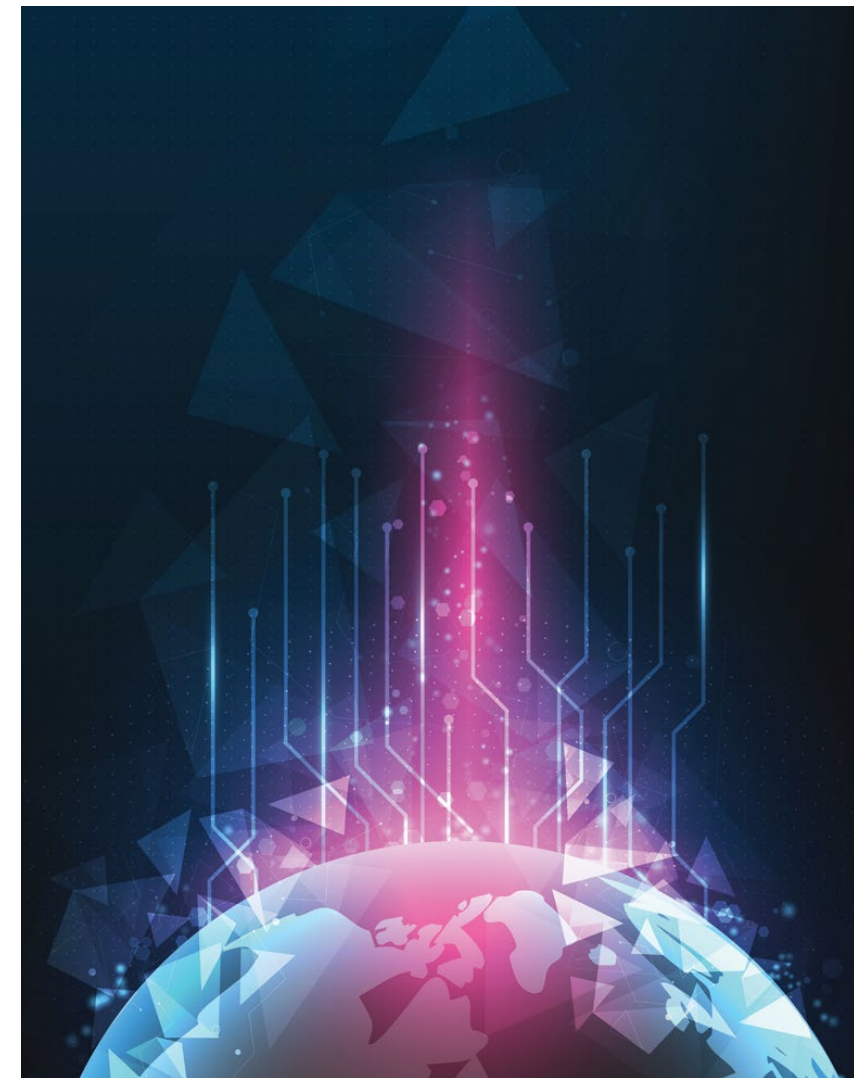
“The market is yet to invest heavily in deep technical talents and products, which is a long-term investment and a long-term return strategy,” he says. “Naturally, this became reflected in the regulatory environment where there seems to be a consensus that the number of new home-grown AI models is still too rare to create a true need for regulatory programs like sandboxes.”

In the future, however, given the country will maintain investments in AI technology and talent, Bakhsh believes there will eventually be unique opportunities, “even beyond those in Western states which had a head start to create players such as OpenAI.”

OpenAI is the leading AI company recognized for its pioneering work in Large Language Models (LLMs) with ChatGPT.

“Ultimately, Saudi Arabia aims to be a pioneer in the AI space, to push the boundaries of cutting edge AI research,” he says. “The long game for AI in Saudi Arabia is ultimately in foundational AI tech, which is basically developing the technology infrastructure behind market-dominating AI models such as ChatGPT and Gemini. While such companies monopolize the space right now, open-source software have proliferated the market and will eventually allow for a more democratized AI tech ecosystem. Current achievements in the Saudi AI ecosystem are AI applications that lean heavily on these models developed by the likes of Google and open-source iterations; but in the long term, Saudi Arabia's investment in top local and global talent will lead to us building globally competitive foundational AI tech.”

As Wall Street's AI obsession moves to new heights, the quiet but evolving narrative of Saudi Arabia's bridge between oil and innovation is certainly going to be one to watch. [T](#)



*Megha Merani is an independent journalist with more than 10 years of newspaper, magazine and web reporting experience in the Middle East, writing hard news, investigative reports, features and opinion pieces. Her passion for storytelling coupled with a proven instinct for identifying talk-generating issues has resulted in breaking stories and insightful features that have made local, regional and international headlines. Her work has been published across Thomson Reuters, Zawya, Bloomberg Middle East, Gulf News, former local daily 7DAYS, and government publications.*





# THE FUTURE IS NOW

HARNESSING THE POWER OF DIGITAL TWINS TO REIMAGINE CITIES ACROSS THE KSA AND BEYOND BY DEVINA DIVECHA

According to PwC's 2022 report, How Digital Twins Can Make Smart Cities Better, a digital twin is -in its simplest sense- "a linked virtual model of a physical object." To explain it better, here's PwC Middle East Technology Consultant Partner Kaveh Vesalli. "A digital twin is a virtual model of a physical object, person, place, or process that can be used to simulate or imitate its behavior to better understand how it would work in real life," he says. "It collects data from the built and natural environments, along with human and machine activity, via technologies such as sensors, drones, and mobile devices. Armed with the right data, models, and process governance, digital twins are the most analytically sophisticated yet visually intuitive design and decision support systems available today."

One of the areas where digital twins are playing a big role in is in the realm of urban planning. Cities all around the world are expanding, and this is even more true in the Middle East, specifically Saudi Arabia, where its ambitious urban development projects are backed by a vision to do more than merely build infrastructure. Rather, it's a vision that involves creating a host of smart cities- which means cities that anticipate and cater to the needs of its inhabitants, leveraging technology to do so.

The Digit Group is a US-based real estate development company specializing in urban solutions, and its CEO and President Paul Doherty has played an instrumental role in smart cities around the world (including in China and Australia), and he has also worked on the blueprint that was used in Saudi Arabia's Vision 2030. Doherty is insistent about the importance of using the right words in the context of digital twins, and adds that,

with the advances of technology in his lifetime, going from hand drawing to the digital context, "we're in a whole new world."

"We like to call digital twins a mirror of what is reality," he says. "That's really good for communicating design intent for construction. But then we start to look at what else it can do, beyond just being a communications vehicle, to a constructor to build something. We're looking at technologies that can sit underneath those geometries that allow us to explore different designs and simulations of how people are going to interface with it. It's no longer a digital twin, but we're looking at it now as a virtual world. You can attach different types of experiences around it. We are now no longer about the level of detail (LOD)- we're now responsible for the level of experience."

But this is only the beginning, Doherty says. "Now, things start to become really interesting, because when you have that level of experience, you have the opportunity to pull together these virtual worlds, and when they all start to communicate together, you then have your neighborhood," he explains. "You now have your square block. You have your district, you have your city. When all of those start talking together, that's when we start calling it the Metaverse. What I'm finding in places like NEOM, Qiddiya, Red Sea Global, and all these mega projects inside the Kingdom is that the light bulbs are going off, which means that the outcome will be a better built environment."

This feeds into the upcoming projects in Saudi Arabia, where sustainability has been the forefront of the Kingdom's vision. PwC's Vesalli underscores the role of digital twins in realizing this worthy goal by pointing out that the Kingdom is currently working towards building and developing four major cities: the technologically advanced and sustainable NEOM, the culturally centered Al Ula, also one of the world's oldest cities, tourist destination Amaala, and mixed-use development Jeddah Economic City. "Digital twins can optimize these projects in their planning, operations, finance,



**Christophe Castagnera**, Head of Strategy at UK-based experience design agency Imagination Middle East

and emissions-reduction decision-making in large, new and unique ways," Vesalli says. "The projects will benefit from substantial cost savings, productivity gains and carbon emission reductions organization wide. From a city management perspective, a digital twin of a building, a neighborhood, or even an entire city can greatly assist in urban planning, as well as the operation and maintenance of physical assets and sustainability. For instance, this system can help by simulating the risks created by high temperatures or dust storms in a city, and can ensure that designs for the built environment are more resilient and sustainable. In addition, the process taken by digital twins will be able to assist in identifying and preventing measures that will maintain physical assets or city networks, in order to minimize downtime as a result of any operational issues. Digital twins have the power to evaluate the planning and process of the Kingdom's mega projects, and predict the various scenarios that will result from the process of development and implementation."

As such, through the lens of digital twins, Saudi Arabia envisions smart cities that not only function efficiently, but also enhance the well-being and quality of life for their residents. "Smart cities are what I like to call cognitive, where they can anticipate need to create a better environment for safety, for security, and for creating experiences that delight, that can inspire," Doherty adds.



**Smart cities** are what I like to call cognitive where they can anticipate need to create a better environment for safety, for security and for creating experiences that delight, that they can inspire."

## URBAN PLANNING WITH DIGITAL TWINS

In the context of smart cities, experience design also plays a crucial role in creating meaningful and user-centric urban environments. Christophe Castagnera, Head of Strategy at UK-based experience design agency Imagination Middle East, emphasizes the importance of understanding diverse user needs and leveraging smart technologies to enhance everyday experiences. "Experience design is about first assessing the emotional and rational needs of people, and then developing solutions that enhance their lifestyle or solve their problems," he explains. "The potential for smart cities to enhance experiences and entertainment is just one aspect. With benefits such as smoother logistics and travel, or wellbeing aspects such as better detection systems for those with health issues, smart cities will transform how cities work, and adapt more to human needs and wants. So, experience design needs to map out these needs, match them to the types of experience that are desired, and develop the right sensors and technology platforms to enable the underpinning platform that can make it happen."

Castagnera outlines an example of how Imagination developed an entire study on the future of the public realm for an organization in Saudi Arabia, which considered how a smart city would enhance the everyday lives of very different types of people: a family, a businesswoman, an elderly couple, and a married

couple of artists. "Each scenario required different smart city moments, and showed us the different paths and technology required to support them," he notes. "There had to be a seamless and fun experience in the real space, supported by the smart city ecosystem working in real time to deliver that experience."

The Digit Group's Doherty also signs off on the growing role of technology in enhancing human experiences, saying, "Anticipating needs is what



By feeding different sources of dynamic data to a digital twin, there is potential to test ideas or simulate what-if scenarios for facilities, processes and city landscapes before any real-world implementation - even before cities are built or developed."

**Kaveh Vesalli**, PwC Middle East Technology Consultant Partner







this next generation of technology is going to be very good at, which is why everyone's talking about artificial intelligence (AI).” And he definitely knows what he's talking about- after all, Doherty and his team have been involved in the tender for the healthcare system for NEOM. Rather than the traditional hub-and-spoke model for healthcare with hospitals as the hub, and clinics that feed them as the spoke, Doherty and his team proposed a paradigm shift, placing individuals at the center of healthcare delivery. “We went in with a consortium of some of the best minds in the world, both from healthcare as well as design and construction,” Doherty recalls. “And we said, ‘What would happen if we made the individual the hub, and medical services the spoke?’”

Asking this question is thus what resulted in the creation of Doctor NEOM, an AI-powered wellness app. “The app sits with you, and interoperates with a lot of the things you may already own to help you create a wellness type of existence,” he explains. “Imagine putting more money into how people's lifestyles are going. This also helped us with our urban designs- in that we can actually build that into the physical urban environment. These are the types of things that we're discovering through digital twins, about the simulations, about how can we really make virtual worlds a way of helping people.” Castagnera agrees, adding, “Smart technology is a fascinating area. The Line,

within NEOM, is designed around the concept of a cognitive city. We have worked on design studies to explore how spaces like this could react and adapt to people by harnessing AI sensors that work on multiple levels.”

#### CITIES OF THE FUTURE

By now, it should have become clear that digital twins and technology like AI is being leveraged across all the urban development projects in Saudi Arabia in a variety of ways. In addition, when discussing the role of digital twins in destination management, PwC's Vesalli emphasizes their capacity as “strategy accelerators” for governments and tourism boards. According to him, these systems can enable stakeholders to glean insights more effectively, driving better solutions across every phase of activity. “For ‘placemakers,’ from real estate developers to tourist destinations, to entire cities, digital twins can be used to support every phase of activity from strategic planning to design, construction, and through operations,” he says. “Especially once in the operations phase, it's fair to think of digital twins as continuous improvement platforms, enabling the virtuous cycle of insights and experience, the ultimate goal of destination management. At PwC, we've been looking at ways that digital twins can be used to help investors, planners and other key smart destination and city stakeholders make data-informed business and design decisions. The rapid growth of new information and communica-

tions technology (ICT) and internet of things (IoT) applications in tourism makes the implementation of digital twins an important milestone for smart and sustainable tourism.”

Imagination Middle East's Castagnera also notes that the integration of digital twins and smart technologies are key drivers of innovation. “The future of cities is a vast topic that has been well covered,” he notes. “But the shift has come from the need to design for more circular economics, for wellness and for sustainability- which are now key drivers. The benefit for Saudi Arabia is that there are more opportunities to leap ahead of legacy assets and developments than other nations. The design potential using digital twins and smart technologies is unlimited.” Here, Castagnera provides an example in how this could be applied in a practical context. “Digital twins, for example, enable the design of public realm spaces and entertainment hubs that can have a parallel virtual dimension, enabling the world to ‘be there’ in a new way, and thereby

‘punch through’ the two-dimensional content wall into spatial experiences,” he says. “These are not just 3D or virtual, but can also be sensory using haptic technology, 4D sound, and so forth. Imagine the creation of a digital twin of Saudi Arabia from a hub in Riyadh for National Day to engage and welcome the nation, the region, and the world to join the Kingdom virtually, via a digital twin space. The digital twin space wouldn't be limited by physical walls and other constraints, so there would be opportunity to reimagine the physical space. One concept we developed included a design for a stage-set inspired by the sun in the actual event space. The digital twin was a virtual stage design located in the sun- without the searing heat.”

When it comes to Saudi Arabia's ambitious development projects, Vesalli highlights the potential of digital twins to optimize planning, operations, and sustainability efforts. “This advanced system has the potential to predict responses before they occur,

making it an attractive option for smart and sustainable tourism,” Vesalli explains. “Digital twins can help these organizations by leveraging big data, and they can provide valuable insights to stakeholders in tourism. This will then enable them to achieve various objectives for their projects, such as predicting demand for travel, retail, hospitality, making informed decisions about asset mix, investment, design, and experiences, managing knowledge flow and customer interactions, and providing efficient and effective services. It also offers a range of benefits, such as increased productivity, improved customer satisfaction, personalized marketing campaigns, and streamlined operations. By feeding different sources of dynamic data to a digital twin, there is potential to test ideas or simulate what-if scenarios for facilities, processes and city landscapes before any real-world implementation - even before cities are built or developed.”

But beyond the current benefits of digital twins' technology, there's still so much to look forward to. Here, Doherty dives deeper into the technicality of the incoming tech: hyperspatial. “The way that the web was put together by Tim Berners-Lee was done through a protocol called Hypertext Transfer Protocol (HTTP),” he says. “Well, with the world of 3D, wouldn't it be interesting if we could connect all those virtual worlds together? You can experience digital space just like you can physical space.” The next protocol, Doherty says, will be Hyperspatial Transfer Protocol (HSTP). “The world of spatial computing, meaning AI, is really where digital twins will manifest itself to,” Doherty says. “And it's not because I'm saying it- it's because people are doing that.” He points to a real example from the Kingdom itself. “Take a look at what's happening in the new Murabba development in Riyadh, with the 400 sq. m. cube skyscraper Mukaab.” Indeed, innovative technologies, sustainability, and immersive experiences are a highlight of this development, which aims to be the world's largest modern downtown, featuring more than

100,000 residential units, 9,000 hotel rooms, and extensive retail, office, and leisure spaces with a focus on sustainability. Spread over 19 sq. km., Mukaab has a projected completion date in 2030.

Murabba is just one of many urban development projects that Saudi Arabia is building, and it's a sign of the Kingdom's commitment to investing in its own country and people. For his part, Castagnera commends Saudi Arabia for its forward-thinking approach to experience design, positioning the country at the forefront of urban innovation. “In our experience, Saudi Arabia is at the leading edge of this design philosophy,” he says. “It is investing in design studies, thought experiments, prototypes, and bold, creative urban destinations and asset concepts that will revolutionize the way we experience spaces within cities. And it is driven by winning factors for people such as wellbeing, health, enjoyment, and cultural knowledge, as well as productivity, efficiency, and other factors that benefit the Kingdom from an economic perspective.” Doherty agrees, and concludes, “Saudi Arabia has a strong vision, and it has the opportunity to lead instead of follow. That type of leadership takes a lot of courage, and they are putting their money where their mouth is. And I think it is something that should be celebrated around the world. I wish nothing but the best for this type of initiative: it is one of the largest public works projects in the history of the planet since the Roman Empire.”

*Devina Divecha is an independent writer, editor, emcee and media consultant. With more than 10 years of experience under her belt, her work has appeared in a number of publications including Skift, SUPPER, HOTELSmag, Destinations of the World News, Spinneys Magazine, Entrepreneur Middle East, and more. She holds a BSc in Business from the London School of Economics and an MA in Magazine Journalism from the University of Sheffield. [devinadivecha.com](mailto:devinadivecha.com)*





# BEYOND BINARY

SAUDI ARABIA'S QUANTUM COMPUTING JOURNEY MAY BE IN THE EARLY STAGES, BUT THE KINGDOM IS CHARTING ITS COURSE TOWARDS TECHNOLOGICAL REVOLUTION BY DEVINA DIVECHA

TECHNOLOGICAL ADVANCEMENTS ARE AN INTEGRAL PART OF SAUDI ARABIA'S AMBITIOUS VISION 2030, WHICH AIMS TO DIVERSIFY AWAY FROM OIL INTO MULTIPLE INDUSTRIES AND SECTORS. WHILE TECHNOLOGY LIKE ARTIFICIAL INTELLIGENCE (AI) ARE PERHAPS MORE IN THE NEWS, IT'S THE FIELD OF QUANTUM COMPUTING THAT IS SLOWLY MAKING ITS WAY KNOWN BEYOND THE COGNOSCENTI.

HOWEVER, WHAT IS QUANTUM COMPUTING ANYWAY? LET'S START WITH AN UNDERSTANDING OF THE TECH. COGNOVATION IS A COMPANY THAT OFFERS SPECIALIZED ADVICE ON QUANTUM TECHNOLOGIES TO THE PUBLIC AND PRIVATE SECTOR IN SAUDI ARABIA, AND ACCORDING TO ITS FOUNDER DR. MAZHAR ALI BARI, QUANTUM COMPUTING REPRESENTS A PARADIGM SHIFT IN COMPUTING, WHICH IS DISTINCT FROM CLASSICAL COMPUTING BASED ON BINARY SYSTEMS OF ZEROS AND ONES.

“Quantum technologies, in general, are based on quantum physics, which was discovered at the beginning of the 20th century,” he explains. “Today's computers are also somewhat based on quantum physics. A qubit [the quantum version of the binary bit], however, is very different from a bit. A bit is only two things- one and zero, where something is either in one state or the other. Now, imagine you could be one or zero, or millions of values in between one and zero as well. That opens up a huge computational opportunity. Imagine if you have a very complex maze- if you use conventional computers, you have to try each method sequentially to find the best route. In a quantum computer, you would look at all the routes simultaneously, at the same time.”

While the concept of quantum computing was proposed decades ago by American theoretical physicist Richard Feynman, recent advancements have propelled this theoretical idea into reality. Companies like Google, IBM, and others are at the forefront of quantum computing research, albeit in its nascent stages. “We are dealing with an emerging technology, and we don't know how long until they are powerful enough to do the things we expect them to do,” Dr. Bari says. “But it's becoming more and more promising. And if it works, it's going to be absolutely revolutionary; it may be like a new industrial revolution. It could be a quantum age.”

So, where does Saudi Arabia lie in the lay of the quantum computing land? Despite being in its early stages, quantum computing in the Kingdom is gaining momentum, and Parminder Kaur, Director of Growth Advisory, Security Practice at Frost & Sullivan, has examples to cite. “King Abdullah University of Science and Technology (KAUST) partnered with Zapata Computing to bring quantum computing to Saudi Arabia,” Kaur notes. “KAUST is also dedicated to enhancing research in computational fluid dynamics (CFD) by harnessing quantum technology, particularly investigating the potential of quantum computers to enhance the aerodynamic design of

vehicles.” Announced in 2021, this move will significantly impact the aerospace, automobile and other industries by enhancing CFD, she adds. “In March 2022, Saudi Aramco partnered with PASQAL, a France-based quantum technology provider, to develop quantum computing solutions for the energy sector,” Kaur continues. And following that, in January 2023, Aramco's Wa'ed Ventures also invested in PASQAL in the latter's US\$108 million Series B round. »»

“KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY (KAUST) PARTNERED WITH ZAPATA COMPUTING TO BRING QUANTUM COMPUTING TO SAUDI ARABIA.”

Dr. Mazhar Ali Bari, Founder of Cognovation







**Parminder Kaur**, Director of Growth Advisory, Security Practice at Frost & Sullivan



Imagine if you have a **very complex maze**-if you use conventional computers, you have to try each method sequentially to find the best route. In a quantum computer, you would look at all the routes simultaneously, at the same time.”

on digitalization such as the Digital Saudi 2030 Strategy and National Transformation Program,” Frost & Sullivan’s Kaur notes. “The progress of quantum computing in the nation aligns with several crucial aspects of Vision 2030, such as fostering a flourishing digital economy, enhancing cybersecurity, promoting talent development, and fostering innovation. The Saudi Data

and Artificial Intelligence Authority (SDAIA) is also actively working on initiatives that will fund education and research programs. The Kingdom is drawing in international talent and establishing research centers to propel advancements in the field of quantum computing.”

Dr Bari says now is the crucial time for a strategic approach encompassing materials, devices, software, and use cases. While most other G20 countries, for example, already have officially announced their national quantum strategies, Saudi Arabia still must work its way to that stage. “Awareness among key stakeholders is definitely growing, and bringing a national quantum strategy on its way sooner rather than later would be a logical undertaking,” Dr. Bari says. In such a scenario, the potential of what quantum computing can do across sectors is important. For instance, with Saudi Arabia’s Vision 2030 in sight, PASQAL’s technology holds promise in key sectors such

as energy, aerospace, defense, and technology.

“The potential is huge,” Legrand declares. “The Middle East region -and Saudi Arabia in particular- love new technologies, and quantum technology has the particularity of being able to be integrated into a project such as Saudi Vision 2030. Today, we’re delivering computers that can offer several advantages, such as low energy consumption, which we see as an incredible lever and particularly interesting for the region.” Plus, with Wa’ed’s investment into PASQAL, Legrand sees a lot of opportunity for growth. “We’re already very proud to be part of this Aramco family,” he adds. “The support that Wa’ed gives us is incredible, and it enables us to multiply our forces in the Kingdom. Saudi Arabia and the Middle East are now part of our strategic development axes. We have opened an office

and hired Saudi nationals, and we’re working hard to integrate into the In Kingdom Total Value Add program.” (Here, Legrand is referring to Aramco’s In Kingdom Total Value Add program, which was launched to baseline, measure and support increased levels of localization in the Kingdom; this is now a crucial element of contracting with the Saudi oil giant.)

But Aramco isn’t the only entity PASQAL is associating itself with in Saudi Arabia. “We’re already working closely with Aramco, but we’ve also launched several other initiatives with other industries, such as telco and finance,” Legrand shares. “I can’t give you too many details here for confidentiality reasons, but you can imagine that we can work on subjects linked to reservoir simulation or complex optimization issues. What’s important for us is to be able to identify use cases that can be executed on real quantum machines and not simply on emulators like most of our competitors. Our main priority for Saudi Arabia will focus our effort on three main verticals: energy, aerospace and defense, tech and telco.”

Now, while there’s a lot to be explored in this field, Dr. Bari does caution about the challenges in the move towards quantum supremacy. In their current state, he says, quantum computers can be noisy, necessitating advancements in hardware and algorithms. “There are very few areas currently with the current hardware which show quantum advantage,” he explains. “So, in other words, where is quantum computing better than classical computing? When that’s achieved, that will be called the quantum

The field of quantum computing and its research and development is progressing rapidly, and attracting significant attention from academia and major industrial and academic groups from the Kingdom.

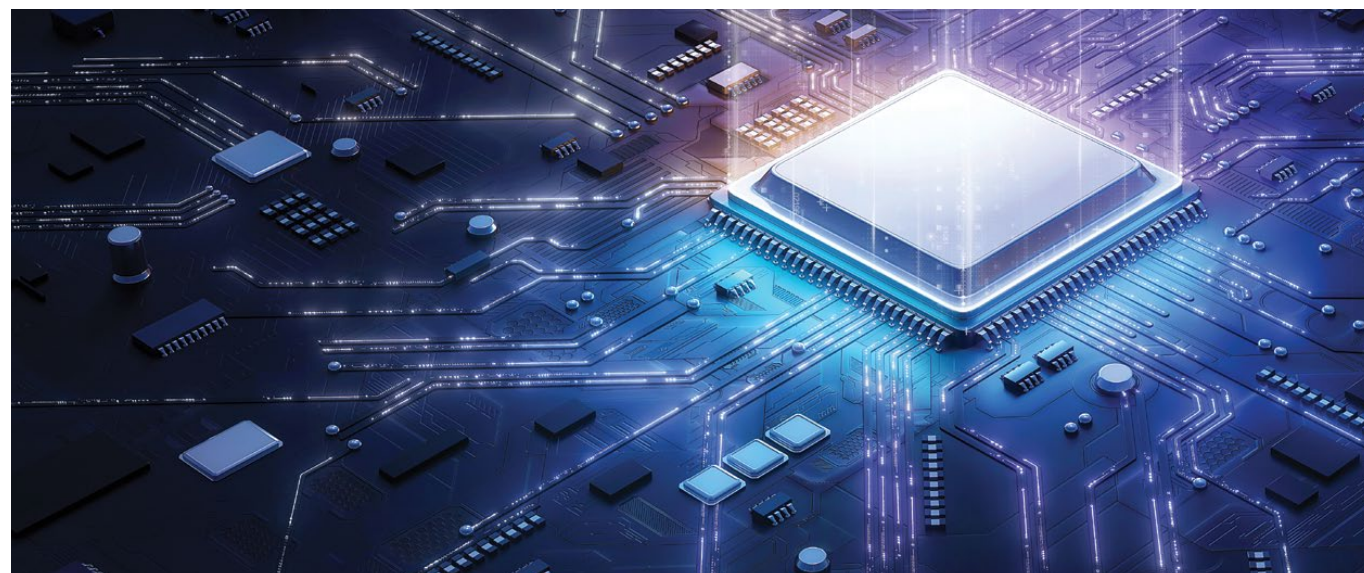


**Christophe Legrand**, Senior Vice President for Global Sales at PASQAL

advantage, and in order to get there, we have to produce better hardware than we are now.”

As the hardware is not mature yet and is subject to large R&D investment, a report titled How Can Saudi Arabia Join The Quantum Computing Race? by Arthur D. Little commissioned by the Ministry of Communications and Information Technology (MCIT) suggested that the Kingdom should instead “focus on quantum computing-as-a-service (QCaaS) opportunities and prioritize development of QC software and services capabilities.” Additionally, the shortage of skilled professionals and the absence of the right education infrastructure pose hurdles to quantum progress.

Dr. Bari, who holds a PhD in Quantum Physics from the University of Cambridge, UK, agrees. “You need to have people, you need to have the workforce, the software, the engineers, the scientists, and the researchers,” he says, highlighting the importance of workforce training and development. He also urges further investments in physics education to cultivate the talent pool needed for the development of this technology. “The workforce training and development is key,” he declares. “I grew up in Ireland, Dublin, and every major university has a physics department. Saudi Arabia has some very good universities with a lot of engineering and computer science departments, but they need to invest more in their physics education infrastructure.” ➤➤





The technology of quantum computing also presents a paradigm shift in cybersecurity— it can offer enhanced security through quantum-safe cryptography, but it also presents threats to existing encryption methods. “Quantum computing has the potential to revolutionize the field of cybersecurity, as it presents several opportunities for more secure communication through quantum-safe cryptography and quantum key distribution,”

Frost & Sullivan’s Kaur explains. “However, it also poses a significant threat to existing encryption methods, such as breaking current encryption algorithms, limiting key generation rate and transmission distance, compromising blockchain and cryptocurrencies, processing limitations, and breaking authentication. Preparing for this quantum era is crucial for data protection, because of the potential threat that quantum computing


poses to existing cryptographic and encryption systems. Quantum computing has the potential to disrupt widely employed cryptographic algorithms that presently safeguard our digital communication and data.”

Dr Bari agrees with this notion, and adds the term “post-quantum cryptography” (PQC) to the mix. “Quantum computers, in theory, can

break any of the known current encryption keys,” he notes. “Essentially, everything is hackable if you have a quantum computer today, and that poses a big risk. Countries like the USA are taking the lead in this area, and they are developing post-quantum encryption algorithms or techniques to make existing technology quantum safe.”

Nevertheless, opportunities abound. It really is a whole new world, and Legrand says, “Saudi Arabia is a pioneer in this field. Our aim is to support and accelerate this development by installing PASQAL machines in the Kingdom, and to give the entire ecosystem access to this incredible, but also very rare, technology. So, we’re very much looking forward to bringing all this to reality as quickly as possible, and making this new technological revolution even more tangible.” Beyond quantum computing, Cognovation’s Dr Bari highlighted the significance of further quantum technologies. “Quantum computing is only one part of quantum technologies,” he says. “There is quantum sensing, quantum communications, quantum hardware and software, and quantum services and end users.” While all are of interest, Dr Bari especially highlights the potential of quantum communications. “This is a very interesting area within quantum (communications) technologies: people are talking about the concept called the quantum internet,” he explains. “In the future, we may have something called quantum internet where you can transmit information that’s so safe and unbreakable, nobody can hack into it.” Dr. Bari says experiments on this front have been carried out across the world, and adds, “Quantum communication is going to be very important, because if you can transmit information that cannot be broken, that’s revolutionary.”

To sum it up, exciting times certainly seem to be in the offing in this space. “Once the technology is mature, it will impact every industry,” Dr. Bari concludes. “The challenge right now is to find the first early adopters of the first use cases, which really demonstrates superior performance in terms of economic value. And I always like to joke that –and maybe it’s not a joke, really– that he who controls quantum controls the world.”



“In the future, we may have something called quantum internet where you can transmit information that’s so safe and unbreakable, nobody can hack into it.”

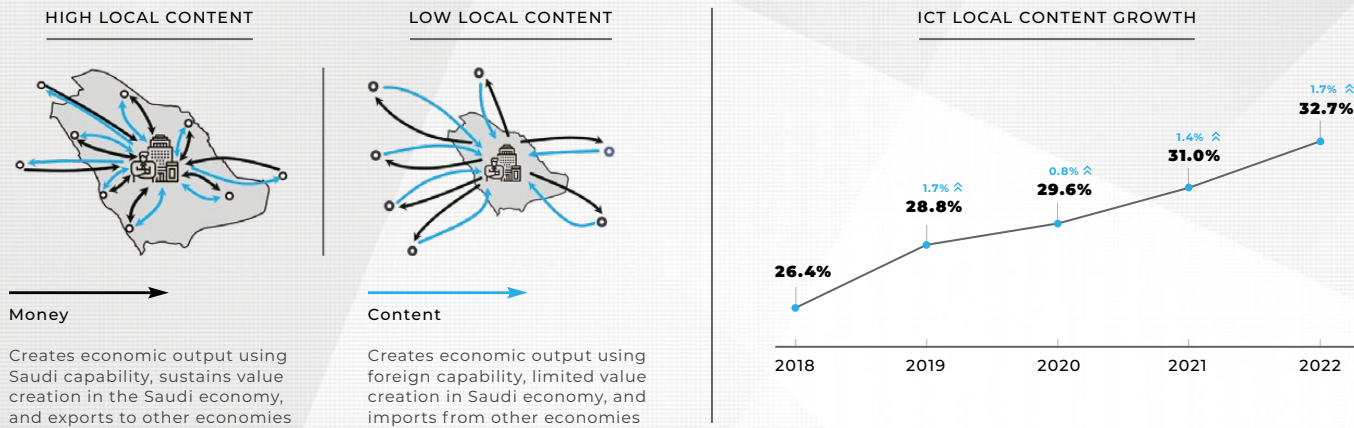


# THE LOCAL CONTENT LANDSCAPE IN THE KSA ICT SECTOR

## WHAT IS LOCAL CONTENT?

As per Saudi Arabia's Local Content and Government Procurement Authority, local content refers to the "portion of total expenditure in the Kingdom through the participation of Saudi components in the workforce, goods, services, production and technical assets that remains in the KSA economy."

## WHY DOES LOCAL CONTENT MATTER?



## HOW DOES LOCAL CONTENT MAKE AN IMPACT?

### PILLARS OF LOCAL CONTENT

- LOCAL WORKFORCE WAGES
- LOCAL SPEND ON GOODS AND SERVICES
- LOCAL DEPRECIATION OF CAPITAL AND ASSETS
- LOCAL CAPACITY BUILDING

### ECONOMICAL IMPACT OF LOCAL CONTENT

- CONTRIBUTION TO GDP
- JOB CREATION
- SECTOR GROWTH
- EXPORTS

### KEY FIGURES IN ICT SECTOR

SAR172 BILLION	VALUE OF ASSETS USED LOCALLY IN SAUDI ARABIA'S ICT SECTOR
SAR82 BILLION	VALUE OF LOCAL GOODS AND SERVICES
SAR37 BILLION	VALUE RETAINED IN THE LOCAL ECONOMY WITH LOCAL CONTENT
SAR21 BILLION	LOCAL SPEND ON WORKFORCE

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