



Saudi Arabia
Centre for the
Fourth Industrial
Revolution

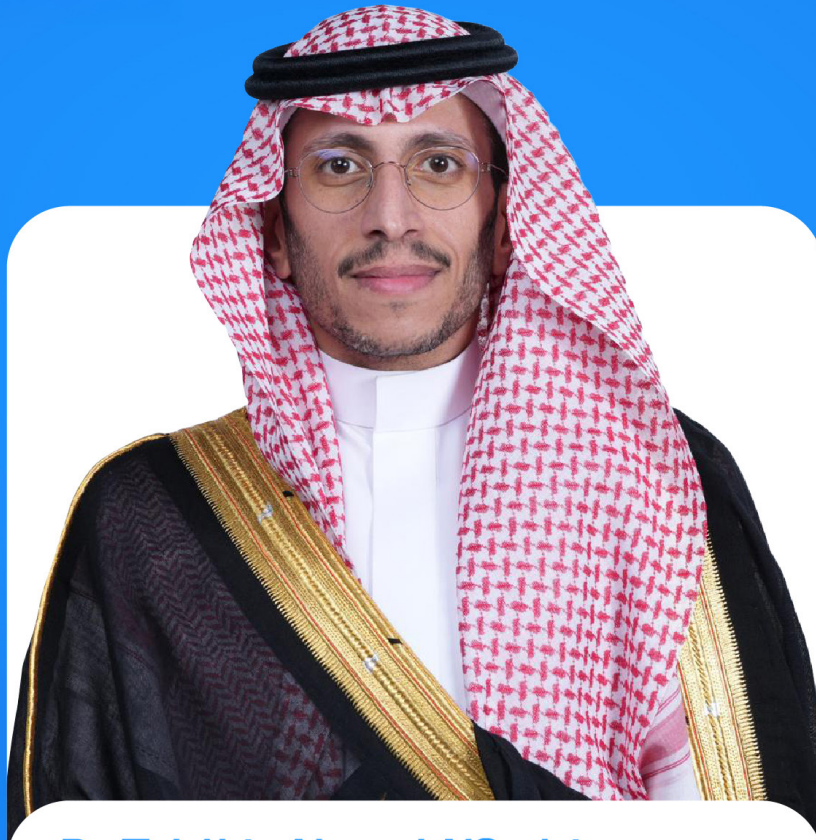
Quarterly Newsletter

Q2 2026

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Dr. Talal bin Ahmed AlSedairy

Chairman of the Board of Directors
Centre for the Fourth Industrial Revolution Saudi Arabia

C4IR Saudi Arabia extends its sincere congratulations to **Dr. Talal Ahmed AlSedairy, Senior Vice President for Research and Development at King Abdulaziz City for Science and Technology (KACST)**, on his appointment as Chairman of the Board of Directors of the Centre for the Fourth Industrial Revolution Saudi Arabia. We wish him continued success in leading the Centre's efforts to foster collaboration, innovation, and the responsible adoption of emerging and frontier technologies.

01

C4IR Saudi Arabia: Progress Through Shared Insight

As we reflect on the second quarter of 2026, this period marked significant progress across C4IR Saudi Arabia's activities and engagements, from convening stakeholders through World Quantum Day 2026 to advancing discussions on Industry 5.0, responsible AI adoption, and future workforce readiness.

Throughout the quarter, the Centre contributed to national and global conversations on emerging and frontier technologies through publications, webinars, ecosystem engagement, and collaboration with partners across the wider C4IR Network.

World Quantum Day 2026 formed a central part of the quarter's activities under the theme **"Shaping the Quantum Workforce,"** bringing together students, educators, youth, and families through the Quantum Journey Exhibition. The celebration reflected the importance of advancing awareness and strengthening pathways into emerging and frontier technology fields through education and public engagement.

This quarter also reflected the growing importance of cross-sector collaboration, knowledge-sharing, and future-focused dialogue in shaping responsible innovation pathways across Saudi Arabia's evolving frontier technology ecosystem.

As technological transformation continues to accelerate globally, discussions around AI governance, Industry 5.0, quantum technologies, AI in education, and future workforce readiness are becoming increasingly important across industries and institutions. Through its engagements and collaborations, C4IR Saudi Arabia contributes to these conversations while supporting broader dialogue around responsible, inclusive, and human-centric approaches to technological transformation.

The Centre also strengthened collaboration with stakeholders across academia, industry, government, and international organizations to support ecosystem development, knowledge exchange, and long-term capability-building aligned with Saudi Arabia's future innovation ambitions.

As we look ahead, the coming months present further opportunities for collaboration, dialogue, and ecosystem engagement as the Centre builds on this momentum through upcoming forums, publications, webinars, and strategic initiatives.

Sincerely,



Amal AlShareef

Acting Managing Director, C4IR Saudi Arabia

To engage with us and be part of C4IR Saudi Arabia's future activities, follow us at:



02

World Quantum Day 2026 The Quantum Journey Exhibition

C4IR Saudi Arabia marked its third consecutive celebration of **World Quantum Day** through the **Quantum Journey Exhibition** under the theme “**Shaping the Quantum Workforce**,” focused on introducing quantum science and technology through immersive educational experiences. Hosted at King Salman Science Oasis in Riyadh from 7–16 April 2026, the exhibition brought together students, educators, youth, and families to explore the growing role of quantum technologies within Saudi Arabia’s evolving innovation ecosystem.

Hosted at **King Salman Science Oasis (KSSO)** in Riyadh and organized by **C4IR Saudi Arabia** in collaboration with **King Abdulaziz City for Science and Technology (KACST)**, **Institute for Advanced Studies and Cooperation (IASC)**, and **ICB Labs**, the exhibition reflected continued efforts to strengthen national awareness of quantum technologies, inspire future talent, and support dialogue around Saudi Arabia’s rapidly evolving quantum ecosystem.

The Quantum Journey Exhibition welcomed more than **1,700 visitors** and introduced them to quantum science through immersive educational zones featuring multimedia storytelling, hands-on demonstrations, visual installations, and real-world applications of quantum technologies, designed to make complex scientific concepts more accessible and engaging for diverse audiences.

Through immersive zones, visitors explored foundational concepts including quantum mechanics, superposition, entanglement, quantum communication, and quantum computing while engaging with demonstrations designed to translate complex scientific principles into intuitive and interactive learning experiences. The exhibition highlighted both the scientific foundations and practical implications of quantum technologies, contributing to broader awareness and engagement across different audience groups.

The exhibition also aimed to inspire the next generation of innovators, technologists, researchers, and future talent. By bringing together students, educators, youth, and families, the exhibition contributed to broader discussions around future workforce readiness, awareness of emerging and frontier technologies, and the growing importance of quantum technologies across industries and research ecosystems.

It marked the beginning of broader conversations that will continue through the Quantum Forum 2026 taking place on 30 August at King Salman Science Oasis, Riyadh bringing together global experts, researchers, industry leaders, and policymakers to explore quantum readiness, innovation pathways, and future workforce development across Saudi Arabia’s evolving quantum ecosystem.



The Quantum Journey Exhibition in Numbers



10

Exhibition days



40

Participating schools



40K+

Social media impressions



1,700+

Visitors



52

Student volunteers



14

Media mentions



900

Students engaged



73.9K+

News and social media reach



80+

Digital posts published across platforms

03

Insights on AI, Education, and Future Readiness

Reimagining Learning in the Age of AI



Dr. Reem Taibah

Responsible AI in Education Project Lead, C4IR Saudi Arabia

Dr. Reem Taibah is a physicist leading the Responsible AI in Education project at C4IR Saudi Arabia, where she drives research-backed impact across emerging and frontier technologies and education systems, focused on mapping pathways for responsible and ethical AI integration across students, teachers, and the broader education ecosystem.

The Responsible AI in Education project at C4IR Saudi Arabia is grounded in a data-driven, evidence-based approach that began with a comprehensive landscape assessment examining the current state of AI integration across Saudi Arabia's education ecosystem. The assessment included a benchmark study, expert interviews, and a **National Teacher Survey** that gathered **44,920** responses to better understand teacher perspectives, classroom realities, and implementation challenges.

Based on these findings, current efforts are now focused on piloting the AI Assessment Scale framework in classrooms throughout 2026 in collaboration with the **Ministry of Education** and the **National eLearning Center** through the AI Sandbox initiative. Rather than representing a shift away from research, the pilot phase builds directly on the earlier assessment work by focusing implementation on one of the ecosystem's highest-impact areas.

The AI Assessment Scale is designed to help schools move beyond binary approaches to AI use inside classrooms. Instead of forcing educators to

either permit or prohibit AI entirely, the framework introduces more nuanced models for engagement. Students may use AI to brainstorm ideas, collaborate with AI while modifying outputs, or critique AI-generated results, creating a smoother learning experience while strengthening reasoning and critical thinking skills.

As AI increasingly becomes embedded into educational environments, assessment practices themselves are also beginning to evolve. Traditional correctness-based evaluation models are becoming less sufficient in settings where AI can instantly generate information. Greater emphasis is now being placed on evaluating logic, interpretation, reasoning, and students' ability to identify bias and distinguish fact from misinformation.

Educator readiness remains another central focus of the initiative. Schools and teachers participating in the pilot are expected to demonstrate foundational competency in AI literacy and assessment methodologies, while the program itself includes training designed to help educators guide AI use more effectively inside classrooms.

The broader discussion around educator enablement is also reflected in the findings of the **National Teacher Survey** conducted with the **Ministry of Education in 2025**. The results highlighted strong interest among educators in AI-related training and capability-building, with **81%** of respondents expressing interest in additional AI training and **46%** indicating willingness to personally invest in high-quality programs.

Practical implementation is also beginning to demonstrate how AI can support more personalized learning environments. **Noon Academy**, one of the project stakeholders, has developed a hybrid setup where students use AI-integrated iPads while teachers manage multiple classrooms remotely through a unified interface. The system generates real-time insights into student participation, learning progress, and classroom challenges, while also enabling weekly summary reports for parents. Such applications demonstrate how AI-powered monitoring and automation can support more personalized educational experiences when deployed thoughtfully.

At the same time, preserving creativity and critical thinking remains a central consideration as AI adoption accelerates. Reimagining assessment in the age of AI is increasingly viewed as essential to preventing over-dependence on technology while maintaining meaningful learning experiences. Protecting the student-teacher relationship, while equipping educators to guide AI use thoughtfully and responsibly, will remain critical as education systems continue adapting to rapidly evolving technological environments.

Looking ahead, efforts throughout the remainder of 2026 will focus on evaluating how the AI Assessment Scale performs across different pedagogical contexts and whether further localization is needed to align the framework with Saudi Arabia's educational and cultural environment. These findings are expected to help shape recommendations for broader adoption across the national education ecosystem.



In Conversation with



Dr. Husa AlAngari

GM & CEO for KSA, Ultimate Learning Academy (ULA)
Assistant Professor of Instructional Systems Technology,
Princess Nourah University

Dr. Husa AlAngari is GM & CEO for KSA at Ultimate Learning Academy (ULA) and Assistant Professor of Instructional Systems Technology at Princess Nourah University. With two decades of experience across education systems, workforce transformation, and digital innovation, her work focuses on designing AI-enabled learning and capability development systems that bridge education and workforce readiness in AI-driven economies.

How is AI influencing student learning behaviors and the way information is processed in educational settings?

AI is shifting learning from information acquisition to synthesizing, evaluating, and applying knowledge. With AI removing traditional barriers to access, learners are now navigating an environment of abundance, where the challenge is no longer access to information, but making sense of it and using it effectively.

Learners are increasingly navigating personalized learning pathways shaped by AI, requiring greater agency in how they progress, make decisions, and validate information. This shift reflects a broader move toward AI-augmented learning, where learners actively engage with AI as part of the learning process while maintaining control over how knowledge is interpreted, validated, and applied. This changes the learner's role from passive recipient to active decision-maker, requiring stronger critical thinking and judgment.

At the same time, there is a real risk of over-reliance. If poorly integrated, AI can reduce cognitive effort and limit deep learning. This makes intentional design critical. Learning environments must be structured to ensure that AI extends thinking rather than replaces it, with a focus on problem-solving, reasoning, and application in real-world contexts.

What is the importance of ensuring responsible and ethical use of AI in education systems?

Responsible AI in education is not a standalone consideration; it is a foundational layer that informs all aspects of learning system design. As AI becomes embedded across teaching, assessment, and learner support, issues such as bias, data privacy, and over-automation directly shape learning experiences and outcomes. This is reflected in national frameworks, including those developed by the National eLearning Center, where ethics and data privacy are positioned as an overarching layer guiding all aspects of AI integration.

Ensuring ethical use requires clearly defined boundaries between where AI augments learning and where human judgment remains essential. It also requires embedding governance into the design of learning environments, including how data is collected and used, how decisions are made, and how accountability is maintained.

Ultimately, responsible AI is critical to building trust and ensuring that AI-enabled education systems enhance learning while preserving human agency.

What are the key strengths and limitations of AI-assisted learning tools today?

AI-assisted learning tools offer clear strengths, particularly in enabling personalization at scale,

providing real-time feedback, and improving accessibility for diverse learners. They also support educators by enabling more adaptive instruction and freeing up time for higher-value teaching activities.

However, their limitations are equally important. AI cannot reliably assess true understanding versus generated responses, nor can it fully account for context, intent, or learner and cultural contexts and nuances. There is also a risk of cognitive outsourcing, where learners rely on AI at the expense of developing their own thinking processes. Most current tools are optimized for efficiency rather than learning depth. This makes it critical to move beyond tools and focus on how AI is intentionally integrated into learning systems to support meaningful learning outcomes.

What frameworks or approaches can support the safe and effective adoption of AI in schools and universities?

Effective adoption requires moving beyond introducing AI tools to designing AI-augmented teaching and learning systems. This means integrating AI into instructional design, assessment, and learner support in ways that are intentional and aligned with learning outcomes.

This requires a systems-level approach, including clearly defined capability frameworks, adaptive and personalized learning pathways, and a focus on the conditions that enable effective learning in practice, such as system design, learning environments, and decision-making. It also requires ongoing upskilling of educators to effectively integrate AI into teaching, assessment, and learner support.

Equally important is ensuring that ethics and data privacy function as an overarching layer across all components of the system, rather than as a separate domain. Adoption should be measurable, outcome-driven, and designed to strengthen both learning quality and workforce readiness. At a national level, this approach is already being operationalized through the National eLearning Center's AI competency frameworks, which provide a structured reference for educators, learners, and institutions, ensuring AI adoption is consistent, responsible, and aligned with workforce readiness priorities, while aligning

stakeholders across the AI-enabled education ecosystem.

What future skills do you believe students will need to succeed in an AI-enabled economy?

The focus is shifting from discrete skills to broader capabilities required to operate in AI-enabled environments. These include critical thinking, systems thinking, and the ability to make decisions under uncertainty. AI fluency is becoming foundational, not just in terms of using tools, but in evaluating, challenging, and effectively collaborating with AI systems. Learning agility is also critical, as individuals will need to continuously adapt and reskill in response to rapid technological change.

At the same time, ethical reasoning is increasingly important, as individuals must understand the implications of AI use and its impact on society. Ultimately, differentiation will come not from competing with AI, but from how effectively individuals work alongside it.

How can education systems maintain creativity and critical thinking while integrating AI into learning environments?

Maintaining creativity and critical thinking is less about limiting AI and more about how learning experiences are designed. In AI-augmented learning environments, these capabilities can be strengthened when learners are required to engage critically with AI outputs, refine them, and justify their decisions. This requires a shift in assessment from evaluating final answers to evaluating the thinking process. This includes reasoning, interpretation, and decision-making. It also requires designing learning tasks that preserve human agency, ensuring that learners remain in control of how AI is used and applied. The role of educators evolves accordingly, from delivering content to guiding cognitive development. When designed intentionally, AI can extend thinking and creativity rather than replace them.

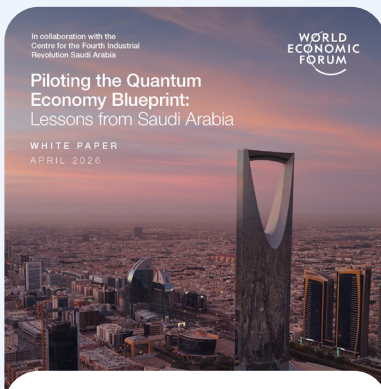
04

Delivering Impact Across the Ecosystem

Throughout Q2 2026, C4IR Saudi Arabia continued contributing to dialogue around emerging and frontier technologies through publications, ecosystem engagement, webinars, and collaboration with national and international stakeholders.



Thought Leadership and Impact



Piloting the Quantum Economy Blueprint: Lessons from Saudi Arabia (White Paper)

Published in collaboration with the World Economic Forum, the white paper Piloting the Quantum Economy Blueprint: Lessons from Saudi Arabia explores how Saudi Arabia became the first nation to operationalize the World Economic Forum's Quantum Economy Blueprint at a national scale while outlining lessons related to stakeholder coordination, talent development, governance, and security.

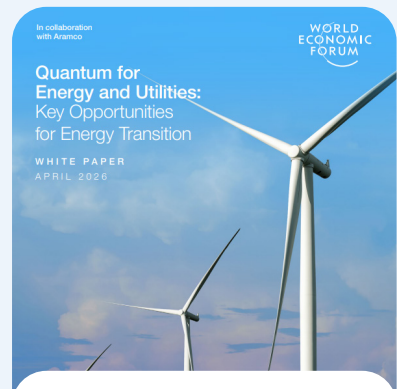
[Read more](#)



5 Lessons from Piloting the Quantum Economy Blueprint in Saudi Arabia (Article)

Contributed to a World Economic Forum article summarizing key lessons from piloting the Quantum Economy Blueprint within Saudi Arabia's quantum ecosystem.

[Read more](#)



Quantum in Energy and Utilities: Key Opportunities for Energy Transition

Contributed to the World Economic Forum paper "Quantum in Energy and Utilities: Key Opportunities for Energy Transition," developed in collaboration with Aramco. The paper presents key use cases alongside a roadmap for scaling quantum solutions across the energy sector.

[Read more](#)

In collaboration with
Accenture



Intelligent Industrial Operations Outlook 2026

Contributed to the Intelligent Industrial Operations Outlook 2026, published by the World Economic Forum in collaboration with Accenture. The report highlights the transition toward intelligent, connected, and adaptive industrial systems enabled by technologies such as AI, cyber-physical systems, and digital twins.

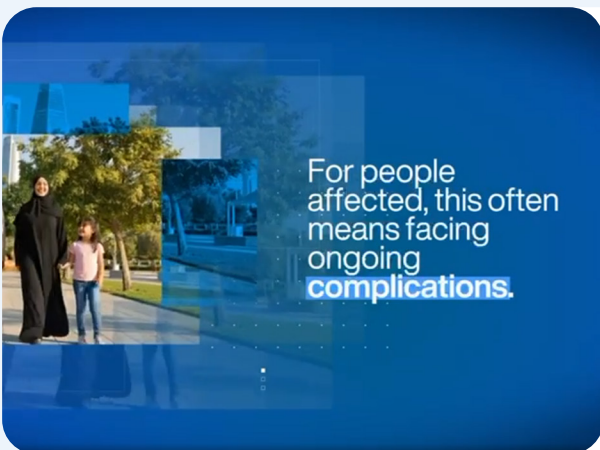
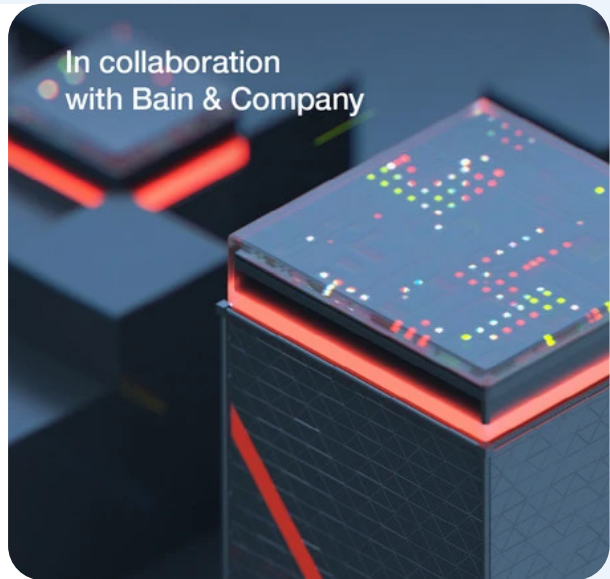
[Read more](#)

AI Infrastructure in the Age of Sovereignty: Requirements, Strategies and a Trusted Framework for Digital Embassies

Contributed to the World Economic Forum white paper “AI Infrastructure in the Age of Sovereignty: Requirements, Strategies and a Trusted Framework for Digital Embassies,” developed in collaboration with Bain & Company. The paper explores how economies can design AI infrastructure strategies by balancing domestic ownership with trusted international partnerships.

[Read more](#)

In collaboration
with Bain & Company



For people
affected, this often
means facing
ongoing
complications.

Amplifai Health Buzz Video

Published a buzz story highlighting the social impact of TFScan, an AI-powered thermography tool developed by Amplifai Health to support the early detection of diabetic foot ulcer risks through non-invasive screening approaches.

[Watch the Video](#)

Events and Meetings

C4IR Saudi Arabia's impact was further advanced through participation in a series of regional and international engagements, including



Human Augmentation in Industry 5.0

26 April 2026 | Virtual

C4IR Saudi Arabia hosted the first webinar as part of the “Shaping the Future of Industry 5.0” series titled “Human Augmentation in Industry 5.0,” focused on advancing human-centric productivity through safer, adaptive, and collaborative systems. The webinar explored how robotics, autonomous systems, and AI technologies perform in realworld environments while highlighting practical frameworks relevant to Saudi industries.

23rd International Learning and Technology Conference

15 April 2026 | Virtual

C4IR Saudi Arabia former Managing Director Dr. Basma AlBuhairan delivered a keynote at the 23rd International Learning and Technology Conference at Effat University titled “What Counts: Human Responsibility in the Age of Agentic AI.” The session explored the transition toward increasingly autonomous systems and the growing importance of human responsibility, governance, and public interest in AI-enabled environments.



The Rise of the Cognitive Enterprise: How AI Is Redefining Today's Workforce

20 May 2026 | Virtual

C4IR Saudi Arabia hosted the second webinar in its Shaping the Future of Industry 5.0 series, titled The Rise of the Cognitive Enterprise: How AI Is Redefining Today's Workforce. The webinar explored how AI agents are evolving from support tools into digital workers and showcased real-world examples of Saudi organizations leveraging them to enhance operational efficiency, productivity, and organizational performance.

Who Taught the Machine? When AI Becomes the Authority in Non-English Learning Contexts

11 June 2026 | Alfaisal University

C4IR Saudi Arabia, in collaboration with Alfaisal University, hosted a seminar on the growing role of AI in learning and students' increasing reliance on AI-generated content without critical evaluation. The seminar examined the shift of authority from teachers to AI in non-English learning contexts, highlighted linguistic and cultural biases in large language models, and introduced a practical framework for critical AI literacy grounded in cognitive science and the Arab scholarly tradition.



05

Looking Ahead

The Quantum Forum 2026

30 August 2026 | Saudi Arabia

Building on the momentum of World Quantum Day 2026, Quantum Forum 2026 will convene policymakers, industry leaders, researchers, innovators, and members of the global quantum ecosystem for high-level keynote sessions and panel discussions focused on the future of quantum technologies and quantum readiness.

Discussions will explore key developments shaping the global quantum landscape, including quantum education, workforce readiness, healthcare, manufacturing, cybersecurity, financial systems, and emerging applications of quantum technologies across industries.

Aligned with broader efforts to strengthen awareness and dialogue around emerging and frontier technologies, Quantum Forum 2026 aims to:

- Advance awareness of quantum technologies through dialogue, knowledge exchange, and ecosystem engagement.
- Introduce core quantum concepts and connect them to real-world applications, future industries, and innovation opportunities.
- Translate global quantum discourse into nationally relevant insights aligned with Vision 2030 priorities.

The Forum will serve as a platform for knowledge exchange and cross-sector collaboration, supporting Saudi Arabia's long-term quantum ambitions and strengthening the Kingdom's position within the global quantum ecosystem.

C4IR Saudi Arabia Webinar Series - Shaping the Future of Industry 5.0

Building on the momentum established during Q2, C4IR Saudi Arabia will continue its Industry 5.0 Webinar Series throughout Q3 2026, bringing together experts and stakeholders to explore the future of industrial transformation through human-centric, sustainable, and resilient approaches.

As part of the series, upcoming webinars will explore:



Sustainability in Industry 5.0

Technologies Shaping a
Regenerative Future



Industry 5.0

From Cost-Driven Procurement to
Societal Value



Intelligent Healthcare

Systems in the
Industry 5.0 Era

To stay updated on upcoming webinars and future discussions from C4IR Saudi Arabia, visit:
<https://www.c4irsaudiarabia.org/virtualengagements>

Innovation in Motion: Advancing Saudi Arabia's Future

Saudi Arabia's First Autonomous Robotaxi Service

Saudi Arabia's Transport General Authority (TGA) Arabia's Future
Saudi Arabia's First Autonomous Robotaxi Service
Saudi Arabia's Transport General Authority (TGA) authorized the Kingdom's first licensed Robotaxi autonomous driving permit, enabling WeRide and Uber to launch driverless passenger rides in Riyadh operating across key routes including King Khalid International Airport and Princess Nourah University.

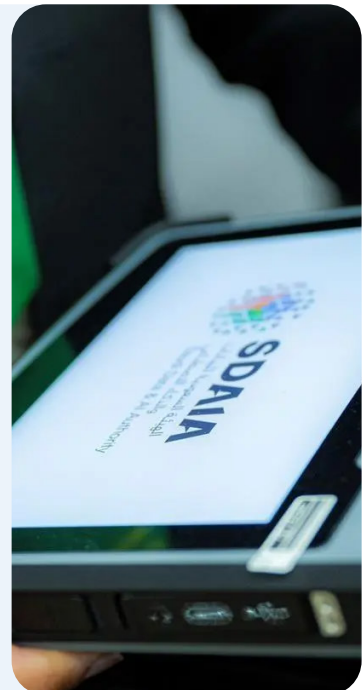


SDAIA Digital Technologies Supporting Hajj Procedures in Senegal

The Saudi Data and Artificial Intelligence Authority (SDAIA)
deployed advanced digital systems and biometric technologies at Blaise Diagne International Airport in Senegal as part of the Makkah Route Initiative.

The deployment included AI-enabled operational systems, biometric registration devices, and secure data infrastructure to streamline travel procedures for Hajj pilgrims. Developed in line with privacy and cybersecurity standards, these technologies enhance operational efficiency and service delivery.

The initiative reflects Saudi Arabia's leadership in leveraging advanced technologies to support digital transformation and global mobility.

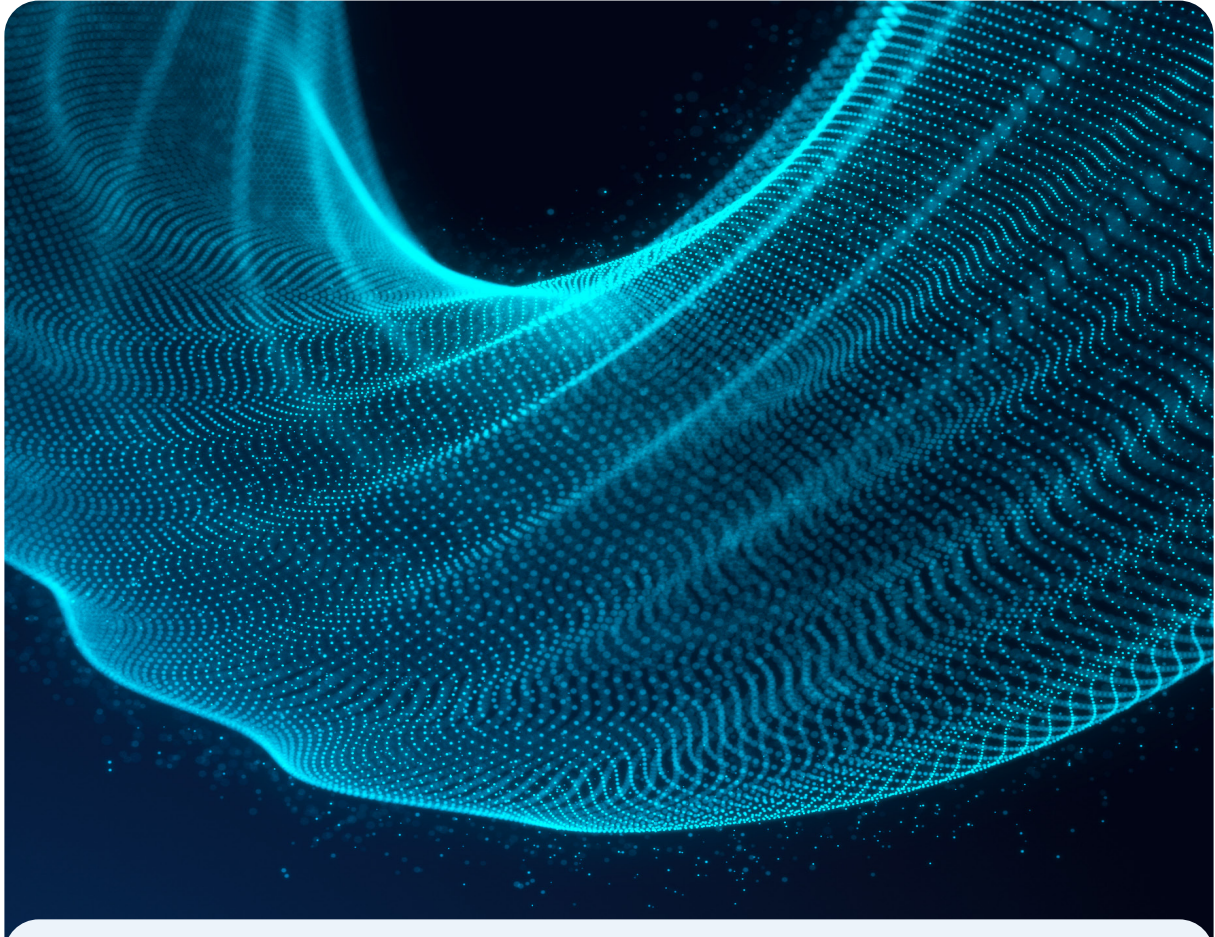


Suture Needle Strap

The Suture Needle Strap, developed by Dr. Hamad Alzoman, a professor at King Saud University, is a **Saudi medical** innovation designed to enhance surgical safety and improve needle control during clinical procedures. The device secures surgical needles, reducing the risk of accidental displacement while improving precision and operating room efficiency.

Granted both Saudi and U.S. patents, the innovation was showcased at the World Creativity and Innovation Day 2026 exhibition in Riyadh. It reflects Saudi Arabia's growing capabilities in medical innovation and locally developed healthcare technologies.





Call Out

This edition highlighted World Quantum Day 2026, celebrated through the Quantum Journey Exhibition. It also featured conversations on AI-enabled learning, digital education, and future-ready skills, alongside emerging and frontier innovation highlights from across Saudi Arabia. In addition, we drew attention to two Saudi ventures, including health tech startup Amplifai Health and edtech platform Noon Academy.

To contribute to future conversations, stories, and innovation spotlights featured in upcoming editions, contact us at: communications@c4ir.sa

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