



Saudi Arabia

Centre for the
Fourth Industrial
Revolution

Newsletter Q2 2025

C4IR Saudi Arabia

Insights and Highlights

01

C4IR Saudi Arabia: Enabling Impact

Welcome to the Q2 2025 edition of the Centre for the Fourth Industrial Revolution (C4IR) Saudi Arabia's newsletter.

In this issue, we highlight our key activities from the past three months and share how you can engage with us as we support the equitable, sustainable, and responsible adoption of frontier and Industry 4.0 technologies in Saudi Arabia.

A major highlight of this quarter was our celebration of World Quantum Day 2025 (WQD 2025), a platform for experts and enthusiasts to explore emerging issues, topics, opportunities, and challenges in quantum technology. You'll find a summary of the day's key moments below, along with links to our wrap-up report and video for further insights.

Q2 was also marked by C4IR Saudi Arabia spearheading the Kingdom's 4IR leadership. We were proud to contribute to international publications and events - including in collaboration with our partners at the [World Economic Forum](#) - and continue to support ongoing projects and initiatives, while hosting a series of webinars offering deeper dives into the world of quantum technology and its applications.

As we turn our focus to Q3 and beyond, visit our [website](#) or follow us online to stay informed on the latest projects and developments fueling the Kingdom's advanced and frontier technology ecosystem. Whether you're a 4IR expert, policymaker, industry leader, or simply passionate about new technology, you will find numerous opportunities to get involved – from quantum science webinars to major events like the 3rd Saudi Forum for 4IR 2025 coming in October. However you choose to engage, we look forward to shaping the future of frontier and Industry 4.0 technologies together with you.

Sincerely,



Basma AlBuhairan, PhD
Managing Director of C4IR Saudi Arabia

Stay in touch:



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The Intelligent Age in Action: World Quantum Day 2025

On 14 April, C4IR Saudi Arabia hosted the Kingdom's World Quantum Day (WQD) 2025 celebrations under the theme, "Discovering Quantum Possibilities: A Day of Inspiration and Exploration." In partnership with [King Abdulaziz City for Science and Technology \(KACST\)](#), WQD 2025 brought together policymakers, industry leaders, and researchers from around the globe to explore the latest advancements shaping quantum technology and discuss how to leverage its possibilities.

Opening the discussions, Dr. Basma AlBuhairan set out the global quantum context of "immense and expanding opportunities." She noted that this is being fueled by over \$40 billion in public investment globally, with dedicated national quantum strategies launched by more than 24 countries. Meanwhile, Saudi Arabia's strategic vision for quantum technology is positioning the Kingdom as an emerging force in the quantum landscape with strategic partnerships, targeted investments, and dedicated efforts to cultivate local talent.

Across expert-led keynotes and discussions, there was broad consensus that quantum has reached a tipping point, where its theoretical promise is beginning to translate into real-world applications that will change how we operate across key sectors such as healthcare, cybersecurity, computer science, education, and telecommunications. As a result, speakers emphasized the need for collaborative frameworks to sustain this momentum alongside the importance of regulatory clarity and long-term investment in early education and talent development to ensure the responsible advancement of quantum innovations.



We know that the quantum revolution is not a solo effort. It requires collaboration, cooperation, and a shared commitment to progress to achieve this goal, and strategic initiatives need to be launched aiming at driving progress in this field.



Abdullah AlHarbi

Co-founder and Head of Innovation and Commercialization
[Saudi Accelerated Innovation Lab \(SAIL\) at Saudi Aramco](#)

Dr. Raneem AlSelaimi, Deputy Managing Director of C4IR Saudi Arabia, closed the celebrations, noting, "The more we uncover, the more we realize we're barely scratching the surface." Echoing the sentiments of the day, Dr. AlSelaimi called for national strategies and global regulatory collaboration to ensure that quantum science and technology deliver societal benefit at scale.

WQD 2025 also recognized the top 10 innovators from the [Quantum for Society Challenge](#), launched by C4IR Saudi Arabia in collaboration with the [World Economic Forum's UpLink platform](#). This challenge supports start-ups and entrepreneurs leveraging quantum technologies to develop practical solutions to global challenges such as climate change, health, sustainability, and water resources.

In addition, scientific sessions hosted by the Saudi Quantum Computing Association presented cutting-edge quantum concepts, focusing on "entanglement swapping" and its growing real-world applications.

WQD 2025 is part of Saudi Arabia's broader efforts to strengthen its position in frontier and Industry 4.0 technologies and support the Kingdom's growing Quantum Economy initiative. For further insights into quantum technology developments and to meet the top 10 Quantum for Society innovators, download the [WQD 2025 report here](#) or [rewatch the event here](#).

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This Quarter at a Glance

INITIATIVES AND PROJECTS

AVIATE Saudi Workshop, 16 April

C4IR Saudi Arabia convened a workshop on the development of the National Advanced Air Mobility (AAM) Playbook. The workshop brought together industry and ecosystem players to transform real-world use cases into actionable, scalable systems. Participants identified core challenges, operational concerns, and potential solutions to ensure safe, trusted, and viable AAM deployments, with insights informing the next phase of the Playbook and helping to unlock the potential of next-generation mobility in the Kingdom. [Read more about our AVIATE Program here.](#)



Scientific Research Hackathon at King Saud University, 25 April

C4IR Saudi Arabia supported a Scientific Research Hackathon at King Saud University, which brought together students and health experts to develop innovative solutions for healthcare challenges. In collaboration with KACST, the hackathon empowered students to transform ideas into real, impactful projects, with expert mentoring, judging, and awards for the top five ideas.



Quantum Materials: Designing the Future Webinar, 28 April

As part of the Quantum Nexus series, C4IR Saudi Arabia hosted a webinar titled, "Quantum Materials: Designing the Future." The session explored how the novel research field of quantum nanoscience is enabling breakthroughs in material design and reshaping chemistry at the smallest scales. Participants delved into the transformative potential of quantum effects, discussing how these innovations are paving the way for new materials and chemical processes that could revolutionize a wide range of industries. [Watch here to learn more about the series.](#)



Quantum Computing: The Next Frontier Webinar, 27 May

C4IR Saudi Arabia hosted a new session in the Quantum Nexus series titled, "Quantum Computing: The Next Frontier." The webinar examined how principles like superposition and entanglement are transforming computational capabilities. Speakers shared insights on the current state of quantum hardware, emerging real-world applications, and the steps needed to achieve quantum advantage.



Launch of the Advanced Manufacturing and Production Center, 28 May, Saudi Arabia

C4IR Saudi Arabia participated in the launch of the **Advanced Manufacturing and Production Center**, led by the **Ministry of Industry and Mineral Resources (MIM)**. As a strategic partner, C4IR Saudi Arabia is playing a key role in enhancing collaboration and competitiveness across this sector. This newly established center is designed to promote sustainable industrial growth, foster innovation, and increase the sector's contribution to the national economy in alignment with Saudi Vision 2030.



Global Technology Retreat (GTR25), 3-6 June, USA

GTR25 convened global innovation ecosystem stakeholders for four days of strategic discussion on adapting to and the responsible scaling of frontier and Industry 4.0 technologies, and examined the role of cross-sector collaboration in promoting sustainable growth. Dr. Raneem AlSelaimi, Deputy Managing Director of C4IR Saudi Arabia, presented the centre's progress and conducted meetings with C4IR Network representatives from the UAE, Qatar, South Korea, and Rwanda on future opportunities for collaboration.



INTERNATIONAL EVENTS

Future of Semiconductors Forum 2025, 4-5 May, Saudi Arabia

Hosted by **King Abdullah University of Science and Technology (KAUST)**, in collaboration with **KACST** and **NEOM**, Dr. Basma AlBuhairan delivered a keynote address highlighting semiconductors as the foundation of the quantum era. She emphasized the Kingdom's targeted investments, innovation zones, and talent development. She also introduced **C4IR Saudi Arabia's Quantum Economy Project** as a platform connecting regulators, start-ups, researchers, and industry leaders. [Read more about the event here.](#)



Smart Factory Summit 2025, 11-13 June, Switzerland

C4IR Saudi Arabia, represented by Dr. Ibrahim AlShunaifi, IIoT for SMEs Lead, took part in the Smart Factory Summit held in Switzerland. He presented the Kingdom's Smart Factory Hub as a model for industrial transformation, emphasizing international collaboration, linking local manufacturers to global value chains, and accelerating the impact of Saudi Vision 2030. C4IR Saudi Arabia continues to advance this work through partnerships with platforms such as the World Economic Forum and **UN Industrial Development Organization (UNIDO)**. [Read more about the event here.](#)



16th Annual Meeting of the New Champions (AMNC), 24-26 June, China

AMNC 2025 brought together leaders from government, business and academia, along with innovators and representatives from international organizations, media, and civil society. Dr. Basma AlBuhairan contributed a range of insights into Saudi Arabia's 4IR and innovation experiences across speeches, panel discussions, and hub session presentations. She covered topics from the growing momentum of quantum technology, and its impact on the energy and materials sectors, to the frameworks and governance behind smart cities, and Saudi Arabia's approach to biotechnology governance. C4IR Saudi Arabia also nominated several startups for recognition due to their contributions to safety, AI accessibility, and global investment, with three selected by the World Economic Forum as standout platforms: [Wakecap](#), [Alxplain](#), and [Stake](#).



PUBLICATIONS, PAPERS, AND ARTICLES

Upskilling Future Leaders in Digital Manufacturing, 3 April

C4IR Saudi Arabia published a co-branded Agenda Post with the World Economic Forum titled, "This is How We Upskill Future Leaders to Drive the Digital Transformation of Manufacturing." The post sheds light on the [King Saud University](#) Industrial Intelligence Program, designed through a collaboration between C4IR Saudi Arabia and [EyoTic](#). The program aims to equip engineering students with essential skills in industrial intelligence to lead the digital transformation of manufacturing in the Kingdom, as Saudi Arabia's Vision 2030 [aims to expand the Kingdom's manufacturing sector](#) from 12,000 to 36,000 factories by 2035. It offers a comprehensive framework and practical lessons for building sustainable, future-ready manufacturing. [Read the full post.](#)

White Paper: From Shock to Strategy: Building Value Chains for the Next 30 Years, June

The [World Economic Forum's Global Future Council on Advanced Manufacturing and Value Chains](#), of which C4IR Saudi Arabia is a member, has released its latest white paper, drawing on extensive input from industry experts, leading academics, civil society, and public officials. The paper outlines potential scenarios for the configuration of global value chains in 2030, 2040, and 2050. Drawing on survey data, foresight workshops, and use cases, the scenarios presented illustrate hypothetical, future-ready value chains as strategic tools for manufacturing and supply chain executives and policymakers, to help them prepare for an increasingly complex and uncertain future. [Download the full white paper here.](#)

White Paper: From Policy to Practice: Actionable Recommendations for a Commercial Bioeconomy, June

C4IR Saudi Arabia, as a contributor to the World Economic Forum's Bioeconomy Initiative, has launched a new white paper, "From Policy to Practice: Actionable Recommendations for a Commercial Bioeconomy," in collaboration with [Capgemini](#). The paper presents a strategic framework to help translate bioeconomy goals into effective, scalable policies. Offering 14 actionable recommendations across regulation, incentives, financing, and education, the paper is designed to advance sustainable growth, resilience, and innovation in a rapidly evolving global landscape. [Read and download the paper here.](#)

Briefing Paper: Next Generation Bio-Innovation: Delivering Commercial Value, June

C4IR Saudi Arabia contributed to a World Economic Forum briefing paper that examines how bio-innovation can become more commercially viable. With potentially far-reaching implications for virtually every industry, this work enriches global thought leadership on biology's commercial value and offers new insights into how bio-innovation can create differential and sustainable product value. [Read and download the paper here.](#)

04

Join Us in the Future

Looking ahead, there are even more opportunities for you to engage with C4IR Saudi Arabia's activities and become part of our global community. Our webinar series will continue to explore key issues, opportunities, and challenges in the quantum realm, offering valuable insights into this transformative technology, as we prepare to host the 3rd Saudi Forum 2025 for 4IR in October.

Cryptography in the Quantum Era Webinar, 29 July

Hosted by Dr. Saad A. Alowayyed, Quantum Economy Project Lead at C4IR Saudi Arabia, this webinar will introduce the principles of quantum cryptography and its real-world applications. Topics will include the fundamentals of quantum cryptography, current challenges, and future advancements in securing information in the quantum age. [Click here to register.](#)

Quantum Sensing Webinar, 28 August

Explore how quantum-based sensors are reshaping industries with unprecedented levels of precision and accuracy. The webinar will cover the main types and applications of quantum sensing, including gravimeters, magnetometers, and pressure sensors, alongside the future of quantum sensing with increased portability and networkability, as well as the challenges facing the sector.

Quantum Biology: Life at the Quantum Level Webinar, 25 September

This webinar will investigate how quantum effects influence biological processes and what this means for future research in life sciences. The webinar will cover the challenges and applications of quantum biology, including how processes like quantum coherence, tunneling, and entanglement play a part in everything from light harvesting in plants to human consciousness.

3rd Saudi Forum for 4IR 2025, 29-30 October, Riyadh

C4IR Saudi Arabia is proud to host the premier forum for exploring the frontiers of 4IR technology and the Kingdom's industrial transformation. In partnership with World Economic Forum, the 3rd Saudi Forum for 4IR 2025 will explore the development of policies that support innovation, responsible scaling, and inclusive access to technology; the emergence of the bioeconomy and quantum economy as engines of national transformation; and essential sustainable approaches to industrial transformation in the Intelligent Age. Keep an eye on our social media channels for more information on this event, including how to register.

We look forward to continuing this journey together to shape an equitable, sustainable, and responsible future for all.

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