

Page: General Information
Provide information about the company to be considered for the award. If you will be nominating an individual, specify the nominee's employer.
Name of Organization/Company King Abdullah City for Atomic and Renewable Energy
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Additional Contacts I do not wish to list additional contacts
Page: Entry Information
Entry Title Mishkat Virtual Exhibition Center
Category O03. Technical Innovation of the Year - Green and Clean Technology
Technical Innovation of the Year Submission Format Written Answers
a. Briefly describe the organization that achieved the nominated technical innovation: its history and past performance (up to 200 words). Required King Abdullah City for Atomic and Renewable Energy (KACARE) is the Saudi Arabian government entity focused on building a sustainable energy future for the nation, in line with Saudi Vision 2030. Mishkat, KACARE's interactive energy discovery center, serves as the organization's public-facing initiative for education. For a decade, Mishkat has been educating Saudi youth and families about energy through its physical exhibition in Riyadh. Historically, Mishkat's reach was limited by its physical location. To overcome this and amplify its educational mission across the Kingdom, KACARE's technology team developed the Mishkat Metaverse Initiative. This strategic pivot from a physical-only to a digital-first model was designed to vastly increase accessibility and engagement. This innovation reflects KACARE's commitment to leveraging technology for widespread, scalable climate education, directly supporting the Saudi Green Initiative and UN Sustainable Development Goals 7 and 13, and transforming a local center into a national platform.
b. Outline the nominated technical innovation. Be sure to describe it in terms that someone with limited knowledge of the technology can understand and appreciate (up to 250 words). Required The Mishkat Metaverse is an immersive, universally accessible virtual world dedicated to renewable energy and climate education. It is a 3D digital version of our physical science center, accessible on any device with a standard web browser or VR headsets (for VR version)—no downloads, expensive VR headsets, or powerful computers are required. The core innovation is a five-layer integrated technology system built for mass-scale public engagement: 1. WebXR & Unity Engine: We created an interactive 3D world that runs in a browser, ensuring it is accessible to citizens across the Kingdom. 2. Cloud-Native Infrastructure: The platform is hosted on a scalable cloud service, allowing it to support thousands of simultaneous users, from a single student to large, coordinated virtual school trips. 3. Photon Real-Time Networking: This technology allows visitors to see and interact with each other's avatars in real time, creating a shared community learning space. 4. AI-Powered Avatars: We deployed lifelike AI guides, fluent in both Arabic and English, to provide personalized tours and answer user questions, ensuring a rich learning experience. 5. Gamified Learning: The platform features interactive quests and a virtual "Pledge Wall" where users can commit to real-world green behaviors, turning learning into active participation. This innovation was designed to democratize access to critical climate and renewable energy education for all.

c. Explain why the technical innovation you have highlighted is unique or significant (up to 250 words). Required

The Mishkat Metaverse is significant because it solves the critical challenge of providing scalable public education. By removing the barrier of physical travel, this innovation has dramatically expanded our reach and impact.

First, its architecture is uniquely inclusive. Engineered to perform on low-bandwidth connections and standard hardware, it ensures that citizens in remote or underserved communities have the same access to climate education as those in major cities. This focus on "digital equity" is a pioneering approach for a national sustainability initiative.

Second, the results are measurable and impactful. We achieved a 270% increase in our beneficiary reach in the first year of operation. This was accomplished with high efficiency, leading to a 93% reduction in the cost-per-beneficiary.

Finally, the platform is directly aligned with national goals. It serves as a key tool for furthering the objectives of the Saudi Green Initiative. The metaverse has measurably improved visitor comprehension of energy topics, as evidenced by a 24-point uplift in average assessment scores (from 61% to 85%) after a virtual tour. It transforms passive learning into trackable, nationwide engagement.

d. Reference any attachments of supporting materials throughout this nomination and how they provide evidence of the claims you have made in this nomination (up to 250 words). Optional

The attached "Mishkat Narrative" presentation provides comprehensive evidence for our claims.

- Organizational & Strategic Context - These slides detail KACARE's mission and the strategic alignment of the Mishkat Metaverse with Saudi Vision 2030 and the Saudi Green Initiative, supporting the statements in question (a).
- Technical Innovation & Features - This section visually breaks down the five-layer technology stack—from the WebXR interface to AI avatars—as described in question (b). Screenshots and the link to the live platform (metaverse.mishkat.org.sa) provide direct proof.
- Significance & Impact Metrics - These slides contain the core data verifying the innovation's significance. You will find charts illustrating the 270% growth in reach, the 93% reduction in cost-per-beneficiary, and the 24-point uplift in visitor comprehension scores, which substantiate the claims in question (c).
- User Journey & Testimonials - External validation is provided through a user journey map and feedback, demonstrating the project's real-world impact. The included video provides a live walkthrough of the platform itself

[REDACTED FOR PUBLICATION]

Would you like to add an additional supporting document?

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