

TDRA

هيئة تنظيم الاتصالات والحكومة الرقمية
TELECOMMUNICATIONS AND DIGITAL
GOVERNMENT REGULATORY AUTHORITY

Organized by

الإمارات تبتكر
UAE INNOVATES

فبراير 2023



هاكاثون

HACKATHON

U A E

الإمارات

TODAY'S CHALLENGES, TOMORROW'S SOLUTIONS

تحديات اليوم، حلول الغد

2023 REPORT

UAE HACKATHON 2023 REPORT

Table of Content

3	Executive Summary	27	Appendix 1: UAE Hackathon Winners
6	Chapter One: Preparation and Organization of the UAE Hackathon	28	Appendix 2: UAE Hackathon Participants Nationalities
15	Chapter Two: Outcomes and Feedback from Participants	28	Appendix 3: UAE Hackathon Inspiring ideas
22	Chapter Three: Milestones	41	Appendix 4: Participating Teams, Mentors and Arbitration
26	Chapter Four: Recommendations	45	Appendix 5: UAE Hackathon Partners

Executive Summary

Based on its vision towards encouraging innovation and the use of modern tools, and in conjunction with the biggest event of its kind nationwide; “**UAE Innovates 2023**” organized by the Mohamed Bin Rashed Center for Government Innovation from the period of 1 to the 28th of February, the “**Innovation Month 2023**” events have launched on Wednesday, the 1st of February, and lasted until the 28th across the UAE. Federal and local government entities, the private sector, hand in hand with academic institutions and all members of society participated in the events which are held under the motto “**UAE Innovates**”.

As part of the government’s ongoing efforts towards celebrating innovators and motivating all segments of society to come up with initiatives and innovative solutions for the country’s top priority sectors; thus, enhancing the position of the UAE as a global hub for innovation and knowledge.

The events of “**UAE Innovates**” 2023 included the participation of different sectors of society in a national event that contributes to the consolidation and dissemination of the culture of innovation and the promotion of collective action in the design and development of future experiences, initiatives, and projects. This was in conjunction with the announcement of **His Highness Sheikh Mohamed bin Zayed Al Nahyan**, the current President of the United Arab Emirates, to declare 2023 as the “**Year of Sustainability**” under the slogan “**Today for Tomorrow**”. His Highness also highlighted the UAE’s achievements in sustainable practices to meet all challenges in a rapidly changing world by preparing all vital sectors for the post-oil phase and building a talent-based knowledge economy based on innovation and modern science, which will help support the direction of the state and its institutions; that is to achieve the goals of the vision “**We the UAE 2031**” and the objectives of the UAE’s Net Zero by 2050 Strategic Initiative, which is a national urge to protect the environment and achieve net zero emissions by 2050.

As part of these activities, the Telecommunications and Digital Government Regulatory Authority (TDRA) launched the 6th hybrid edition of the UAE Hackathon, themed “**Today’s Challenges, Tomorrow’s Solutions,**” across the seven emirates nationwide. In its sixth consecutive year, the Hackathon provided a great opportunity for youth to creatively compete and use open data to develop innovative solutions that help foster the culture of collaborative innovation and find sustainable solutions to the challenges posed by government entities and the private sector.

The 6th edition of the UAE Hackathon is in line with the announcement that the United Arab Emirates will host the largest international event on climate change, namely the Conference of the Parties in the United Nations Framework Convention on Climate Change “**COP28**”. This conference is a breakthrough in the world’s journey to address the threat of climate change. The country is committed to investing in its youth in priority sectors, particularly in the areas of energy and climate change, and equipping them with the skills and knowledge needed to keep pace with rapid changes. For this reason, and based on the UAE Centennial 2071, hand in hand with the national sustainability initiatives, the 6th edition of the UAE Hackathon was launched with main pillars, at the top of which are:

1. Enhancing competencies along with disseminating knowledge and innovation in data analysis to develop solutions and decision-making.
2. Promoting the spirit of integration and collective action among the federal government, e-governments, national programs, the private sector, and international organizations.

TDRA has partnered with the seven local e-governments: Abu-Dhabi, Sharjah, Ajman, Umm Al-Quwain, Ras Al-Khaimah, Fujairah, and Dubai. It also cooperated with several major universities in the country, including Khalifa University, Zayed University, the Higher Colleges of Technology in Dubai, Sharjah, and Ras Al-Khaimah, the University of Dubai, the University of Sharjah, Ajman University, Umm Al-Quwain University, University of Science and Technology of Fujairah, Rochester Institute of

Technology of Dubai, and Middlesex University Dubai. It has also worked with many top leading private sector technology companies, such as Oracle, Unity Technologies, Amazon Web Services, Crypto Oasis, Serco Group Plc, all of which have helped make the Hackathon exceptionally successful in its virtual edition.

TDRA provided youth with the technology, innovation, and entrepreneurship training and mentoring they needed to help them develop the most creative ideas in each of these tracks: Start-ups, University Students, and School Students. In addition, TDRA helped youth develop digital solutions, smart applications, and electronic services. It also integrated the latest technologies such as artificial intelligence and the internet of things, blockchain, and chatbots as they put their ideas into practice. The development of the Researchers Track at the sixth edition of the Hackathon enhanced the quality of the outcomes. This track is aimed at researchers working in academic institutions and research centers on applied projects that provide research solutions to the pressing challenges of the Hackathon.

The previous Hackathons have taught many participants how to use open government data and develop applications and digital solutions. This has contributed to the production of a staggering number of creative solutions in the six following themes that correspond to the UAE government's priorities for 2023:

- We the UAE 2071
- Environment and its sustainability
- Expanding the UAE's international economic partnerships
- Establishing and consolidating the national identity
- Developing the educational system, vision, indicators, and outputs
- Accelerating Emiratization

Using the following set of emerging technologies:

- Intelligent Chatbots
- Augmented Reality
- 3D and 4D printing technology
- Artificial Intelligence
- The Internet of things
- Blockchain
- Big data and Data analysis
- Other Emerging Technologies



In this way, the following main outcomes were obtained:

- To reach and meet creatives and innovators from the seven emirates and help them develop and present their ideas and green innovations within any of the 7 Hackathons.
- To generate innovative ideas and develop models for realistic solutions

using open government data to develop government services in priority sectors and enhance wellbeing.

- To promote the concept of open government, collaborate with teams and participating groups from all 4 tracks, and assist in working with federal and local government entities to leverage data.
- To spread digital awareness among participants from all segments, employ the latest emerging technologies, and expand knowledge in data science.
- To support and monitor the winning teams throughout the various Hackathons and help them turn their innovative ideas into concrete reality through the post-Hackathon phase “Promising ideas support and incubation phase”.
- To produce new data and statistical information to be included in the open database.

The Telecommunications and Digital Government Regulatory Authority (TDRA) celebrated the winning teams of the 6th edition of the UAE Hackathon in a ceremony held at the Higher Colleges of Technology – Dubai conference hall. The announcement of the first-place winners from the UAE took place in the presence of **His Excellency Eng. Majed Sultan Al Mesmar**, TDRA Director General, and **His Excellency Mohammed Al Qassim**, Director-General of the Emirates Schools Establishment.

The “**Mental Life**” project won the first place in the Startups track. The “**Sustainable Aquaponic**” project won first place in the University Students track, and “**Eduverse**” won first place in the School Students track.

These projects ranked first place because they offer innovative solutions and green, brilliant ideas to the challenges posed by the state’s future policy of promoting digital transformation toward a green economy and creating a stimulating environment for emerging technologies.



Chapter One: Preparation and Organization of the UAE Hackathon

Premises and Objectives

Since its launch six years ago, the idea of the Hackathon emerged from the Telecommunications and Digital Government Regulatory Authority's (TDRA's) vision to promote the open data portal (bayanat.ae) during the Month of Innovation and to embrace activities based on open data, information technology, and the latest offerings of technology in the seven emirates of the UAE. TDRA viewed the Hackathon as an excellent and effective way to spread a culture of innovation and motivate high school and university students, government employees, businessmen, and researchers, as well as creative thinkers to participate in shaping the future, supporting the country's vision of creativity and capacity building among the youth, and enhancing the connection between different segments of society and institutions. It also incorporates the seven local e-governments to support one goal: the expansion of open government data and the enhancement of collective efforts to solve the challenges of sustainability, climate change, and digital government.

The approach and design of the UAE Hackathon was based to be directly integrated with:

1. "UAE Strategy for the Future" being a comprehensive roadmap that will lead the country into the next era of sustainable development. The 3 main pillars of the strategy were the new design guide of Hackathon 2023, specifically mentioning the first and second pillars that focus on the following:
 - A new operational model for government that focuses on operational excellence in local and federal government entities.
 - Building national capacity

2. The UAE National Innovation Strategy, which considers innovation as the primary goal for development. By creating innovative ideas and introducing new products, services, and processes that improve the quality of life. The strategy aims to:
 - Ensure a conducive-to-innovation environment
 - Create a culture of innovation among individuals, businesses, and the public sector.
 - Focus on the seven priority sectors for leading innovation at the national level: education, health, technology, transportation, water, space, and renewable and clean energy.
3. The objectives of the Telecommunications and Digital Government Regulatory Authority (TDRA), especially the third and fifth, focus on:
 - Promoting a smart lifestyle in the UAE.
 - Establishing a culture of innovation in the institutional work environment.

The UAE Hackathon 2023 also serves the UAE's national development priorities aligned with the UAE National Committee on SDGs and contributes to improving the UAE's international ranking in the E-Participation Index and the Global Entrepreneurship Index, as well as the Global Innovation Index.

Hence, the UAE Hackathon was based upon several premises, including:

- Finding solutions to government challenges, such as climate change and its impacts.
- The country's approach to the Fourth Industrial Revolution and Artificial Intelligence, as well as supporting the concept of digital government and sustainable smart cities
- The increasing focus on Big Data analytics at the national and international level.

- To prioritize civic happiness among the national objectives of the UAE's national goals.
- To reach the largest segment of innovators and creators among the citizens and all residents of the 7 Emirates from youth onwards.
- To expand the range of open data, increase its efficiency and present it digitally to achieve the goals of the national open data portal.

These premises gave rise to the goals of the UAE Hackathon, which include the following:

- To increase the interest of various segments in the concepts of innovation and entrepreneurship, and to develop their capabilities.
- To discover advanced, green, highly agile, and viable solutions to address the rapid pace of change and development of technological tools.
- To offer partnerships with the private sector to support and achieve the nation's goals through the UAE Hackathon.
- To continue the dissemination of knowledge and innovation, anticipate the future in data, and contribute to improving the skills of young people.
- To empower winners to turn their ideas into projects by providing them with the support they need to work on their ideas and create real startups that enhance well-being and support the nation's economy.

The UAE Hackathon Support Structure

The Telecommunications and Digital Government Regulatory Authority (TDRA)

As part of its mandate and mission to supervise the digital transformation in the UAE, the TDRA initiated



the UAE Hackathon 2023 in the seven emirates in its hybrid edition. It provided mentoring, guidance, financial support, along with substantive and technical support to ensure the success of the Hackathon in its sixth edition, motivating society to innovate and offering inspiring solutions to pressing challenges. It also provided training, mentoring, and guidance to ensure a successful outcome. In addition, TDRA created a support and incubation stage for the best ideas from researchers track, entrepreneurs, and university students as part of the Hackathon activities. In collaboration with government entities, TDRA also expanded the open data portal to obtain as many datasets as possible from modern data systems. It also developed the Hackathon website to keep pace with developments in this hybrid edition, improve performance efficiency and productivity, and increase the ability to identify and process the best innovative ideas.

Federal Competitiveness and Statistics Authority (FCSA)

The FCSA provided technical support by making various datasets available to promote different themes and challenges through the open data portal (Bayanat.ae). This allowed participants to be trained, guided, and share their expertise on how to use and analyze databases and datasets to achieve the best outcomes that serve creative ideas.



Government Entities

The Hackathon received tremendous support from various government entities. Over 35 local and federal government entities participated in the UAE Hackathon 2023, demonstrating their trust and support for the Hackathon's premises and objectives.

Universities and Academic Institutions

The role of universities and national and private schools was not limited to hosting the Hackathon 2023 digital introductory sessions, but they also encouraged and

motivated students from all disciplines to participate and learn about the UAE Hackathon and its challenges.

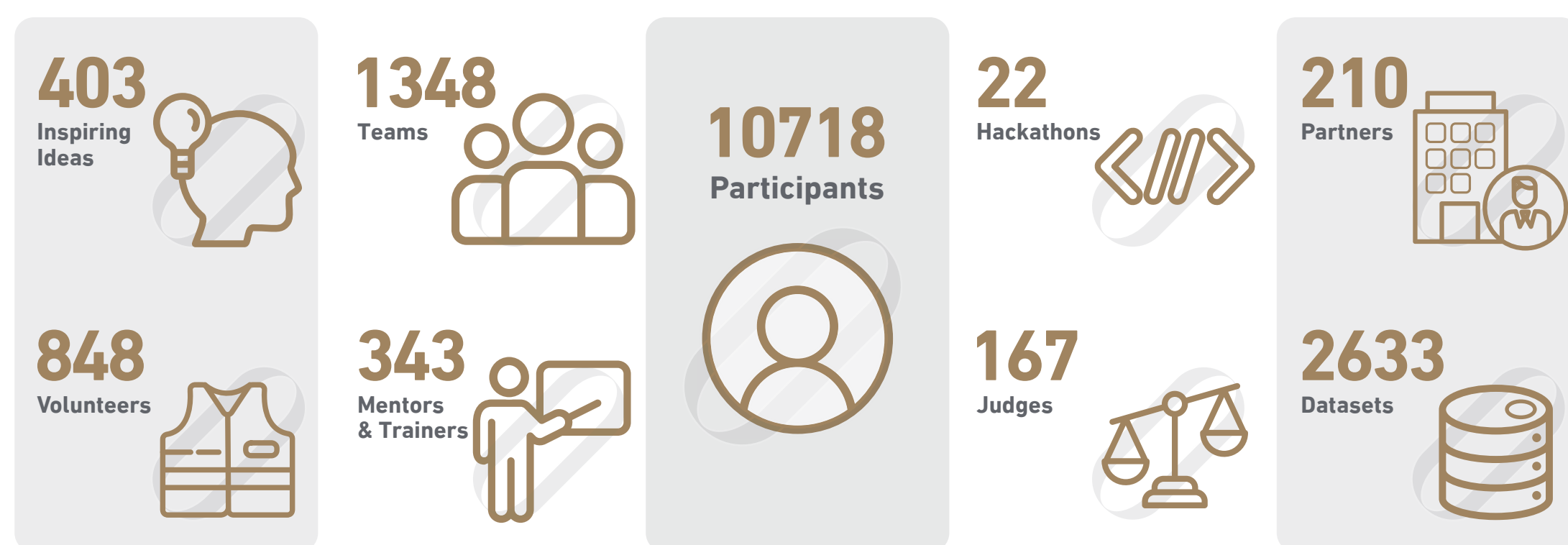
In an unprecedented move, the universities provided logistical support through mentors and judges who actively supported and guided participants with creative ideas so they could present them in the best possible way . Strategic partnerships with a number of federal and private universities have continued to host the Hackathon events and all participants across the 7 emirates.

The Private Sector

In the sixth edition of the UAE Hackathon, the private sector participated significantly by offering substantive and technical support to help young people develop their ideas efficiently and fulfill the Hackathon's motto. It also provided a series of hands-on training sessions on the use of various technological tools, such as Artificial Intelligence and the Internet of Things, Blockchain, 3D and 4D printing technology, data analysis, and reading charts and graphs skills.

UAE Hackathon 2023 Preparation

The Hackathon has successfully implemented the outcomes and achievements of the five previous editions, which were as follows:



The Telecommunications and Digital Government Regulatory Authority team, along with its government, academic, and private partners, devoted their efforts to update and evolve the UAE Hackathon 2023 program to meet the demands of the current phase of the country's vision of digital transformation and a sustainable green economy, which has been positively reflected in the outcomes of the sixth edition of the Hackathon.

In the same context, the TDRA team invited its partners to a brainstorming session before launching the final edition of the Hackathon. In this session, which took place on June 9, 2022, a set of goals was decided upon to help shape the 2023 Hackathon.

These objectives were as follows:

- To educate participants about the Hackathon and its major accomplishments over the past few years.
- To listen to the thoughts and feedback of all partners on the successes of the previous editions of the UAE Hackathon
- To provide suggestions and recommendations that can be taken into consideration when designing the UAE Hackathon 2023
- To form a comprehensive team from different entities that will help achieve the goals of the Hackathon nationwide.

The workshop had a remarkable turnout of more than 50 representatives from 26 government entities, academia, and the private sector. Six broad recommendations were made that serve as key catalysts for shaping the design of the sixth edition of the Hackathon.

The UAE Hackathon 2023 Tracks

The UAE Hackathon is known for the active participation of various social groups: school and university students , employees of government entities, creative youth, and entrepreneurs, as well as experts and specialists in developing technical

solutions to the proposed challenges. Therefore, in the sixth edition of the UAE Hackathon, the three-track system was introduced for the second time to achieve better outcomes from the different groups of participants. The Researchers Track was also newly developed for academic institutions and staff of national research centers working on practical research projects to solve the pressing local challenges. In addition, a digital evaluation process was developed for all ideas based on standards appropriate to the nature of participants in each track, their qualifications, and the level of expected outcomes.

- **School Students Track**

The age criterion for this segment is between 11 and 18 years old who are not yet enrolled in university. This track focuses on school students from the UAE, whether they are public or private schools. The main criterion of this track is to develop filtered ideas that will be considered as a prototype and will be delivered and explained through a presentation ahead of the judging panel. No production of high or low- fidelity prototypes is required at this stage.

- **University Students Track**

The age criterion for this segment is between 18 and 25 years of age or slightly older, who do not yet have long-term work experience. The main criterion of this track is to develop advanced solutions that will be delivered and explained through a presentation ahead of the judging panel. A low-fidelity prototype for these solutions is required.

- **Startups and Entrepreneurs Track**

This track is designed for experts and government and public sector employees in various fields who have technical skills that enable them to develop high-quality and feasible solutions. In addition, startups that are in the early stages and have solutions to the Hackathon challenges can participate.

The main outcome of this track is to develop advanced solutions and deliver and explain them through a presentation on the day allocated for the presentations of this track. Participants are required to design a high-fidelity prototype for their projects that can help them strengthen or develop their startups by finding new and different resources and investment opportunities.

- **Researchers Track**

This inaugural Hackathon track is for researchers to collaborate on practical projects that provide solutions to the Hackathon challenges. The basic criterion of this track is to develop applied research projects that can be transformed into a commercial product or service on a local or larger scale, where the project is based on an emerging or deep user-centered technology.

UAE Hackathon 6.0 Themes Update

TDRA deemed it essential to develop a new set of themes that align with the UAE Centennial 2071 Vision, the State's vision towards the future, and the Year of Sustainability. TDRA also ensured a focus on themes that encompass the state's priority challenges at the local and global levels, including issues of greatest importance related to sustainability and digital transformation. It also strengthened the concept of introducing themes that are not only related to challenges in the UAE, but challenges that affect the whole world, such as the environment, sustainability, and economic partnerships. **These themes were as follows:**

- We the UAE 2071
- Environment and its sustainability
- Expanding the UAE's international economic partnerships
- Establishing and consolidating the national identity
- Developing the educational system, vision, indicators, and outputs
- Accelerating Emiratization

Theme	Description
We the UAE 2071	Having joined the top 5 countries in the world in 339 developmental, economic, and social indicators in 2022, one of the UAE's goals for this year has become to achieve the government's 5 priorities which concentrate on the social, economic, investment, and development aspects, in order to keep pace with the rapid changes towards designing a better future for the UAE.
Establishing and consolidating the national identity	The government's top priority in 2023 is to establish societal values and a sense of national identity in order to make the UAE the best place to live. It aims to accelerate digital transformation towards spreading cultural awareness, preserving the national identity, strengthening the sense of belonging to the nation amongst Emiratis and ensuring nurturing young Emiratis' abilities.
Environment and its sustainability	The UAE is ranked among the most vulnerable countries at risk of the impacts of climate change in the world. Since it plays a central role in the world's energy economy, it seeks solutions to reduce emissions, while continuing to meet the world's energy demands. The UAE Government aims to ensure sustainable development while preserving the environment and to achieve a perfect balance between technological, economic, and social development.

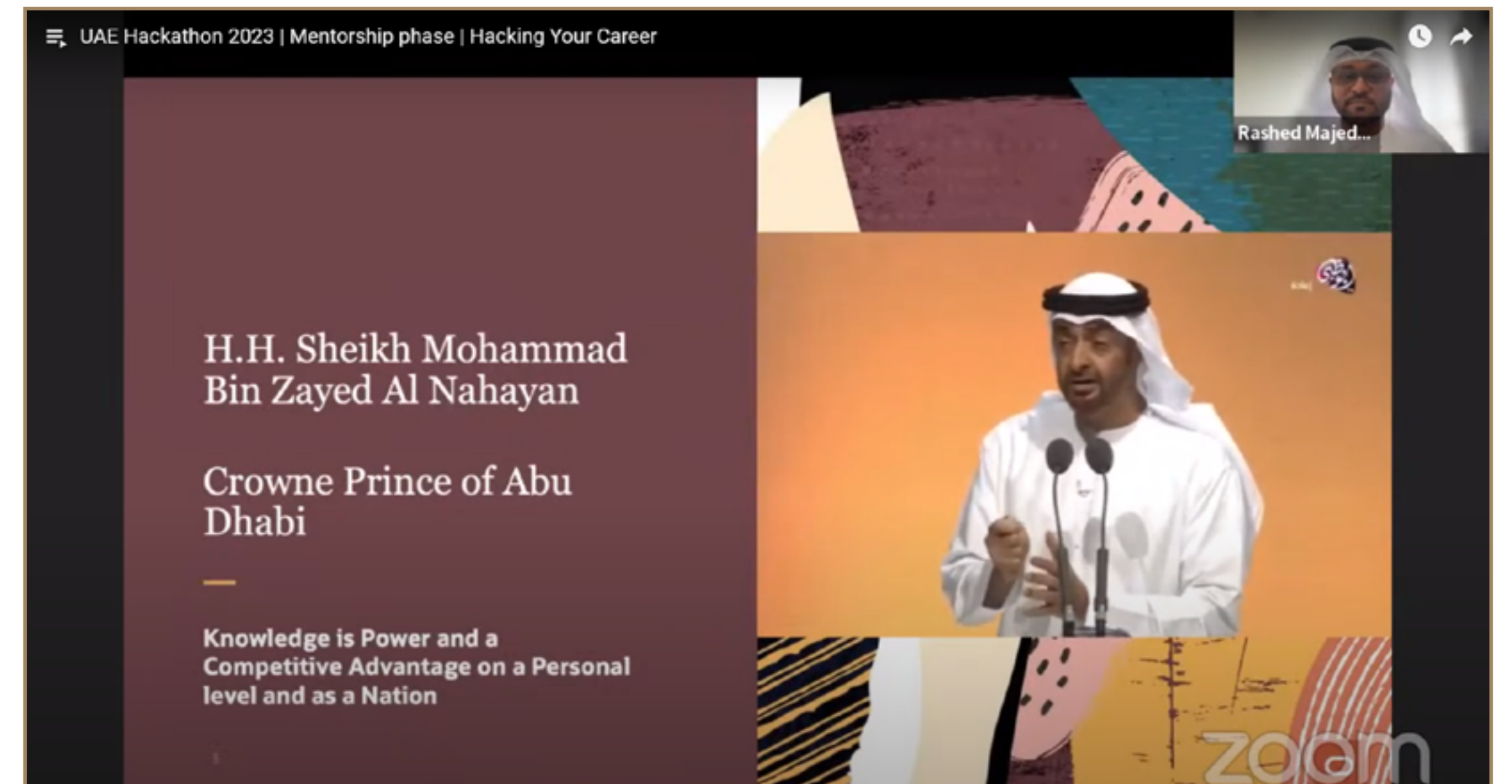
Developing the educational system, vision, indicators, and outputs	The UAE aims at investing in technology-based education through providing students with the 21st century skills necessary to face the world's rapid changes, along with developing the education system and establishing innovation labs in universities and schools to support inventions in an effort to make the UAE the best nation in the world by the next centennial in 2071.
Accelerating Emiratization	The UAE aims to increase the integration of Emirati citizens into the labor market and provide the necessary mentorship and vocational training programs to boost their participation in the country's strategic sectors, as well as enhance the workforce productivity towards building a better future and more sustainable life.
Expanding the UAE's international economic partnerships	The transition to a digital economy can boost competitiveness across various sectors, provide new opportunities for business and entrepreneurial activity, and new avenues to access global markets, as well as expanding international economic partnerships as one of the government's priorities in 2023. Through investment in digital transformation, businesses can lay the foundation for long-term resilience to future crises.

The UAE Hackathon Training Content

TDRA enriched the Hackathon with training content developed in collaboration with local and international partners, delivered by a team of experts at regional and global levels in the fields of technology, innovation, and entrepreneurship, so that participants could benefit from their expertise in helping them efficiently promote and develop their ideas. The training spanned the entire Innovation Month. The first trimester of the month was distinguished by the fact that all sessions and training

workshops were available in virtual format, which made it easier for participants to follow up and participate. Training activities also continued during the 2-day Hackathon in each emirate. The innovation and technology training program was conducted in the form of sessions and a training workshop, **described as follows:**

Training Content Components			
Content in the Field of Technology	Duration (training hours)	Content in the Field of Innovation	Duration (training hours)
Developing a technological system for innovation management	2	An intensive course on design thinking and ideation	15
Using Amazon Web Services	3	Team Building skills	2
AI as a tool for developing sustainable and creative ideas	3.5	Defining the problem and identifying users	3
Introduction to blockchain and its usages	2	Improving ideas and working on their validation	3
Augmented and virtual reality techniques and examples on their applications	3	The ethics of innovation and entrepreneurship	2
Data democratization and its tools of analysis	2	Business model and seed funding	4
Latest emerging technologies and their applications	3	How to prepare a unique presentation for your creative idea	3



In addition, TDRA's partnership with various government entities and the private sector helped increase the effectiveness of the mentorship process and provide participants with the guidance and advice they needed to develop their ideas and improve their quality through the presence of a selection of experts and professionals from the entities that posed challenges relevant to the Hackathon 6 themes to support the various teams.

- **Government and academic mentors:** Participating mentors from government institutions and universities have played a key role in helping participants understand the challenges faced by government entities and guiding them in obtaining the latest data and the mechanism to tame and utilize it. The mentoring process has excelled in its consistency. The Hackathon platform continuously improved the ease of communication between the mentors and the concerned teams under the hybrid version of the Hackathon, which facilitated the process of obtaining information and using the accumulated experience of the government and private mentors. This was the result of thorough preparation and prior arrangements with government entities and universities before the Hackathon, by creating a list of nominations of

government experts and potential academics, their number, as well as their areas of expertise. In addition, the arrangements included asking them to register as mentors on the UAE Hackathon platform to achieve the desired goals, as well as the participants' easy perception of shortcomings in some challenges and trying to find appropriate solutions.

- **Private sector experts:** The participation of private sector companies by providing numerous experts and technical and professional services has helped increase the quality of the mentoring and training process in the Hackathon. Arranging meetings with many private sector companies to take part in the Hackathon with their experts and services and participating in some training workshops had effective outcomes reflected on the Hackathon participants and their ideas, which they described as a genuine and memorable experience of support. The hybrid version of the Hackathon helped facilitate access to experts through verified Hackathon platforms without requiring participants to attend the various hackathons on-site.

The Beginning of the UAE Hackathon 2023 Journey

Having developed a comprehensive vision for the UAE Hackathon 2023, TDRA launched it on Wednesday, February 1, 2023, by announcing participation and registration on the Hackathon platform.

In preparation for the sixth edition of the Hackathon, TDRA coordinated virtual meetings with federal and local authorities and specialized agencies related to information technology to obtain the necessary support. It also coordinated all organizational matters with academic partners from universities in the seven emirates to host the Hackathon activities for two days per emirate. In addition, TDRA developed a strategic marketing plan that achieved great success thanks to its partnership with key institutions such as the Federal Competitiveness and Statistics Authority, the seven e-governments, and national and private universities and the private sector.

TDRA spared no effort to incorporate digital transformation into all internal processes and activities of the Hackathon, consequently evident in the preparation and organization of a hybrid edition that followed the same approach as in previous years and sought to motivate and improve digitalization concepts. It also improved the Nation's approach towards a safe and efficient digital transformation, which contributed to increasing performance effectiveness of the Hackathon's various processes and providing a creative work environment for participants.

TDRA has added several clauses to its marketing plan to encourage different segments of youth and employees to participate in UAE Hackathon 2023.

The UAE Hackathon Introductory Sessions

TDRA assigned introductory sessions (both digital and within universities) as a marketing strategy for the Hackathon. Some sessions were held for different university and school students in the UAE. The collaboration was reflected in the dense attendance of young people and their desire to learn more about the UAE Hackathon and how to participate.

The sessions were not limited to university and school students but also targeted employees of federal and local government agencies. Hundreds of employees were present, many of whom were willing to participate in solving the challenges posed by their bodies. They also welcomed the guidance of support and the participation of experts on the teams involved in the various tracks.

The introductory sessions explained what the Hackathon is and its objectives, all of which align with the UAE's vision in various areas. The achievements of the previous five Hackathon editions were also presented to motivate the youth in all tracks, followed by an explanation of the Hackathon themes and the most critical challenges it offers, as well as how to come up with the best ideas that correspond to the proposed challenges, its journey, and the schedule of the different activities. Finally, all the questions of the participants were answered so that they could get a better idea of the numerous activities of the Hackathon.

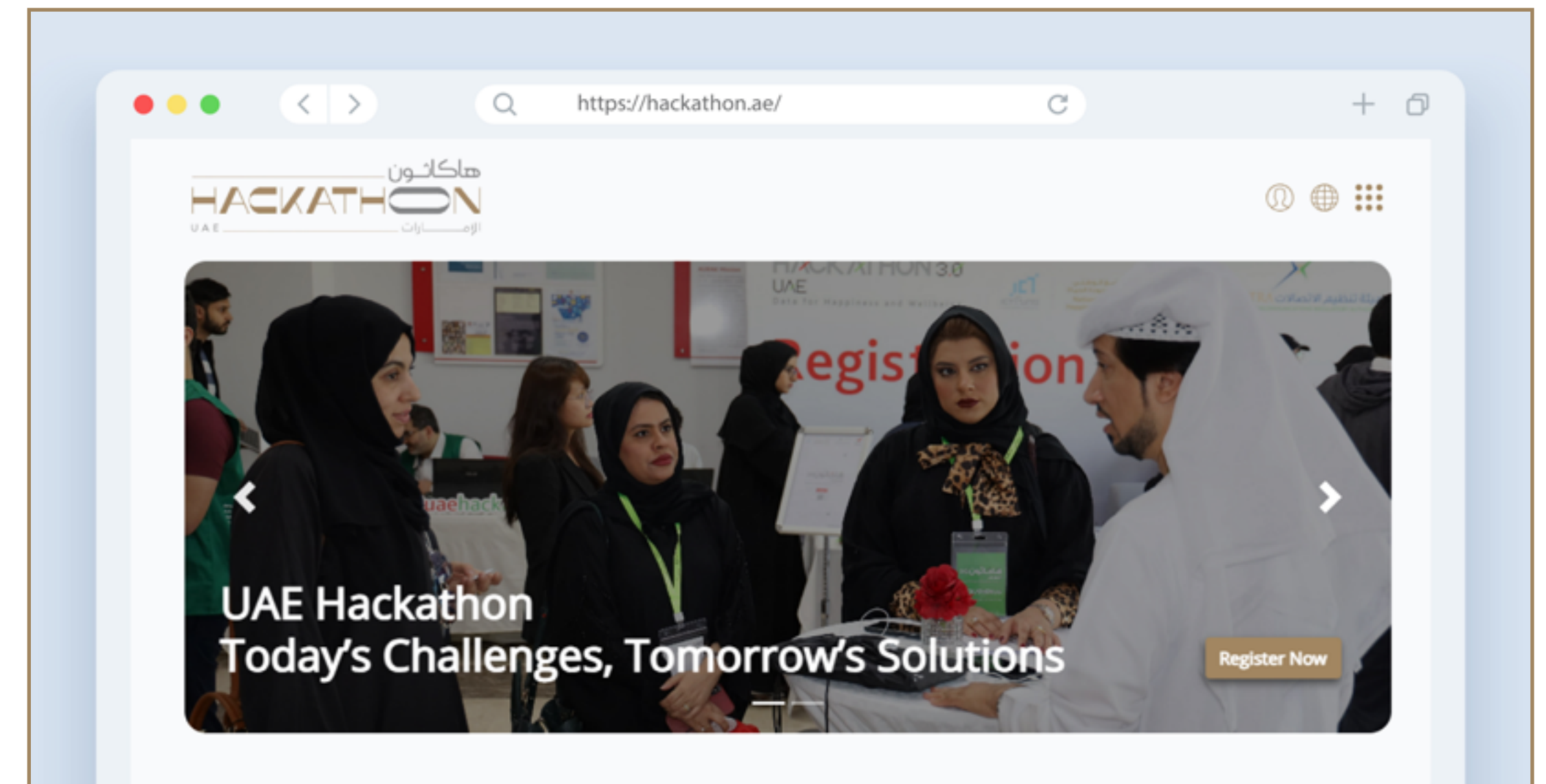
The introductory sessions helped achieve a set of marketing objectives for the UAE Hackathon, including:

- Promoting the UAE Hackathon in the seven emirates and motivating youth for effective participation.
- Engaging with the youth and responding to all their Hackathon- related inquiries to ensure a well-planned journey to develop creative solutions and ideas during the Hackathon events.

Promotional Activities for the UAE Hackathon

- Coordinating with e-governments, federal and local government entities, and public and private universities in the seven emirates to promote the UAE Hackathon to the largest possible number of university students through direct activities by the Hackathon team or through the dissemination of promotional materials on the different university platforms.
- The promotion of the Hackathon also extended to private and government schools through the Emirates Schools Establishment, which motivated several teachers and students to benefit from the Hackathon experience and contribute with their ideas to create a better society. The School Students experience proved successful as this edition attracted a larger number of local and private schools. Many teams submitted high-quality ideas this year, doubling the number of participants in last year's Hackathon.
- Creating valuable interactive content and sharing it through the digital platforms and the Hackathon website, introducing the Hackathon and its history in the seven emirates, narrating its detailed journey, and defining its themes and challenges. This helped those who wanted to participate understand and grasp what they were approaching.

The UAE Hackathon 2023 Platform



The development of the hackathon platform, which serves as a management system, continued to be a semi-autonomous innovation to accommodate the size of participants from the different four tracks, along with mentors, experts, and representatives of government agencies, and to encourage all attendees to participate and communicate effectively:

- The website has been accredited as a digital guide for participants in all its details and content, and the unique design of the platform helped make it easy for participants to access all relevant information without having to repeatedly communicate with the organizing committee.
- The Hackathon platform included all guidance files, training content, and data sources for challenges presented in a dynamic digital image to serve as the main reference point for all participants.
- The communication mechanism was developed in this year's version between participating teams, government and private sector mentors, and their

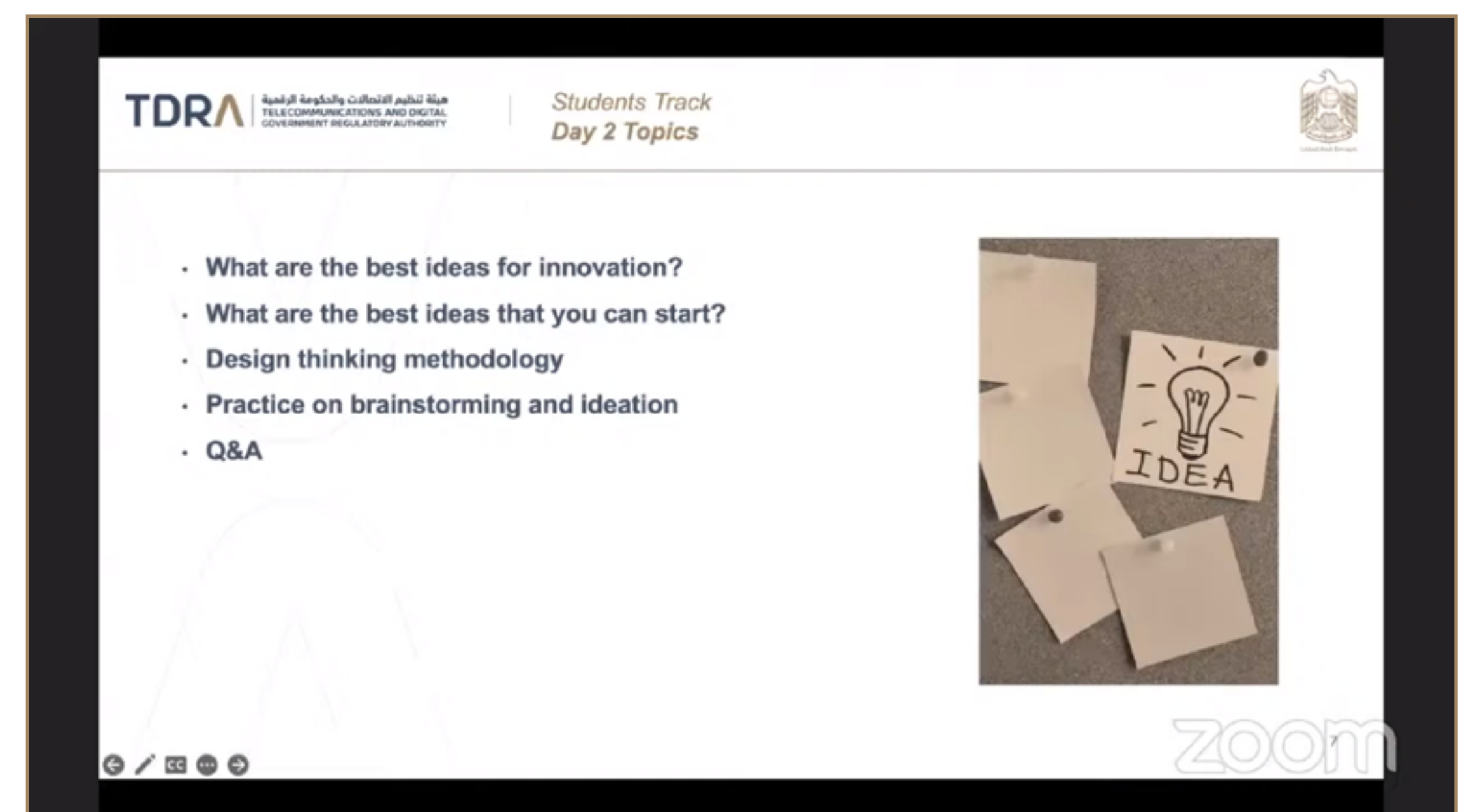
representatives through the Hackathon platform. Teams experienced the ease of searching and communicating through the platform with a mentor or expert once they have selected one of the Hackathon challenges and the technology on which their innovative solutions are based. Both teams and experts can receive digital notifications of one party's readiness to communicate with the other without having to be present during the seven Hackathon days.

- In addition to the digital content offered by the Hackathon, the website was linked to the Virtual Academy to help participants access all sorts of available courses to help them develop their ideas.
- The platform included additional features to process and analyze all the inputs and to generate a set of important data and statistics reflecting, for example, the level of participation, and the number and quality of ideas submitted by the participants. This year's platform features additional functionality to facilitate the process of tracking, processing, and selecting the best ideas.
- Work is underway to launch the Happiness Wallet, which will incubate winning and inspiring ideas so that partners can learn all the details of the ideas and access their presentations. The Wallet will help improve communication between stakeholders and intellectuals and facilitate adoption and incubation in the post-Hackathon phases.

Activation of Training and Guidance Program

The training and mentoring program continued in its hybrid form throughout February. The first 10 days of the month included a series of intensive training sessions by innovation and technology experts from academia and the private sector, which also included a number of global engagements and positively impacted the end result of inspiring ideas that emerged in the final presentations of all Hackathons.

In addition, the event received immense recognition from the judges for the various Hackathon tracks. Training sessions and workshops continued on daily basis in each of the seven Hackathons, with a variety of training content tailored to match the participating tracks.



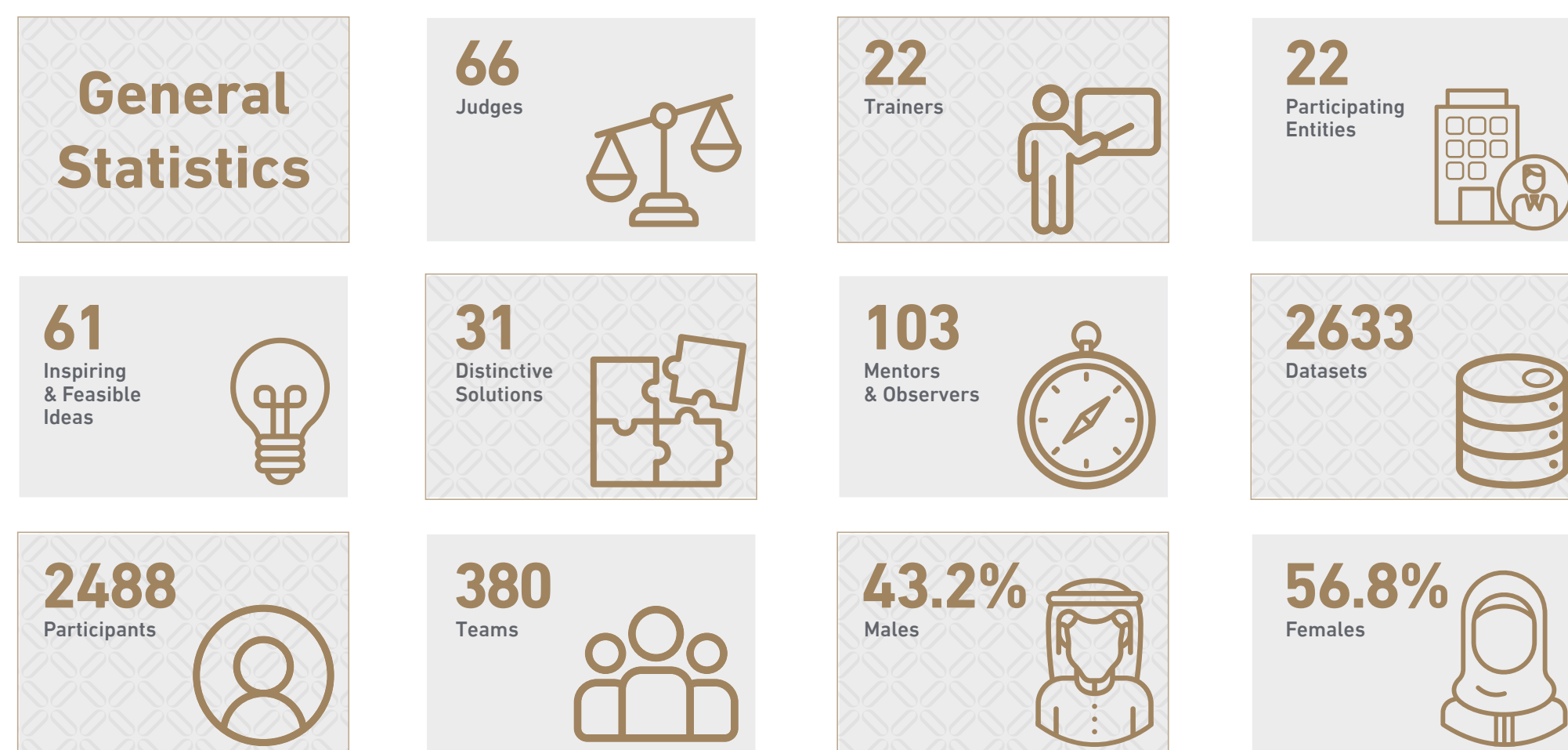
Chapter Two: Outcomes and Feedback from Participants

Hackathon Outcomes

The outcomes of this year's Hackathon reflect the outstanding success of its promotion among different segments of society. This was reflected in the participation of more than 2488 contestants, divided into over 281 teams, with Dubai, Sharjah and Abu Dhabi recording the highest percentage of participants. The presence of more than 103 observers and mentors from various partners effectively boosted the success of the Hackathon, as participation increased by 63% compared to last year. In addition, more than 22 trainers helped teams unleash the best creative ideas using open data.

These successes can be overviewed through concrete figures that reflect the efforts to continue to establish the UAE Hackathon as an annual event that aims to anticipate the future, promote the concepts of innovation and creativity for a better society, and develop solutions that contribute to the happiness of society.

The UAE Hackathon 2023 Outcomes:



Themes and Challenges Outcomes:

6 Main Themes / 48 Challenges	Number of Challenges	Number of Representative entities
We the UAE 2031	17	12
Establishing and consolidating the national identity	1	1
Environment and its sustainability	10	8
Developing the educational system, vision, indicators, and outputs	3	3
Accelerating Emiratization	7	7
Expanding the UAE's international economic partnerships	10	6

The Training and Mentorship Stage Outcomes:

19.5	Days of training and mentorship	22	Trainers
42	Workshops and training sessions	107	Hours of training content
103	Mentors and observers	8736	Technical and Substantive inquiries

Arbitration Stage Outcomes:

21	Judges for school students track	39.7	Hours of evaluation and arbitration
41	Judges for university students and entrepreneurs track	32	Representative entities in the panel of judges
4	Judges for researchers track		

First Place Winner at UAE Hackathon Tracks

The Startups and Entrepreneurs Track

The **“Mental Life”** team has won first place in the Startups and Entrepreneurs track. The project aims to make studying, playing, and completing daily life tasks easier for everyone, including people of determination. The core of the project is to complete tasks, play games, and take exams without having to exert physical effort, using SVM only, which is a machine learning technology that memorizes everything they think of.



University Students Track

The **“Sustainable Aquaponic”** team from the Higher Colleges of Technology, Sharjah also won first place in the university students track.

The team developed a proposed aquaponics system that is a mutually reinforcing integrative system between fish and hydroponics with 100% organic production as no pesticides or chemical fertilizers are used. Excess products can be sold to the community, supporting community models of productive families and self-sufficiency. This project fulfills the triple bottom line of sustainability: environmental, societal, and economic dimensions because it solves all the problems mentioned above (pollution, energy, water, and food demand, as well as traffic congestion and time wasting, fast consumable products, etc.).



School Students Track

The **“Eduverse”** team from Khalifa Bin Zayed Secondary School in Abu Dhabi won first place, enabling them to develop an innovative interactive platform that provides students with a comprehensive solution for acquiring technical skills such as programming. The platform brings together a variety of websites in one place

to help students access the best educational resources available. "Eduverse" aims to make the educational process fun, interactive, and accessible to students of all ages through its game-based curriculum.



Researchers Track

The researchers track also included the selection of four research projects that were chosen as the best research projects to provide them with an incubation period of six months to develop and apply their research projects in the field. The best research projects were as follows:

1. Research project on Dubai University Radio Research Laboratory.
2. Developing carbon capture technology in an innovative way - University of Sharjah.
3. Expert systems for choosing the location of emergency service facilities - University of Sharjah.
4. Research Project to Develop the Education System (Smart Education) - UAE University.

The Distinctive Features of the UAE Hackathon 2023 in its Hybrid Edition

The UAE Hackathon 2023 has continued to directly contribute to its goals of anticipating the future and being part of shaping a sustainable green economy for the country in the next 50 years.

The UAE Hackathon was presented as a hybrid edition and followed the same approach as last year. With this, the UAE Hackathon established itself as a model for continuity in daily life to get the optimum benefit of the Hackathon processes, and as a crystal-clear example of a project based on digital transformation and digitalization within the country.

The UAE Hackathon journey was launched at the beginning of February with the announcement that it was open for participation on February 1. This was the point of departure of all the Hackathon events throughout February, culminating with the closing ceremony and announcement of winners on March 7, 2023, at the Dubai Men's College - Higher Colleges of Technology conference hall.

The UAE Hackathon Promotion Stage

From the last week of January to February 10, the Telecommunications and Digital Government Regulatory Authority (TDRA) held a series of hybrid and virtual introductory sessions with various government entities and universities in the UAE before announcing the opening of participation in the Hackathon to all UAE residents and the launch of the sixth edition of the UAE Hackathon.

During the first trimester in February, which included the training and mentorship stage, a series of introductory sessions and workshops were held to demonstrate what Hackathon 2023 is, its distinctive themes, and the recommended emerging technologies for 2023. Many young people from government entities employees, universities, and schools across the UAE attended these sessions.

Consequently, all information about the hybrid edition of the UAE Hackathon was made available and all questions and inquiries from participants about themes, challenges, and announced emerging technologies were answered.

In parallel with the introductory sessions of the Hackathon, a series of technical sessions and workshops on the use of various technological tools took place during the rest of the training and mentorship stage duration, with the participation of a group of technology experts from the private sector who informed the Hackathon community about the latest updates in the world of technology. They also gave participants tips on how to employ these updates in developing their creative ideas, paving the way for them to participate more effectively.

Training and Mentorship Stage

The training and mentorship stage lasted throughout February in a hybrid and virtual form, as all technical sessions and workshops were held virtually during the first 10 days of the month. The 7 Hackathons also offered a series of guidance sessions for all participants during the first and last days. This stage included a series of workshops and trainings in technology, innovation, and entrepreneurship to build capacity, provide practical information, and guide participating teams in brainstorming and developing their solutions. This stage also included training on how to properly prepare for the final presentation and finalize a business model and financial structure for the projects presented, as well as finalizing the presentation data on the Hackathon website.

This stage was remarkable for a breakthrough in the presence of more than 100 mentors and experts from government entities who proposed the Hackathon challenges or from academic institutions who acted as a robust addition to the mentorship stage with their expertise and academic knowledge that helped evaluate and develop ideas into more effective and practical solutions. Mentors from private institutions and leading technology companies left a distinct impression by

supporting, training, and mentoring the different teams in using a set of tools or different digital platforms, all of which helped them improve their creative ideas.



Re-enacting part of the Hackathon as a two-day event, in collaboration with the seven partner universities in the UAE, enabled effective communication between participants and experts and contributed to the quality of information exchange and the proposed recommendations for the teams as they worked on their creative

ideas. The hybrid system achieved a tremendous ability to manage and respond to more than 8,000 technical and professional requests made by the mentors and experts in attendance over the course of the Hackathon days - an increase of nearly 50% from the previous year.

Evaluation and Arbitration Stage

In a highly competitive stage between the various participating teams in the four tracks, 311 teams, divided into 10 teams in the Researchers Track, 46 teams in the Startups & Entrepreneurs Track, 92 teams in the University Students Track, and 136 teams in the School Students Track, presented their inspiring ideas and creative solutions to a selection of judges representing government entities, academic institutions, and the private sector. This stage lasted seven days, divided into 7 Hackathons, during which it was a great challenge for the judges to select the best ideas from all those presented.

The largest turnout for this stage was among the School Students track, with the participation of 136 teams tackling all 48 proposed challenges. In this stage, there was intense competition between the different teams, which was finally decided in favor of the “Eduverse” team from Khalifa Bin Zayed Secondary School – Abu Dhabi. The number of participating teams from the School Students track increased threefold compared to the previous year, and for the first time, many national schools also participated in the Hackathon.

The Closing Ceremony

In its sixth edition, the Telecommunications and Digital Government Regulatory Authority (TDRA) celebrated the winners of the UAE Hackathon 2023 “Today’s Challenges, Tomorrow’s Solutions”. The ceremony took place at the conference hall of Dubai Men’s College, Higher Colleges of Technology, in the presence of H.E. Eng. Majed Sultan Al Mesmar, TDRA Director General, the participating teams, and representatives from government, academia and private entities.

The ceremony included an exhibition of the winning inspirational ideas of Hackathon 2023 four tracks, as well as the distinctive projects that emerged from the previous Hackathons and were transformed into real projects that serve the community.

Many success stories were presented, such as the first-place winning team of the Startups & Entrepreneurs track: HCMS.ai. from the previous year, which was able to provide an initial financial investment of 2 million dirhams for a project. The system can match the skills offered in educational institutions with the skills needed in the labor market. The goal is to create a system that reduces the skills gap between the labor market and educational institutions using artificial intelligence and data science. The system has successfully developed a fully standardized classification of occupations that includes skills and competencies for the UAE labor market obtained through natural language processing (NLP), machine learning, and industrial intelligence.

Along with other inspiring projects, “WeGrow” has attended as a success story that developed a highly user-friendly mobile app that aims to provide livestock farmers/producers with an effective platform to manage their livestock and help with multidimensional issues and characteristics. The application has all the important features and the sections and variables in the application are effectively defined by the requirements of livestock breeders/producers. One of the most important sections of this app is livestock management, which helps users track livestock from different aspects such as health, age, gender, production, reproduction, breed, and farm management, and users can also manage their finances independently using this app. H.E. Eng. Majed Sultan Al Mesmar, TDRA Director General was very pleased to see the development of ideas inspired by the hackathon in recent years to startups and projects on the ground with the necessary support and guidance.

The ceremony announced the winning teams that had offered the best innovative and creative solutions. “Mental Life” won the grand prize of “Fifty Thousand Dirhams” in the Startups and Entrepreneurs track, which involves completing tasks, playing

games, and taking exams without engaging in physical activity, only with the help of machine learning technologies that will memorize everything they think of using SVM machine learning technology.

First-place projects were also announced for University Students and School Students tracks. The Sustainable Aquaponics team won first place for university students track. The team developed an aquaponics system that is a mutually reinforcing integrative system between fish and hydroponics with 100% organic production as no pesticides or chemical fertilizers are used. As for the school students track, the Eduverse team won first place with its project of an innovative interactive platform that provides young people with a comprehensive solution for acquiring technical skills such as programming.



Feedback from Participants

This year, the feedback from the participants was outstanding and positive. Everyone expressed their happiness with the return of the Hackathon as a hybrid edition and its existence in each of the 7 emirates. They also praised the development of the UAE Hackathon platform, which hosted all the creative ideas of the teams, and the development of the registration process, team building, contacting mentors and experts, and technical support, up to the final procedures, such as the digital receipt of certificates, to ensure the continuity of the application of the digital transformation strategy to the sixth edition of the UAE Hackathon. These were not the only moments of fascination and happiness, participants also praised the collaboration with the TDRA organizational team, its ability to inspire and motivate the different teams, and the facilitation of all the obstacles and difficulties they faced, which contributed to improving the outcomes of their ideas. Above all, the majority of the participants recommended adding more data to the Bayanat.ae data portal so that they could benefit from more graphical analysis to achieve the best outcome of their ideas.

Participants expressed appreciation for having a large number of mentors and experts from government entities and the private sector available to them this year, which made it easier for them to understand the data and properly adjust its use. Participating teams also received more support and mentorship while working on their ideas.

All participants wished that this success would continue in the coming years so that they could participate again. The Telecommunications and Digital Government Regulatory Authority (TDRA) was motivated to plan a second phase of the Hackathon where the winning and promising ideas will be developed in collaboration with various incubators such as the Business Incubator of Higher Colleges of Technology, University of Dubai, and Ajman University, to ensure continuity in building the capacity of innovators and developing their ideas to transform them for the local market. In this context, the Happiness Wallet has been activated, dedicated to inspiring ideas

and serving as an interface between teams, their ideas, supporting entities, and business incubators and accelerators willing to support and adopt these ideas.



Chapter Three: Milestones

The strenuous efforts of the TDRA team, in collaboration with all government partners, academics, and the private sector, have been crowned with success, reflected in a series of achievements similar to those of previous years.

Brainstorming Workshop for the UAE Hackathon Design

TDRA held a brainstorming workshop in June 2022, inviting all e-governments, local and federal entities, national universities, and some private sector technology companies to achieve a more dynamic version of the Hackathon that fully meets the country's visions and strategies over the next 50 years. More than 50 representatives attended the workshop and shared their opinions and recommendations, which were later incorporated into the design of the 6th edition of the UAE Hackathon to make it more comprehensive to current challenges and more attractive to all segments of society in the seven emirates.

The recommendations were clearly considered in the design of the UAE Hackathon 2023 through the development of a new track for researchers. This track encourages all researchers working in academic institutions to participate in their practical research that aligns with one of the challenges proposed by the participating government entities. The "Incubation phase for inspiring ideas" was activated based on the recommendations for building strategic partnerships with several business incubators in the country. In collaboration with a group of national incubators and accelerators such as the incubators of Higher Colleges of Technology, University of Dubai, and Ajman University. The incubators and accelerators are seeking to adopt successful and inspiring ideas, providing all means of technical and professional support for their projects to become businesses, and facilitating the registration of their companies and their entry into local markets.

Workshops for Government Entities and Institutions

For the third consecutive year, the UAE Hackathon hosted a series of workshops for government entities and institutions that were virtually conducted to make the Hackathon easily accessible. These workshops aimed to help government entities and institutions identify and select the most critical challenges they face and add them to the 6 themes of the UAE Hackathon 2023. The formulation of the challenges included more detailed descriptions with up-to-date databases to help understand the challenges and their root causes, making it easier for participants to offer more realistic solutions. In addition, this year's version of the Hackathon increased the number of challenges in the areas of sustainability, digital transformation, economics, education, and Emiratization.

Digital Archiving

In continuation to the digitization approach from previous years, the UAE Hackathon 2023 provided extensive media coverage to document all internal events before, during, and after the Hackathon in the form of videos and photo albums that documented the training content provided by the UAE Hackathon experts. The Hackathon owns a large digital library full of sustainable, rich content to help participants develop their creative solutions in all upcoming Hackathon editions.

The Hackathon platform was a mainstay of digital archiving, serving as a repository for preserving and storing the data of participants and their teams, as well as the files and links to their inspiring ideas. This facilitated access to all data at any point in the future. In addition, the protection of such information was enhanced by a special security policy that allowed only the relevant people to access this data or information.

In addition, there was extensive coverage of the Hackathon events that captured the enthusiasm of the youth, the interactions, and communication with mentors and

trainers while developing their ideas through the various platforms offered in this Hybrid Hackathon edition, such as Slack and Zoom applications and the hackathon website. In addition, many scenes were captured as the different teams excitedly presented their ideas to the judging panels, and entire scenes of joy and enthusiasm were filmed among the different participants and segments. In this way, the sixth edition of the UAE Hackathon complemented the success of the previous five editions and became unique in terms of digital archiving.

A breakthrough in the number of participants from school students

The results of adequate Hackathon preparation were realistically reflected in terms of school students track. The goal is to engage diverse students in the Hackathon activities, foster their creative skills, and raise their awareness of the challenges of the future, of which they are an essential part. This year's Hackathon statistics recorded a steady increase in the number of school student participants by three times compared to last year, confirming the Hackathon's ability to provide a platform for all participating groups to benefit from expanded Hackathon activities in the UAE.

Fruitful strategic collaboration with the Emirates Foundation for School Education and good preparation has improved a practical plan involving schools in the seven emirates to motivate and encourage students from national schools to participate with high intensity. This is one of the most important achievements of the sixth edition of the UAE Hackathon.

His Excellency Mohammed Al Qassim, Director General of the Emirates Foundation for School Education, was keen on attending the closing ceremony of the UAE Hackathon to honor the winning teams from the school students track and their supervisors, and to leave a good impression on the participants.

TDRA has launched the **"Public Consultation for Measuring Effectiveness of UAE Digital Government in the Delivery of Public Services"** among its objectives.

The survey consists of 2 main sections divided into 48 questions. The first section included 7 short answer questions. The second section included 41 Likert scale questions.

The first section of the survey aimed to collect social and demographic data on participants to help researchers categorize them into subgroups, determine if the sample was representative, and attempt to locate the impact of background characteristics and obtain participants' responses and perspectives on the future of the UAE. The second section, on the other hand, aimed to gather the UAE Hackathon community's feedback and perceptions about digital government, its public value, their current experiences with it, their confidence and trust in using it, and their suggestions for improving the user experience.

The survey reflected the involvement of all segments of participants, underscoring the spirit of collaboration and keenness of the UAE Hackathon community in sharing their opinions and recommendations to help shape the future of government services.



Digital Transformation of the Internal Processes of the Hackathon

The development of the UAE Hackathon Digital Platform continued as the central pillar through which all internal processes of the Hackathon events were handled. The website greatly facilitated the registration process for participating teams and their follow-up. It also enabled communication between mentors, depending on their specialization and experience, and participating teams in need of that expertise through a direct link on the website. The website also allowed the final ideas of participating teams to be stored and documented, which helped reduce face-to-face interaction between workgroups and participating teams. It also enabled a new, more appropriate evaluation method to evaluate each idea according to its track. The platform made it possible to host all different arbitration committees, which facilitated the arbitration process of the teams and accelerated the process of presenting the results to the participants in no more than twenty minutes.

Digital transformation relieved internal processes of printed materials, such as promotional materials and guides, without impacting the Hackathon's operations during its implementation in February.

Private Sector Effective Contribution

For the first time, companies from the private sector participated in the UAE Hackathon 2022, including Oracle, Unity Technologies, Amazon Services Web, CryptOasis and Serco Group PLC. This multiplies the list of companies that contribute to supporting UAE Hackathon activities annually by sharing their expertise and knowledge with participating teams, whether through training workshops or by providing mentorship hours during the seven Hackathons days.

This is a proof that global and local companies consider the UAE Hackathon as one of the most important catalysts for innovation and entrepreneurial concepts,

enriching the knowledge of emerging technologies and considering the Hackathon as one of the most important sources of young talents.

Activating the Happiness Wallet for Hosting Inspiring Ideas

In continuation of the Happiness Wallet's role as host of the UAE Hackathon for inspiring and viable ideas, it is now ready and prepared to receive inspiring ideas on a more dynamic level, having achieved a breakthrough in the quality, quantity, and diversity of ideas. The Happiness Wallet is designed to help connect owners of inspiring ideas with government agencies, incubators, and business accelerators ready to support and adopt their ideas. It will also archive and develop these ideas with their owners until they reach their full potential and track the various stages of development.

The Happiness Wallet is looking forward to hosting tens of ideas from the previous Hackathons. It is also witnessing strong participation from government entities looking for innovative ideas that offer realistic and sustainable solutions to the challenges they propose, reflecting their confidence in the Hackathon's results.

Launching of the Incubation Stage for Winning and Inspiring Ideas

In parallel with the launch of the Hackathon, TDRA announced the activation of a new stage that will last 4 to 6 months. This stage is responsible for providing technical, substantive, and financial support to shortlisted inspiring ideas from researchers, entrepreneurs, and university students tracks. This will be done in collaboration with incubators across the 7 Emirates, such as the Higher Technical Institute incubator, Ajman university incubator, and Dubai university incubator.

The joint ventures have helped provide participating teams with the opportunity to engage with the best incubators suited to the nature of their idea, facilitating

the process of adopting and developing their ideas. The incubation phase will end with the registration and inclusion of a number of companies at the GITEX 2023 Exhibition in Dubai in October, so that they can present their projects and startups to a wide network of investors and have the opportunity to expand their network of collaboration with potential new partners.

At GITEX 2023, the first winner of the Researchers Track will be announced, receiving a financial prize of 100 thousand AED as an initial financial incentive to support the transformation of the research project into a commercial startup.

Enhancing communication within the UAE Hackathon Community

Aspiring to continue the success and promote the UAE Hackathon 2023 within the youthful society by motivating and inspiring them, and to have the base of the UAE Hackathon community by the end of the Hackathon 4 edition, the Telecommunications and Digital Government Regulatory Authority (TDRA) is currently striving to activate the UAE Hackathon Community in a form that suits the current circumstances, overcome all obstacles, and realize the concept of remote innovation that aims to be in contact with all UAE Hackathon participants over the six years. Maintaining communication helps those interested in the Hackathon community to receive a different range of services, training courses, and digital activities. It also helps them acquire more skills and knowledge to gain the kind of innovative thinking that helps solve challenges that members of society face in their professional lives and within their work entities.



Chapter Four: Recommendations

The expansion of the open data portal and increase in the quality and diversity of available data.

- To support the development of service level agreement with the various government entities and institutions that submit their open data through the bayanat.ae team to establish standards and methods of dissemination, as well as forms of preliminary data presentation.
- To agree with government institutions and ministries to publish their own data on the Bayant.ae open data portal, and to adopt the most modern methods of submission and data presentation.
- To support government institutions and ministries in presenting data digitally to make it easier for innovators to use and analyze such data, rather than publishing it in a readable format in their annual reports and statistics.

The establishment of transparency in the availability of data and information

- To recognize government entities that have contributed to the dissemination of data in an available framework and to provide motivational awards for the highest quality, most sought- after, and most effective data.
- To work in collaboration with the Open Data Portal Bayanat.ae working team to develop an annual plan to encourage government agencies to publish data.
- To conduct a regular discussion with government entities on plans to monitor mechanisms for data collection, management, and participation, and to review criteria for dissemination of this data.

The enhancement of the concept and culture of government innovation

The concept of government innovation is an essential part of the government's modernization and transformation initiatives, which are designed to enable all government entities to become more flexible, structured and technically empowered. Thus, the culture of innovation can be solidified by:

- To support the free flow of data that enables innovation in government and emphasizing the importance of transparency in preparing and implementing government policies.
- To place innovation as a priority on the strategic agenda of all government entities and motivating each government entity to develop detailed strategic plans that include identifying and implementing innovative solutions to develop their services and overcome existing challenges.
- To create a mechanism to share innovations and facilitate the process of stakeholder participation by activating the concept of inclusive innovation.

The continuation of building partnerships with the private sector and the nation's business incubators

Partnerships are key factors in the success of the UAE Hackathon work system. Complementing the experience of working with the private sector and the country's business incubators, especially after this experience proved to be a great success in the previous editions, these collaborative opportunities are proving to be an important building block for supporting the promising ideas of the UAE Hackathon, as well as for providing stimulating platforms and working environments that help develop ideas and enhance the skills of their holders to an extent that increases the chances of successfully transforming ideas into sustainable businesses.

Appendix 1: Hackathon Winners

Hackathon first-place winning teams of each track across the UAE

Track	Team	Awards
Four Shortlisted Teams of Researchers Track	<ol style="list-style-type: none"> University of Dubai Wireless Communication Research Lab Droxide - Carbon Dioxide Redefined Expert Systems for Emergency Service Facilities Site Selection Smart Education 	100,000 AED
Startups & Entrepreneurs Track	Mental Life	50,000 AED
University Students Track	Sustainable Aquaponic	25,000 AED
School Students Track	Eduverse	10,000 AED

Winning Teams of the UAE Hackathon Tracks - Second to Tenth Place:

Award	Startups & Entrepreneurs Track	University Students Track	School Students Track
2nd Place	Asma'ak: A Sign Language Translator	Mosef	UAE Happiness Center Robot: Facial Expression Recognition ML Model
3rd Place	Afyah	E-s3afa	AIAL
4th Place	Neulink	Katara	Meta Imam
5th Place	Thiqa Tutoring Team	Waffir	Al Zawra'a2 Innovator
6th Place	Co-Own	Flybulance	Recycling Bin Bot
7th Place	Smart UAQ	I 8	Mohammad Bin Rashed School - C1
8th Place	Hasaad	Miles Ahead	Electricity From Desert
9th Place	Innovators in the first line of defense	Roots	Elitebirds
10th Place	Ajman Municipality	FSR	EHA (Emiratis Heritage Application) Team

Appendix 2: Nationalities of participants in the UAE Hackathon

The UAE Hackathon is an international event where participants come from different countries and diverse cultural backgrounds. More than 49 nationalities from the six continents of the world participated in the UAE Hackathon this year

Afghanistan	Colombia	Iraq	Mauritania	Palestine	Sudan
Algeria	Comoros	Japan	Mexico	Philippines	Sweden
Antigua & Barbuda	Croatia	Jordan	Morocco	Poland	Syria
Argentina	Dominica	Saudi Arabia	Nepal	Romania	Tunisia
Azerbaijan	Egypt	Lebanon	New Zealand	Russia	UAE
Bahrain	Germany	Libya	Nigeria	Somaliland	UK & Northern Ireland
Bangladesh	India	Lithuania	Oman	South Africa	USA
Canada	Iran	Malaysia	Pakistan	Sri Lanka	Yemen
China					

Appendix 3: Inspiring ideas in the UAE Hackathon

This year, the UAE Hackathon was distinguished by the presence of many inspiring ideas that contributed to the enhancement of the quality of ideas produced during the Hackathon activities.

Track	Team	Research project on Dubai University Radio Research Laboratory
Researchers Track	Challenge	What are the proposed ideas and solutions to support an integrated system for entrepreneurship and encourage establishment of national startups in the IT and telecommunication sector?
	Idea Description	Orthogonal frequency division multiplexing (OFDM) and multiple-input multiple-output (MIMO) structure is used to develop a low-complexity secure communication system based on random interleaving of OFDM-MIMO parallel data streams using a secret sequence. Furthermore, the proposed system is highly immune to multipath fading, jamming and impulsive noise due to the frequency, time, and space diversity inherent in this system.
		The new system can be used for applications that require joint security and anti-jamming functions with low computational complexity. The project will contribute to the advancement of various wireless technologies in the UAE, including the Industrial Internet of Things (IIoT).
	Team	Developing carbon capture technology in an innovative way - University of Sharjah.
	Challenge	

Researchers Track

What are the proposed solutions to help realize Carbon neutrality in the UAE?

Idea Description

Droxide, a modified drone and remotely operated vehicle (ROV) technology that uses a modified chemical solution to capture CO2, has been developed as a new DAC method. Droxide is 91% efficient and 7.28x less expensive than traditional methods, producing a chemical product that can be used in industrial product manufacturing. Droxide has the potential to capture promising amounts of CO2 while covering large areas of high CO2 concentration while consuming way lower than 1200 kilowatts of power that DAC consumes. The study presents a series of experiments investigating the potential of Droxide in carbon capture, using a modified sustenance that could absorb 123.2kg of CO2 with only 17.6kg of the solution. The generated waste, such as heat and water, would be converted into electricity or filtered and reused. Droxide will also incorporate advanced technologies of projection mapping and IoT based solutions for autonomous. Prototype is currently in the process and further research is viewed with the potential of incorporating cheaper metal organic frameworks with high efficiency. This research will potentially be beneficial for the United Arab Emirates to minimize its carbon footprint significantly and become a leader in the space of CDR technologies. With the upcoming COP28, it becomes even more vital for such carbon capture solutions to be advanced for utilization.

Team

Expert systems for choosing the location of emergency service facilities - University of Sharjah.

Challenge

What are the proposed solutions for using and employing the

Researchers Track

available formal data and information in making the right decisions?

Idea Description

This decision-making model presents the perfect solution and different options that allow the government and entities to choose the best location for the new facilities that covers specific spaces for the services offered by these facilities, taking into account the existence of the previous facilities.

Team

Research Project to Develop the Education System (Smart Education) - UAE University

Challenge

What are the proposed ideas and solutions to develop education curricula in universities and schools in a way that encourages and supports the culture of innovation and entrepreneurship among students?

Idea Description

The use of Artificial Intelligence (AI) in education has the potential to revolutionize traditional teaching practices. There is an opportunity to develop a real-time vision-based smart classroom that autonomously monitors students' attention and emotions to provide live graphical feedback to instructors (which gradually transforms into a recommendation system). Instructors can use this feedback/ recommendation to more accurately assess student attention and tailor their teaching approach to the needs of individual students, leading to better student academic performance and improved teacher skills. The proposed system is able to assign numerical scores to students for their concentration levels and offers a promising solution to the challenge of tracking student attention in large classrooms.

Startups & Entrepreneurs Track	Team	Mental Life
	Challenge	
	What are the proposed ideas and solutions to encourage students to get interested in programming skills and emerging technologies, and boost their competence and readiness in these fields?	
	Idea Description	
	The idea is to make it easier for everyone, including people with disabilities, to study, play and do everyday tasks. It's about doing tasks, playing games, and solving exams without having to make any physical activity, just by using a machine learning technique that will memorize everything they think about using the MSV machine learning.	
	Team	Asma'ak: A Sign Language Translator
Challenge		
What are the digital solutions to develop the government work systems and accelerate the procedures and the government services?		
Idea Description		
Asma'ak: The first of its kind Sign Language Translator app that recognizes Emirati Sign Language (ESL) expressed through hand gestures and translates them into text and speech in real-time and in multiple languages. The app is powered by AI-based technology and was developed using the Python programming language. Asma'ak is a free, on-demand translation service that aims to improve communication between deaf and hearing individuals to promote greater inclusion and engagement within society.		

Startups & Entrepreneurs Track	Team	Afyah
	Challenge	
	What are the suitable tools to help and encourage community individuals to adopt healthy and beneficial habits?	
	Idea Description	
	The mobile application has four main sections. In each section there are different motivational activities to encourage individuals to lead a healthy lifestyle. The first section is Dietary, where various recipes are provided for patients with chronic diseases, for muscle builders and lunch boxes. A calorie calculator for food is also included in this section. The second section is the Sportage section, where training coaches, chats from team members and Virtual Reality themes will be available. The third section will provide an informative platform for health knowledge and cancer screening programs in the UAE. This area will also have a BLS course available for the public. The fourth section will provide general parameter knowledge on distance of activities performed, heart rate, and daily exercise time. The fifth section will contain a shopping store that will provide different items individuals need for their new lifestyle.	
	Team	Neulink
Challenge		
How can we ensure that every dataset is accurate, complete, reliable, and timely?		
Idea Description		
Neulink helps healthcare organizations through Software-as-a-Service, designed to provide an all-in-one platform, fast and efficient flow, and priority support and updates.		

Startups & Entrepreneurs Track	<p>Our product aims to link organizations to government programs such as (Eclaim, Tatmeen and Riayati), in addition to multi-channel integration between chains of organizations.</p> <p>Part of our roadmap is to target pharmacies first. We currently have 27 pharmacies ready to use our product once it is up and running and we will be testing our beta version with 4 of them to get the product market ready.</p>	
	Team	Thiqa Tutoring Team
	Challenge	
	<p>What are the proposed ideas and solutions to encourage students to get interested in programming skills and emerging technologies, and boost their competence and readiness in these fields?</p>	
	Idea Description	
	<p>Thiqa Tutoring is a platform that matches users with the best verified, certified, and affordable tutor for their children at their doorstep or online via an engaging VR classroom. Thiqa Tutoring uses virtual reality/mixed reality technology to provide engaging online tutoring. We currently offer our services only in Abu Dhabi and can provide tutoring worldwide by expanding to other cities or countries/ VR.</p> <p>Student Side: provides students with a trusted, certified, and affordable tutor at their home or virtually.</p> <p>Tutor Side: provides a trusted platform for tutors to meet with students in person or online, depending on their time and availability.</p>	
Team	Co-Own	

Startups & Entrepreneurs Track	Challenge
	<p>What are the proposed ideas and solutions to help investors make the right decisions about property investment?</p>
	Idea Description
	<p>The real value of developing such a solution lies in synthesizing complex data points from multiple sources, identifying patterns and relationships that impact investment performance, and the risks associated with these types of assets. By deploying the latest innovations in artificial intelligence (AI), we are giving ourselves a huge edge over the methods currently available on the market, which rely on human input and manual labour. Underpinned by real-time real estate data and insights, we will offer transparency at every stage of the process.</p>
	<p>Currently, we are in the process of being established as a regulated firm by Dubai Financial Services Authority (DFSA), to conduct financial services for arranging deals in investments.</p> <p>We are in discussions as well with TDRA in regards to UAE's Federal Decree by Law No. 46 of 2021 on Electronic Transactions and Trust Services. As per the press release of this announcement from TDRA website dated on 28/11/2021, in the last paragraph of the article it states: "The new law enhances the facilitation of licensing processes based on new services that support digital transactions. It allows many civil and commercial transactions in real estate such as renting, buying, selling, and contract modification."</p> <p>Originated in Dubai, we are building a regulated business model that can be extended to several markets in the Gulf Cooperation Council (GCC) and around the world.</p>
	Team

Startups & Entrepreneurs Track	Team	Smart UAQ
	Challenge	
	What are the best, simplest, and most effective methods to follow up on trade control of economic facilities considering the differences of its trade activities?	
	Idea Description	
	Raqeeb project aims to easily monitor commercial activities as quickly as possible using modern technologies at the lowest possible price and introducing a financial return to the concerned authority.	
	Team	Hasaad
Challenge		
How can we increase communication and spread agricultural awareness among the beneficiary and stakeholders in Dubai?		
Idea Description		
Introducing Hasaad, an innovative urban farming platform designed to bring together a community of like-minded individuals passionate about growing their own food and embracing a sustainable lifestyle. Hasaad empowers users by leveraging advanced AI technology to monitor crop growth cycles and offers a wealth of features that enhance the overall farming experience.		
By joining Hasaad, users can create personalized profiles to showcase their urban farms, connect with other community members, and share their unique experiences. The platform encourages interaction through discussion forums, allowing users to exchange valuable tips, ask questions, and engage in meaningful conversations around farming-related topics.		

Startups & Entrepreneurs Track	Our AI-driven plant monitoring system analyzes images and data from users' farms, providing tailored recommendations to optimize plant growth and detect potential issues before they escalate. Coupled with an extensive library of educational resources, Hasaad equips users with the knowledge and tools they need to become successful urban farmers.	
	Hasaad also integrates gamification elements, rewarding users with badges, points, and other incentives for participating in various activities on the platform. This fosters a friendly and motivating environment, keeping users engaged and committed to their urban farming journey.	
	The platform features a convenient marketplace where users can buy and sell seeds, tools, plants, and other essential supplies, supporting local and house farming, vendors and further fostering a sense of community. With success stories and testimonials from satisfied users, Hasaad aims to inspire more people to join the movement towards a greener, healthier, and more sustainable future.	
	Available as a mobile app, Hasaad makes it easy for users to stay connected, receive notifications, and manage their urban farms on the go.	
	Team	Innovators in the first line of defense
	Challenge	
What are the proposed solutions to help realize Carbon neutrality in the UAE?		
Idea Description		

Startups & Entrepreneurs Track	<p>Our idea is to use Satellite and IoT for Fire early detection in areas subjected to hazards of fire combining.</p> <p>Satellite imagery will be used to detect areas of intense heat and smoke, which are indicators of a potential fire. By analyzing satellite data, patterns of change in temperature and vegetation can also be identified, providing early warning signs of potential fire hazards.</p> <p>IoT devices, such as sensors and cameras, will be placed strategically in high-risk areas to detect the presence of smoke, heat, or flames. These devices will communicate with each other and with a central monitoring system to provide real-time data on fire conditions.</p> <p>By combining satellite imagery and IoT devices, fire departments and emergency response teams can detect fires early and respond quickly to prevent them from spreading. This can help minimize damage to property and reduce carbon emission.</p> <p>Furthermore, the collected data can be analyzed and used to develop predictive models to help identify areas that are most susceptible to fires. This can help the authorities take preventive measures such as dry brush clearing and dead trees or increasing the frequency of patrols in high-risk areas.</p>	
	Team	Ajman Municipality
	Challenge	
	<p>How can we increase communication and spread agricultural awareness among the beneficiary and stakeholders in Dubai?</p>	

Startups & Entrepreneurs Track	Idea Description	
	<p>Our idea is to develop a mobile application to provide awareness and services and facilitate the customer's journey and the reliability of the government and operators of the agricultural sector for those interested in the agricultural sector.</p> <p>The application consists of several stages through which we can spread awareness of the problems facing farmers and how to confront them as well as methods of healthy farming and preservation of plants through a range of privileges from the application to the user.</p>	
University Students Track	Team	Sustainable Aquaponic
	Challenge	
	<p>How can we increase communication and spread agricultural awareness among the beneficiary and stakeholders in Dubai?</p>	
	Idea Description	
<p>The proposed aquaponics farming is a synergistic integration of fish farming and hydroponics with 100% organic produce as no pesticides or chemical fertilizers are used. Excess products can be sold to the community, supporting the "Producing Families" and "Self-Sufficiency" social models.</p> <p>This project fulfils the Triple Bottom Line of Sustainability: Environmental, Societal, and Economic dimensions, as it solves all the afore- mentioned problems (especially pollution, energy, water and food needs, traffic congestion and time wastage, fast perishable products, etc.).</p>		

University Students Track	Team	Mosef
	Challenge	
	How can we provide ambulatory services according to classification and priority of the emergency cases, and quickly rescue it through the best use of the available resources?	
	Idea Description	
	<p>An app that encourages the democratisation of first aiders by connecting them with ambulance departments to provide faster and immediate medical intervention. The details of the case report and address will be directly forwarded from the ambulance department to the app system to search for certified first aiders nearby and call them using an automated bot machine to notify them, view their app, accept, or decline the case and view all the necessary details immediately if possible. The app will provide first aiders a user-friendly platform that will have a navigation system and many other features and tools to achieve the project's objectives which are:</p> <ul style="list-style-type: none"> • Introducing a new approach to faster medical intervention • Preliminary diagnosis before ambulance arrival, which will save the ambulance time • An approach to incentivize and recognize the efforts of first aiders • Recognize non-emergent cases that do not require ambulance intervention 	
Team	E-s3afa	
Challenge		
What are the proposed solutions to help realize Carbon neutrality in the UAE?		

University Students Track	Idea Description	
	E-s3afa is a national project based on converting palm fronds from worthless products into valuable products, which are animal fodder that enhance food security in the UAE. The project prevents the negative practices of burning palm fronds that lead to air pollution.	
	Team	Katara
	Challenge	
	What are the proposed solutions to help realize Carbon neutrality in the UAE?	
Idea Description		
The CO2 detection drone will use the accumulated data to raise carbon footprint awareness as well as help companies and governments reach carbon neutrality goals. The collected data will be displayed in an app that can also be used by consumers. The AI will use machine learning and filtering so that the drone covers relevant areas and predicts CO2 emissions using machine learning. The data will be stored externally using cloud computing. The project will provide an open data source for consumers to raise carbon footprint awareness, as well as help governments and companies provide aid in achieving net-zero by 2050.		
Team	Waffir	
Challenge		
How to track and calculate the wastage of many trade activities in the duty free spots in Dubai airports especially (retail and food outlet spots)?		
Idea Description		

University Students Track

Within the UAE, on average, a person wastes around 225 kg of food each year, and the food wastage is estimated to be around 3.2 million tons, around 38 percent of the food prepared each day in the UAE ends up being thrown and this accounts for 8 percent of all greenhouse gas emissions in the country, with the annual value of food waste estimated to be around 14.7 billion dirhams.

Waffir focuses on providing an opportunity for people and restaurants to make use of food that would otherwise be wasted. The app provides an option for catering industries and businesses to donate or sell their surplus dishes at discounted rates, benefiting both the restaurants and the customers. This method reduces food waste throughout the country while providing customers with budget-friendly dishes for their next meal. In addition to buying food, customers would also be able to donate certain dishes as charity to others, to support those in need.

In conclusion, our business is easily scalable and profitable. The demand is there, all it needs is an app and a press of a button. Everyone is a winner, the restaurants, the society, us, the company, the economy, and most importantly the environment. So, what are we waiting for, let us get the same taste with less waste.

Team	Flybulance
Challenge	
How can we provide ambulance services according to classification and priority of the emergency cases, and quickly rescue it through the best use of the available resources?	
Idea Description	
Our main goal is to use available datasets to address the challenge.	

University Students Track

The emergency responder will get a call requesting an ambulance. If the caller is not the injured person, a message is sent with a link to record the injury scene (including the injured person). Meanwhile, there will also be an AI-based voice-capturing system. Using datasets, we will train a model that is able to detect symptoms from the recorded video or voice. The result is that the case and its severity can be predicted in a very short time. This helps the emergency responder dispatch the ambulance with the necessary resources. This classification process can avoid delays and ensure that patients receive the appropriate care as soon as possible. It also helps in the allocation of resources as the emergency medical service can prioritize critical cases and allocate resources accordingly.

Team	I 8
Challenge	
What are the suitable tools to help and encourage community individuals to adopt healthy and beneficial habits?	
Idea Description	
The I8 app is a calorie calculator that uses LLM AI to estimate the calorie content of foods based on text descriptions and computer vision. The app extracts food details and information from food labels and invoices to effortlessly estimate calorie content.	
Team	Miles Ahead
Challenge	
What are the solutions to develop education curricula in universities and schools in a way that encourages and supports the culture of innovation and entrepreneurship among students?	

University Students Track	Idea Description	
	The application VR uses AI and virtual reality to give students a brief idea of their future career. It helps students get an overview of what they are getting into to avoid changing their majors in the first 2 years or regret it.	
	Team	Roots
	Challenge	
	How to increase school students' awareness of the societal, historical, and cultural heritage, along with the authentic traditions and values?	
	Idea Description	
	The UAE is a rich country in culture and history, and there is no better way to introduce students to this fascinating world than through a gamified educational platform. By incorporating fun and interactive elements into the learning experience, students can engage more deeply with the material, leading to better retention and understanding. Through the use of modern technology, this platform can take students to historical sites, cultural festivals, and even introduce them to traditional cuisine. Through this innovative educational approach, students can develop a deeper appreciation for the diverse and unique culture of the United Arab Emirates.	
	Team	FSR
	Challenge	
	How to prevent the spread of chronic and non-communicable diseases using modern applications and technologies?	
Idea Description		

University Students Track	Epilepsy is a disorder of the nervous system caused by an increase in electrical charges in the brain. It occurs in 1 in 26 people at some point in their lives.	
	It affects 1 in 1,000 adults and 1 in 4,500 children each year. The number of people injured is 50 million in 2017.	
School Students Track	Our idea is an apparatus with an electrical sensor that begins dispensing the medication when the patient has seizures.	
	Team	Eduverse
School Students Track	Challenge	
	What are the proposed solutions to encourage students to get interested in programming skills and emerging technologies, and boost their competence and readiness in these fields?	
	Idea Description	
	Eduverse is an innovative and interactive platform that provides students with a comprehensive solution to acquire technical skills such as coding. This platform brings together a diverse range of technical websites in one central location, making it easier for students to access and learn from the best educational resources available.	
	With its gamified approach, Eduverse aims to make the learning experience fun, engaging, and accessible to students of all ages.	
	Team	UAE Happiness Center Robot: Facial Expression Recognition ML Model
Challenge		

**School
 Students
 Track**

What are the proposed mechanisms, tools, and methods for measuring the best applied government model among government institutions and measuring government and employees performance according to their different services?

Idea Description

The UAE is committed to promoting happiness. UAE government centers are evaluated and given a star classification. The evaluation is based on customer satisfaction and happiness. Entities provide a channel for customer feedback through manual survey forms where users indicate their level of satisfaction.

The key features of the proposed system are facial expression recognition, a response based on the customer's expression, speech recognition for customers' suggestions, and data auto saving for statistical purposes without compromising customer privacy.

The objective of this project is to develop a facial expression recognition system to measure the performance of the government and employees and improve their services in order to achieve the highest level of customer satisfaction and happiness among citizens.

The system is designed to classify people's emotions of individuals in captured by a robot's camera and provide a response based on these emotions, as well as gather customer suggestions and store data for statistical purposes. Based on this, the performance and excellence of government institutions and employees can be measured to identify the best institutional system to be honored.

**School
 Students
 Track**

The inclusion of speech recognition and data logging capabilities make the system a versatile and convenient tool for gathering customer feedback and tracking trends in customer satisfaction. Overall, this project represents a novel approach to collecting and analyzing customer feedback in real-time through the use of ML and robotics technology. It is more efficient and convenient than traditional methods such as manual surveys.

Team **AIAL**

Challenge

What are the proposed ideas and solutions to encourage students to get interested in programming skills and emerging technologies, and boost their competence and readiness in these fields?

Idea Description

The methodology of our proposed method (AIAL) will function as follows:

1. Firstly, the student will start by answering a questionnaire to measure their prior knowledge, learning style, strengths, and weakness.
2. Based on the student profiling, specific topics and content will be selected that meets the student's needs and interests.
3. The app will continuously monitor the student's progress and adjust the content based on their performance.
4. To make the learning experience more enjoyable and encourage students to continue learning, the app will include gamified feedback as rewards, badges, certificates etc.

School Students Track

5. Lastly, the application will allow students to collaborate and connect with other learners to provide a sense of community and spirit of challenge.

The AIAL mobile application will be deployed on the cloud, which offers the following advantages:

1. Students can access the app from any device
2. Cloud computing can reduce the data storage and maintenance cost
3. Cloud providers can ensure that systems are up to date
4. No specific number of required. enrolled in the organization is required
5. Cloud service providers are responsible for securing applications and data stored in the cloud
6. Real-time collaboration will make it easier for teams to work together on projects

Team **Meta Imam**

Challenge

How to encourage and prepare citizens to work as an imam in mosques?

Idea Description

The Meta Imam app allows the user to enter the world of Imams and act like an Imam using VR. The user can first listen to the Athan and see Muslims rushing to the mosque to pray, allowing the user to live a spiritual experience. The user can then enter the mosque and practise leading the prayers. He can then ascend the Manber to simulate the experience of the Friday Khutba. The user can then enter the Imam Academy where he can join others from the Metaverse and conduct or receive lessons.

School Students Track

The academy includes lessons and evaluations that allow the user to obtain certificates. The Virtual Reality space was designed and programmed using CoSpaces.

Team **AL ZAWRA'A2 INNOVATOR**

Challenge

How to increase school students' awareness of the societal, historical, and cultural heritage, along with the authentic traditions and values?

Idea Description

An application that incorporates Metaverse, 3D, AI, and Big Data technologies to cover important fields: (language - costumes - food - our elders (involving senior citizens) - tribes - a store (to sell food and souvenirs) - virtual visits to tourist areas with GPS to visit the location) in addition to excerpts from the book My Story and some questions in notifications that in return give points that can be used in the store.

Team **RECYCLING BIN BOT**

Challenge

How to track and calculate the wastage of many trade activities in the duty free spots in Dubai airports especially (retail and food outlet spots)?

Idea Description

The United Arab Emirates is one of the most developed countries worldwide in terms of the use of technology and innovation. Our project is an AI recycling bin, called a recycling binbot, which will help us track and calculate the wastage of passengers at the airport to reduce waste and have a better environment.

School Students Track	<p>This invention will only be available in the United Arab Emirates.</p> <p>The Recycle Binbot has specific features; the first feature is that the Binbot will be divided into specific parts and categories, such as: plastic, paper, glass, and can. We will also add a random bin on the side where people can throw mixed waste. Four functions will be available in our app for our recycle Binbot. Firstly, the app will send a message indicating that the Binbot is full, then, the Binbot will weigh the waste it contains, and finally, after compressing the waste to make more space, the Binbot will send a message indicating that the waste has been compressed. Our last feature alerts the Binbot via the app to stop working if any hazardous materials are detected in the trash.</p>	
	Team	Mohammad Bin Rashed School - C1
	Challenge	
	<p>What are the proposed solutions to connect and match the requirements and needs of the labor market with the competencies and skills of the job seekers of citizens?</p>	
	Idea Description	

- Every company that holds a trade license has to register at Tawteen App.
- In case there is any permanent or temporary job vacancy, the company's job list will be updated
- Filtration is added so that the job-seeking citizen can find jobs suitable for his academic and practical experience.
- A golden star is given to each company for hiring a certain number of citizens according to the size of their company; to create a positive competitive environment.

School Students Track	<ul style="list-style-type: none"> • The idea is to make seeking for jobs an easy mission for citizens by using a 24-hour available application. • Users have the option to write a review on the company's page. • The application provides all available opportunities for all categories of the community, including volunteering. • Applying for a job is done directly between the citizen looking for a job and the companies through the application. 	
	Team	Electricity from Desert
	Challenge	
	<p>How to develop the mosques and religious endowments to be eco-friendly and more sustainable?</p>	
	Idea Description	

The project is based on the idea of a thermocouple, that is, the generation of a potential difference from a temperature difference between two different metal ends connected at one end to a point. We began to follow the steps of the scientific method and verified the idea through experiments. While working, we encountered a challenge that the output current is small, which we overcame by using a large array of thermocouples. Then, we discovered through experiments that as the number of thermocouples increases, the electric current also increases.

To develop the project further, we hope to obtain assistance in researching and getting more information on electrical conductivity of alloys that generate a larger current.

Team **Elitebirds**

Challenge

School Students Track	How can the producers of recyclable waste be associated with the authorized companies to rotate and track the various stages of the recycling process from start to finish?	
	Idea Description	
	We employ artificial intelligence mechanisms to identify mental health issues and find ways to treat and promote mental health. We also promote this idea to school students.	
	Team	EHA (Emiratis Heritage Application) Team
	Challenge	
	How to increase school students' awareness of the societal, historical, and cultural heritage, along with the authentic traditions and values?	
	Idea Description	
Application, location and center for industry and sewing, the application and location have 4 main parts:		
<ul style="list-style-type: none"> • Part I provides access to the locations of these businesses that exist in the country but are not known and allows the owners of these unreported businesses to send the details and data of the business to the relevant team of the application company, which will verify and then take the information and list the location of the business. Accessible through the search bar in the name of the city, the available stores are sorted and displayed from the closest to the farthest. • The second part is access to stores that sell used items of international brands. The administration of the application will also visit the store to ensure that the 		

School Students Track	<p>items are reliable and of high quality, and then adopt that store and add it to the list of stores that serve the same purpose.</p> <ul style="list-style-type: none"> • The third part is the advantage of adding a store that sells all new sustainable pieces, companies that started from scratch with a sustainable start, and since these companies and stores are usually limited in design, all of their pieces are added, and this allows customers to shop electronically through the application of these local sustainable brands. • Part four allows users to sell their own pieces by inserting the image of the piece from different directions, mentioning the details of the piece, and adding the price of the piece.
	<p>The Industrial and Sewing Center offers designers an integrated environment to transform their designs into designs made with sustainable raw materials and in a 100% sustainable process.</p>

Appendix 4: Participating Teams, Mentors, and Arbitration

1st: Participating teams

Track	Number of Participating Individuals	Number of Participating Teams	Number of Participants	
			Males	Females
Researchers	256	10	1075	1413
Startups	341	46		
University Students	936	92		
School Students	955	163		
Total	2488	311		

2nd: Mentors

Number of Mentors from Participating Entities

International Organizations	Private Businesses	Schools	Universities	Government Entities
1	6	20	9	21

Number of Mentors	103
Participating Entities	<ul style="list-style-type: none"> Telecommunications and Digital Government Regulatory Authority Emirates Schools Establishment General Authority of Islamic Affairs & Endowments Nafis Emirati Talent competitiveness council

Participating Entities

- General Pension and Social Security Authority
- Ministry of Energy & Infrastructure
- Ministry of Justice
- Masdar City
- Dubai Municipality
- Dubai Corporation for Ambulance Services
- Dubai Electricity and Water Authority
- Dubai Airports
- Sharjah Finance Department
- Dubai Health Authority
- Dubai Land Department
- Ajman tourism development department
- Ajman Department of Economic Development
- Ajman Municipality & Planning Department
- Ajman Police
- Human Resources Department of Ras Al-Khaimah Government
- Ras Al Khaimah Tourism Development Authority
- IEEE
- Abu Dhabi Commercial Bank
- Serco Group PLC
- Amazon Web Services
- Oracle
- Unity technologies
- CryptOasis
- Merchant logo
- Amity University - Dubai
- Heriot-Watt University
- Amideast University
- Higher Colleges of Technology

**Participating
 Entities**

- University of Science and Technology of Fujairah
- Khalifa University
- Umm Al Quwain University
- Zayed University
- Ajman University
- Alltihad National Private School
- Al Rayah Girls School for Secondary Education
- Arab Unity School
- Al Najah Private School
- Asma Bint Al Nouman Model School
- Baynounah School
- Diyar Private Academy
- Dubai National School
- Fatima Bint Mubarak School
- Fatima Al Zahra'a Secondary School
- Fujairah Islamic Scientific Academy
- Hamdan Bin Rashid Secondary School
- Khadija Secondary School
- Mareya Al-Qebteya Girls School for Secondary Education
- Ruqayya High School
- Sheikha Bint Saeed Preparatory School
- Wasit Model School for Higher Education
- Falaj Al Mualla School
- Wadi Asfeni School
- Asma Bint Omais Girl School

3rd: Arbitration

Number of entities participating with mentors:

Government Entities	Universities	Private Entities
5	7	5

Name of the Judges:

Track	Name of the Judges and their Entities
Researchers Track 1 Judging Committee	<ol style="list-style-type: none"> Dr. Eesa Bastaki The Chair of the judging committee, The President of the University of Dubai Bashar Kilani Managing Director of Accenture Middle East Dr. Bushra AlBlooshi Head of Research and Innovation in Dubai Electronic Security Center (DESC) Dr. Nawaf AlMoosa Deputy Director of EBTIC
Entrepreneurs & University Students 8 Judging Committee	<ol style="list-style-type: none"> Dr. Essam Metwally Vice-chair of the judging committee Iman Omran Al Shamsi Chief Digital Advisor at Amazon Web Services Dr. Sameera Almulla Director of Certificate Equivalency Department. Ministry of Education Moayad Aloqaily Managing Director of xAnalytics Inc.

<p>Entrepreneurs & University Students</p> <p>8 Judging Committee</p>	<p>5. Dr Mohamed Baloola Deputy Director, Ajman University Innovation Center</p>
	<p>6. Dr. Alavikunhu Panthakkan Research scientist in artificial intelligence - University of Dubai</p>
	<p>7. Dr. Amjad Gawanmeh Director Computer Engineering Program - University of Dubai</p>
	<p>8. Mohamed Salama Senior Partner at Unity Technologies</p>
	<p>9. Dr. Ishaq Alblushi Assistant Professor at Higher Colleges of Technology</p>
	<p>10. Dr. Alia Sadawi Engineering System Management Researcher at The American University of Sharjah</p>
	<p>11. Dr. Haris Khalid Assistant Professor - Higher Colleges of Technology</p>
	<p>12. Dr. Yassir Al Hamoudi Lecturer - Higher Colleges of Technology</p>
	<p>13. Dr. Mohammed Hassouna Professor - Higher Colleges of Technology</p>
	<p>14. Dr. Aesha Alshehhi Faculty Lecturer at Higher Colleges of Technology - Ras Al Khaimah</p>
	<p>15. Dr. Osama Mahmoud Faculty Lecturer at Higher Colleges of Technology - Ras Al Khaimah</p>
	<p>16. Giovanna Bejjani Faculty Lecturer at Higher Colleges of Technology - Ras Al Khaimah</p>

<p>Entrepreneurs & University Students</p> <p>8 Judging Committee</p>	<p>17. Dr. Majed Bouchahma Assistant Professor and Researcher at Higher Colleges of Technology – Ras Al Khaimah</p>
	<p>18. Dr. Suzan Shahin Head of Innovation & Entrepreneurship Center – Umm Al Quwain</p>
	<p>19. Ibrahim Othman Database Consultant - Umm Al Quwain Smart Government</p>
	<p>20. Dr. Hany Abdelrahman Bakr Vice Chancellor for Academic Affairs – Umm Al Quwain University</p>
	<p>21. Dr. Yomna Shakir Assistant Professor at University of Science and Technology of Fujairah</p>
	<p>22. Dr. Ramamurthy Srinivasan Assistant Professor at University of Science and Technology of Fujairah</p>
	<p>23. Dr. Mohamed Salahat Assistant Professor at University of Science and Technology of Fujairah</p>
	<p>24. Dr. Aziza ElDarrat Assistant Professor at University of Science and Technology of Fujairah</p>
	<p>25. Dr. Shammah Al Memari Head of public health research in Abu Dhabi Public Health center</p>
	<p>26. Huda Mohammed AL Hammadi Acting Director of the Department of Information Technology and Central Statistics</p>

	<p>27. Salem Alshamsi Consultant at Digital Dubai</p>
<p>School Students 7 Judging Committee</p>	<p>1. Hessa Al Tunaiji Robotics Specialist</p> <p>2. Zakaria Salim Head of Advanced Skill Department</p> <p>3. Fatima Al Hammadi Smart Learning Program Leader</p> <p>4. Ibrahim Abu Shawish Head of Student Recruitment and Counselling</p> <p>5. Ahmed Al Abdullah Training Specialist</p> <p>6. Israa Al Hammadi Training and Innovation Specialist</p> <p>7. Shaikha Al Kaabi IT Specialist</p> <p>8. Shaikha Al Ali Executive Corporate Excellence</p> <p>9. Dana Younis Senior Academic Support Specialist</p> <p>10. Marwa Al Hamoudi Smart Learning Specialist</p> <p>11. Mohamed Ghassan Training and Development Specialist</p> <p>12. Mariam Al Hammadi IT Specialist</p> <p>13. Amina Al Naimi Senior IT Specialist</p> <p>14. Mohra Kaseb IT Specialist</p>

Appendix 5: UAE Hackathon Partners

Main Partners



أم القيوين الذكية
SMART UMM AL QUWAIN

Strategic Partners

UNITED ARAB EMIRATES
MINISTRY OF JUSTICE



الإمارات العربية المتحدة
وزارة العدل

وزارة التغير المناخي
والبيئة
MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT



وزارة الطاقة والبنية التحتية
MINISTRY OF ENERGY & INFRASTRUCTURE



وزارة الاقتصاد
MINISTRY OF ECONOMY



وزارة الثقافة والشباب
MINISTRY OF CULTURE & YOUTH



المركز الاتحادي
للتنافسية والإحصاء
FEDERAL COMPETITIVENESS
AND STATISTICS CENTRE



تعليم
مؤسسة الإمارات
للتعليم المدرسي
EMIRATES SCHOOLS
ESTABLISHMENT



الهيئة العامة للشؤون الإسلامية والأوقاف
GENERAL AUTHORITY OF ISLAMIC AFFAIRS & ENDOWMENTS



نافس
NAFIS.GOV.AE



Appendix 5: UAE Hackathon Partners

Local Partners



Academic Partners



Technology Partners



Innovation Partners

TDRA

هيئة تنظيم الاتصالات والحكومة الرقمية
TELECOMMUNICATIONS AND DIGITAL
GOVERNMENT REGULATORY AUTHORITY

Organized by

الإمارات تبتكر
UAE INNOVATES

فبراير 2023



هاكاثون

HACKATHON

U A E

الإمارات

TODAY'S CHALLENGES, TOMORROW'S SOLUTIONS

تحديات اليوم، حلول الغد