

Expo 2020 is one of the world's largest events since the pandemic, welcoming approximately 24 million physical visitors and more than 250 million virtual visitors. Expo 2020 partnered with e& enterprise for the implementation and operation of a hybrid and multicloud architecture that hosted more than 100 applications in an agile, scalable, and secure manner.

Expo 2020 Delivered Memorable Digital Experiences to Visitors by Leveraging the Power of Cloud

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ORGANIZATION

Expo 2020

ORGANIZATION CHALLENGE

- » No allowance for project delays as the budget for the event was fixed
- » COVID-19 introduced uncertainty and major changes in the project plan
- » A wide variety of applications and integration requirements
- » Skillset required to manage a hybrid, multi-cloud environment
- » Implement a hybrid, multicloud environment while complying with national data sovereignty requirements
- » 24/7 availability of all applications for seamless visitor experience
- » Extreme peaks in network traffic during mass events and gatherings
- » Deliver customized experiences based on age, gender, and personality

SOLUTION

e& enterprise worked with technology partners to create the proposed enterprise solution, which spanned the design, implementation, and operations of a hybrid multicloud architecture that hosts more than 100 integrated applications. The solution components are outlined below:

- » Dubai and Abu Dhabi regions of e& enterprise's E1 Cloud (private hosted cloud) equipped with 400 managed virtual machines to host mission critical applications such as customer relationship management (CRM), security, billing, exchange, and disaster recovery
- » Bahrain and Mumbai regions of AWS cloud to host applications such as ticketing, service delivery platform (SDP), expo2020dubai website, and disaster recovery
- » On-premises datacenters at Expo 2020 site to host applications with low latency requirements
- » Etisalat by e& connectivity services (5G, Wi-Fi, and fixed services) to ensure quality and reliable application experience across the hybrid architecture

PROJECT DURATION

Approximately six years

BENEFITS

e& enterprise demonstrated strong project management capabilities and technical expertise. It successfully orchestrated a multi-solution provider ecosystem that ensured the timely launch of the event, with all required systems up and running, and the delivery of a seamless experience for approximately 24 million physical visitors and more than 250 million virtual visitors.

Introduction: Expo 2020 Goals

The story of Expo 2020 goes back to 2013, when the United Arab Emirates became the first country in the Middle East, Africa, and South Asia region to win the bid to host the World Expo. The theme of Expo 2020, which was "Connecting Minds, Creating the Future" was built on three sub-themes: Opportunity, Mobility, and Sustainability. The Expo 2020 team embarked on their journey with the vision of delivering memorable digital experiences to Expo visitors from all around the world and leaving a strong legacy behind for future World Expos.

The execution of the master plan for building Expo 2020 began from scratch in 2016 — in a 483-hectare area in the sands of Dubai, the equivalent of more than 670 professional football fields. At that time, there was no established facility or venue. There were also more than 100 projects in scope, including the implementation of customer-facing applications (such as a website and mobile app) and back-end applications (such as CRM, ticketing, workforce management, and facility management), most of which were tightly coupled to front-end applications. A more important component of the project was the creation of a customized and intuitive visitor experience based on gender, age, and behavior, which was designed on top of the hybrid, multicloud architecture. The Expo 2020 team demonstrated a strong commitment to realize this vision and partnered with like-minded companies to achieve its goals. During this long journey, e& enterprise (formerly known as Etisalat Digital), was selected as one of the Official Premier Partners of Expo 2020. Fast-forwarding to 2022, the event closed its doors on March 31, 2022, and more than 24 million physical visitors from different countries and cultures (and more than 250 million virtual visitors) visited Expo 2020 during 182 consecutive days. Even after the conclusion of the Expo, the Expo 2020 virtual platform continues to offer online visitors the opportunity to take a 3D virtual tour of the venue, while sharing the main highlights of the event.

All digital transformation projects face certain challenges, depending on the nature of the project and the expected outcome. However, Expo 2020 encountered an unprecedented external challenge – the COVID-19 pandemic. The pandemic and the associated global travel restrictions made the virtual version of the event even more critical as a means of enabling visitors from around the world to be part of the Expo experience. Creating a hybrid, immersive event of such magnitude during a time of extreme uncertainty was a major challenge, and both the Expo 2020 and the e& enterprise teams had to adapt to this new, uncertain environment in a rapid and agile manner, taking their game to a whole new level.

Implementation

e& enterprise has been a long-standing partner of Expo 2020, with the engagement between e& and Expo 2020 dating back to 2013, as e& enterprise has provided its support to Expo 2020 team during the Expo 2020 bidding process. Once the event was awarded to the UAE in November 2013, e& enterprise and the organizing committee initiated more detailed discussions with regards to the engagement model. In 2016, e& was formally selected as the Official Premier Partner for Telecommunications and Digital Services, and the field work started in 2019. The originally scheduled opening date of Expo 2020 was October 20, 2020, and the initially scoped project was progressing well based on the agreed timeline. However, due to the pandemic, the six-month event was postponed until October 1, 2021, which led to changes and additions to the original project plan.

To create a seamless and high-quality visitor experience and ensure smooth operations, a hybrid multicloud architecture was designed to host, run, and manage more than 100 applications in an integrated manner. e& enterprise began by building a dedicated cloud services team that could implement and manage a wide variety of technologies (e.g., AWS, DevOps, automation, infrastructure as a code, cybersecurity). Deciding which workload was going to run on which cloud and in which cloud region, understanding the integration requirements of disparate applications, setting the right data privacy and compliance framework, and defining the connectivity requirements of applications were foundational pillars of this project.

Once the high-level architectural design and the road maps for hybrid multicloud migration were ready, the next step was to implement and migrate applications to AWS, E1C, and Expo 2020's onsite datacenters, which were built and managed by e& enterprise. Key implementation activities included:

- » Setting up the AWS landing zones in Bahrain and Mumbai regions and ensuring the cloud environment readiness for hosting pre-defined applications (such as ticketing, SDP, and the www.expo2020dubai.com website)
- » Migration of certain workloads that were deployed to the AWS Ireland region by the Expo team to the AWS Bahrain and Mumbai regions based on latency requirements
- » Building and operating a disaster recovery center in the AWS Mumbai region
- » Setting up the E1C landing zones in e& enterprise Dubai and Abu Dhabi regions and ensuring the cloud environment readiness for hosting pre-defined applications (e.g., command and control center, CCTV systems, access control, CRM, security, billing, mail exchange)
- » Building and operating the disaster recovery center in the E1C Abu Dhabi region
- » Integrating various applications together with partners in a single platform to ensure delivery of immersive digital experiences for millions of visitors
- » Implementing a highly resilient and scalable 5G, Wi-Fi, and fixed network to ensure visitors' digital experience and operational continuity (Expo 2020 being the first enterprise 5G customer of Etisalat by e& across the Middle East, Africa, and South Asia)
- » Ensuring compliance with data sovereignty, data security, and privacy requirements of Expo 2020

In addition to the technology capabilities outlined above, e& enterprise's ability to orchestrate a large ecosystem of technology solution providers and its strong project management capabilities played an important role in the execution of the entire project and helped Expo 2020 achieve the expected business outcomes. Managing all the contingencies triggered by the pandemic, meeting the timelines despite all the changes in the requirements, and staying within the budget, all while making sure that all ecosystem partners were aligned with these requirements, is a testimony of e& enterprise's strong project management capabilities.

Operations

e& enterprise's professional and managed services based around multiple cloud solutions, its own cloud datacenters in Dubai and Abu Dhabi, and its project management capabilities were heavily leveraged in this project. However, in the post-implementation phase, it was equally important to maintain and operate the Expo 2020's hybrid, multicloud infrastructure, cybersecurity systems, and application environments. Some examples of the managed cloud services provided as a part of the engagement are outlined below:

- » Management of the AWS and E1C landing zones and the disaster recovery systems
- » Continuous monitoring of the hybrid, multicloud environment across AWS, E1C, and Expo 2020 on-premises cloud datacenters to ensure application performance and optimize cloud consumption costs
- » Management of various applications (together with partners)
- » Automated and artificial intelligence (AI)-enabled IT services management
- » Management and patching of Linux and Windows operating systems
- » Database management
- » Cloud infrastructure security management in line with Expo 2020 IT security policies

Following the conclusion of Expo 2020, some technology investments have been decommissioned. The remainder are planned to be reutilized for Expo City Dubai, the legacy site of Expo 2020 which is designed to be a clean, green, innovation-driven, human-centric city of the future.

Challenges

Challenges faced during the Expo project included strict timelines to deliver 100+ interrelated projects between 2016 and 2022, with the involvement of multiple technology partners and alignment of all these parties around the same goal, as well as the typical technical issues that may be faced in any project. The COVID-19 pandemic intensified the challenges faced during the project and triggered many others.

The COVID-19 pandemic created a lot of uncertainty that impacted the overall project plan, as all physical events had to be postponed for an unknown period of time. It not only impacted the go-live date of the event but also hampered application deployment decisions, requirements, and priorities. For example, the go-live date of the applications was revised based on the new launch date of the event. This was successfully carried out, thanks to the hybrid, multicloud architecture that enabled the fast provisioning of applications.

Orchestrating multiple technology solution providers, aligning them toward the same goal, and maintaining open and transparent communication with the Expo 2020 team were quite difficult tasks. e& enterprise did a meticulous job of driving quality and efficiency across the entire project life cycle – from new vendor onboarding and project governance to quality assurance and budget management. Budget management became a key consideration, especially due to delayed project timelines. The e& enterprise project management team had to adhere to the budget despite all the uncertainty and delays caused by the pandemic.

Another key challenge was related to ensuring zero downtime for a variety of customer-facing and back-end applications. To tackle this issue, it was necessary to have the right cloud architecture design in place and ensure seamless integration and inter-connectivity across various applications through robust fixed and mobile connectivity services. In particular, handling the extreme peaks in network traffic during mass events requires a combination of strong cloud-based architecture, reliable and scalable connectivity services, and a strong managed services team. e& enterprise was well positioned to address such challenges through its telecom and digital services capabilities.

Last not but not least, Expo 2020 was an event where physical and digital experiences came together. Delivering seamless visitor experiences and fulfilling Expo 2020's goals were achieved by not only implementing the most advanced and innovative technologies but also onboarding the right talent with the diverse skillsets, some of which are rare and hard to find. These skillsets were equally important for handling the implementation process and managing the entire operations and support services after implementation. Ensuring smooth operation and providing 24/7 support requires well established processes, strong governance mechanisms, state-of-the-art monitoring and visualization tools, and the right skillsets. e& enterprise approached skillset-related challenges by leveraging its existing employees, hiring new ones through various channels, and adopting the necessary tools and processes to manage the entire employee life cycle as a part of this project. Achieving excellence in every step of the project can only be achieved by hiring the right people and ensuring the right employee experience.

Benefits

Expo 2020 had a clear goal to achieve— namely, delivering memorable digital experiences to visitors and creating a legacy to be followed for future World Expo events. Achieving this goal required perfection at every step of the project. The solutions delivered by e& enterprise and its partners played an important role in realizing this goal. The key benefits of the solutions deployed include:

- » Seamless operations of more than 100 applications in a hybrid, multicloud environment to create digital visitor experiences, thanks to e& enterprise's and its partners' professional and managed services capabilities across a wide variety of technology domains
- » Compliance with government and Expo 2020's data privacy and IT security requirements, while maintaining and protecting visitors' data
- » Quality assurance and cost optimization through continuous monitoring of cloud infrastructure
- » Robust connectivity infrastructure of Etisalat by e&, including 5G, Wi-Fi, and fixed telecom services, which ensured a 24/7 seamless and high-quality experience for visitors
- » Digital experiences created through seamless orchestration of multiple technology solution providers involved in the project and adherence to project timeline, budget, and service-level agreement requirements owing to e& enterprise's strong project management practice

Methodology

The project and company information contained in this document was obtained from multiple sources, including information supplied by e& enterprise.

About the Analyst



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Melih drives IDC's regional research and consulting engagements in the areas of IT services, cloud computing, artificial intelligence (AI), and intelligent automation. He first joined IDC in 2012 and had various responsibilities across the firm's IT services, cloud computing, software, and telecom domains for the Middle East, Turkey, and Africa region.

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