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DUBAI EXPO 2020. A LOOK INTO THE FUTURE

Summary: The emergence of the World's Fairs was closely connected with construction and the industrial revolution – and the desire to showcase its achievements. At the Expo, people first saw much of what is now our everyday reality: from telephones, the first artificial satellite of the Earth and the Otis elevator to ice cream in a waffle cone.

Expo 2020 allows us to look into our future and touch it, full of new technologies, different realities and respect for history and culture.

Dubai Expo 2020 is the first World Expo in the Middle East and the first in the history (170 years) Expo where all

of 192 participating countries have their own pavilions. If we add partner and thematic pavilions to this, we get a grandiose city of the future.

The UAE, as the host country of the EXPO, has indeed become the centre of global peace for half a year. Leading experts from all over the world have rushed to the exhibition. Expo 2020 is an opportunity to see dozens of projects by the best architects and bureaus from all over the world at the same time.

Keywords: Dubai Expo 2020, Opportunity pavilion, Mobility pavilion, Sustainability pavilion, Nicholas Grimshaw, Norman Foster, AGI Architects

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The exhibition is arranged like a city. There is a central square, above which a huge dome rises, and avenues with streets diverging to the sides and divided into three themes: Mobility, Opportunity

and Sustainability. They are subject to one common theme of the Expo, which sounds like a slogan: "Connecting Minds, Creating the Future".

All Dubai Expo 2020 venues are built from scratch. The complex includes 275 structures, including the Dubai Exhibition Centre Skytrain station (it was also built specifically for the Expo). Al Wasl Plaza, with the largest self-supporting dome designed by Adrian Smith + Gordon Gill Architecture from Chicago, is at the centre of the exhibition. It is the most complex structure of the exhibition. More than 800 technical specialists attended its installation. During the day, the dome gives a saving shadow; in the evenings, it



Ill. 1. EXPO 2020. General view. Aerial shot. Dubai, UAE

is illuminated with multi-coloured lights. The opening ceremony of the exhibition was also held here.

The participating countries developed the concepts of their pavilions within the given thematic areas. And each country did it in their own way. Some went along the path of local history and patriotism, some looked in the direction of conceptual art, and some in the direction of science and technology. Others have tried to combine everything.

HOK developed the three-part master plan for the grand exhibition area in partnership with Populous and Arup.

Three main thematic pavilions, Opportunity, Mobility and Sustainability, reveal the general concept of the exhibition. Large and well-known architectural bureaus developed them after a multi-stage competitive selection.

Spanish-Kuwaiti studio AGi Architects designed the Opportunity Pavilion. It is rather rigid and concise but at the same time plastically very complex ribbed structure on three supports with a green zone in the centre.

Foster + Partners designed the Mobility Pavilion. Norman Foster also opted for a three-part structure. However, he made it in more streamlined forms and placed it on a spectacularly illuminated base.

Nicholas Grimshaw created the Sustainability Pavilion. Grimshaw presented a series of peculiar "plates" lined with solar panels.

The organisers note that they evaluated not only the conformity of the concepts to the declared theme, the courage and recognizability of future buildings, but also the prospects for their further use – after the end of the exhibition.

All three pavilions are located around the central square of the complex and form the core of the exhibition.

Mobility Pavilion at EXPO Dubai 2020

As the authors of the architectural concept of the pavilion said, "Dubai is emerging as a global hub for the design and construction industry, exemplified by the varied scope and breadth of our projects in the region".

The Mobility Pavilion tries to blur the line between the physical and digital worlds. Here the real and virtual worlds meet, interact and complement each other. It gleams in the sun with a steely futuristic sheen, resembling a spring with its facade design.

It is a multi-level building, shaped like a shamrock, surrounded by a neon area. The exposition is enormous: one can travel around the pavilion for a long time – through the entire history of technology development. The pavilion visitors move in time and space, meeting 9-meter figures of the greatest explorers who paved the way for progress and innovation. They learn about the prospects for

the development of human civilisation and get acquainted with an incredible project where, with the help of artificial intelligence, big data, robotics, machine learning algorithms and autonomous transport, "smart" cities, focusing primarily on people, are created. The authors of the smart city project were inspired by the project of the future Masdar eco-city in Abu Dhabi, which will function exclusively on renewable energy sources.

The pavilion was named "Alif" after the first letter of the Arabic alphabet, which symbolised "the beginning of progress and new horizons". The pavilion will provide visitors with food for thought, demonstrating how mobility has been the driving force behind human development over the years, leading to off-Earth exploration.

The idea of mobility has been a stimulus for the development of humankind throughout its existence – from the first steps of man outside Africa to space flight and the creation of a digital world. The Arab Emirates have come a long way from the earth's deserts to the deserts of Mars. Mobility changes the way of life, unites people, promotes understanding between different cultures, as well as the exchange of knowledge and ideas. After Expo 2020, the building will be converted for further use. This legacy will complement the Dubai World Central Masterplan,

which is set to become the world's largest logistics and transportation hub.

The Mobility Pavilion is equipped with the world's largest passenger elevator, which can transport more than 160 people at a time. The pavilion also features a 330-metre track, going partly underground and partly along the street, showcasing advanced vehicles in action. And each of the building's three cantilevered forms contains a gallery with an immersive exhibition designed by London-based consulting firm MET Studio.

Opportunity Pavilion at EXPO Dubai 2020

The Opportunity Pavilion, designed by AGi Architects, was inspired by the rich history of city squares and their universal importance as a place for communication between people of different ages, languages and cultures. The pavilion, called Mission Possible, is a ribbed structure on three pillars with a green area and a restaurant in the centre. The architects of the bureau, according to tradition, use local climatic conditions as an energy resource for the pavilion – its southern part is equipped with solar panels that provide lighting inside.

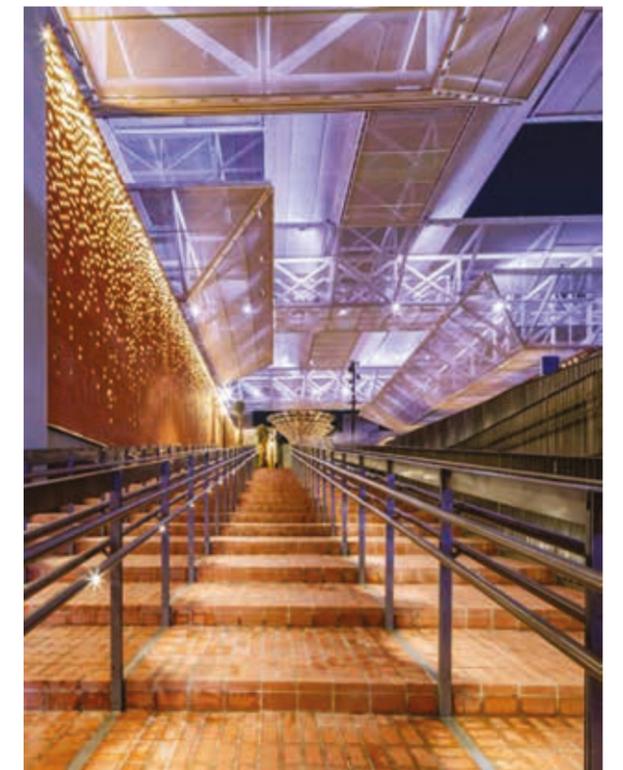
And the roof expanding from the base provides extensive shade for visitors, creating a balance of light in the central lobby, where an oasis is located. A wide and gentle staircase leads visitors from the



Ill. 2. Mobility Pavilion. EXPO 2020, Dubai, UAE



Ill. 3. The Opportunity Pavilion by AGi Architect. EXPO 2020, Dubai, UAE



first floor to the main level of the pavilion, which includes a long and narrow building and two smaller ones located around the central square. These buildings house the pavilion's main exhibition spaces.

The blocky volumes of the Mission Possible pavilion are located under metal canopies covered in fabric by Serge Ferrari. "The canopy represents clouds and the dreams that we all aspire to achieve to build a better world," said Joaquín Pérez-Goicoechea, co-founder of AGi Architects. The cloud element consists of six textile layers of fabric on metal structures that protect the area from direct sunlight. The canopy plays with transparency, light, shadows and colour, constantly transforming depending on the time of day, light and people's movements.

Industrial design company Flexbrick wrapped the pavilion's facade in a unique ceramic fabric with multiple illuminated areas that glisten after dark.

This ceramic tile also covers the floor of the pavilion, which has been called the "terracotta carpet", and is intended to create a neutral backdrop that brings different groups of people together.

Pérez-Goicoechea explained that the versatility of the square is a central design element of Mission Possible. "The concept design behind the Opportunity Pavilion is based on the relationships among people and the impact of their actions," he explained.

Mission Possible presents an exhibition designed by Alec Fit and Ikaria Atelier that focuses on the Sustainable Development Goals, a set of targets set by the United Nations in 2015. The interactive exhibition presents ways to solve current water, food, and energy problems. The United Nations also has a dedicated space inside the pavilion called the UN Hub. Mission Possible looks at how we can better build a better future.

Sustainability Pavilion at Expo Dubai 2020

The architectural bureau by British architect Nicholas Grimshaw (Grimshaw Architects) aims to show the ingenuity and possibilities of architecture as society increasingly turns to smart strategies for a sustainable future of living.

Drawing inspiration from complex natural processes, the foundation focuses on renewable resources such as photosynthesis, solar energy, and getting clean water from moist air. Thus, the pavilion's dynamic form will serve its function. The pavilion works in tandem with the landscape – display gardens, winding paths and shaded areas that represent the power and possibilities of nature.

British studio Grimshaw topped the pavilion with a 135-metre-wide canopy covered in solar panels.

You can get a good look at this colossal building from a bird's eye view or from the 9th floor of the press centre of the exhibition.

The surfaces of Pavilion are clad with a local stone from the Hajar Mountains – which provides enough thermal mass to absorb the heat while the stone's natural color reflects the sun.

Soaring over the courtyard, the Pavilion's canopy accommodates more than 6,000 sqm of ultraefficient monocrystalline photovoltaic cells embedded in glass panels. The combination of the cell and the glass casing allow the building to harness solar energy while providing shade and daylighting to the visitors below. The experience in the courtyard is of being beneath a large shade tree with dappled light projecting onto the surfaces below. The form of the canopy works with the courtyard to direct cool air in, while simultaneously exhausting low-lying hot air through a chimney effect at the centre.

The result is a structure that combines the most advanced technology in solar capture and a clear understanding of the natural conditions of the site to actively generate energy while passively cooling and enhancing the experience of the visitor. After

Expo 2020, the Sustainability Pavilion will be transforming into a science museum and expanding on its mission of exploring sustainable practices and the critical stewardship of our planet.

Expo 2020 lasts six months. After the exhibition is completed, the area will be transformed into a large-scale complex called District 2020.

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Ill. 4. The Sustainability pavilion by British studio Grimshaw. EXPO 2020, Dubai, UAE