Meeting the Future

How Megaevents Should Transform for Success in a Post COVID-19 Era

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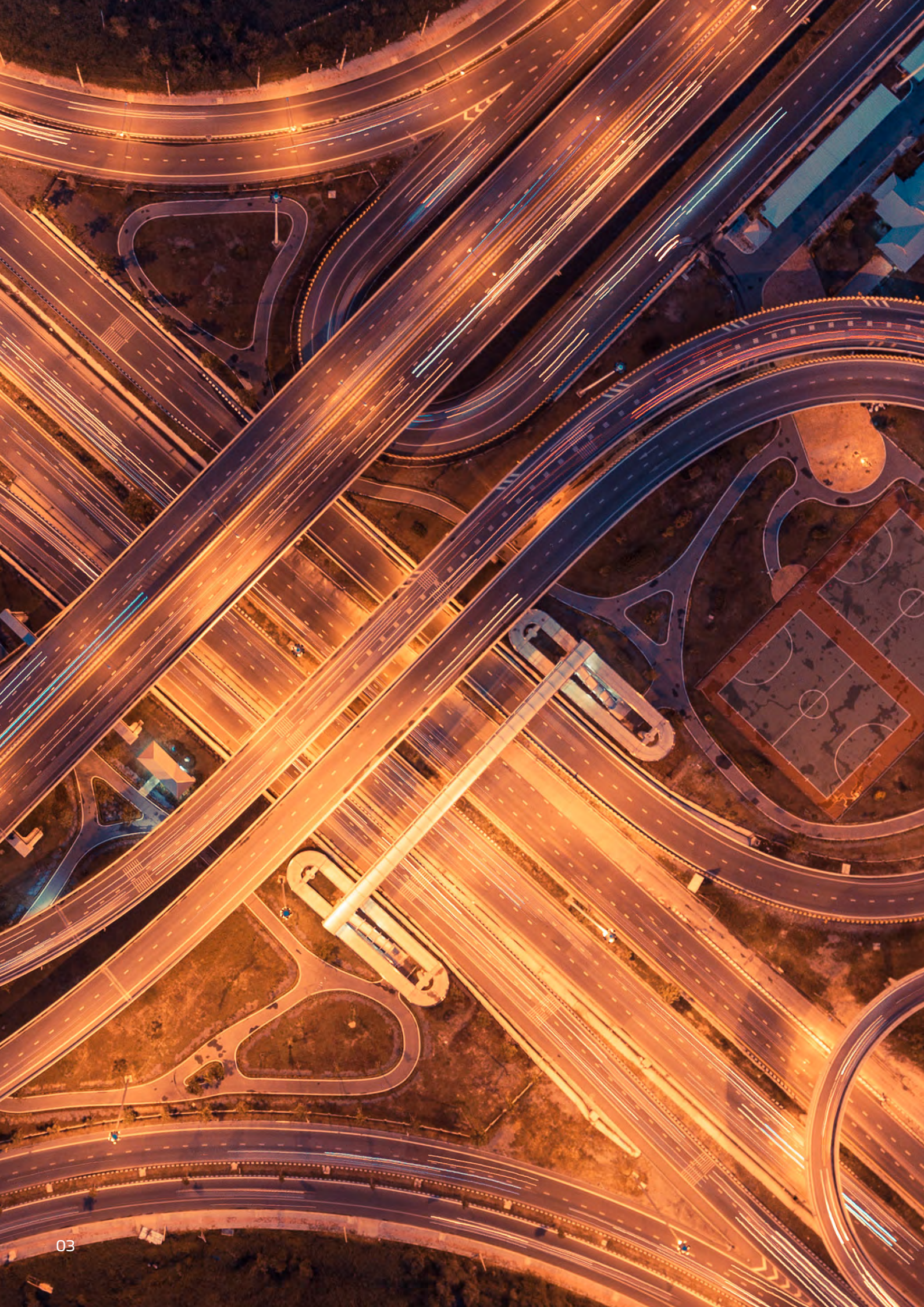

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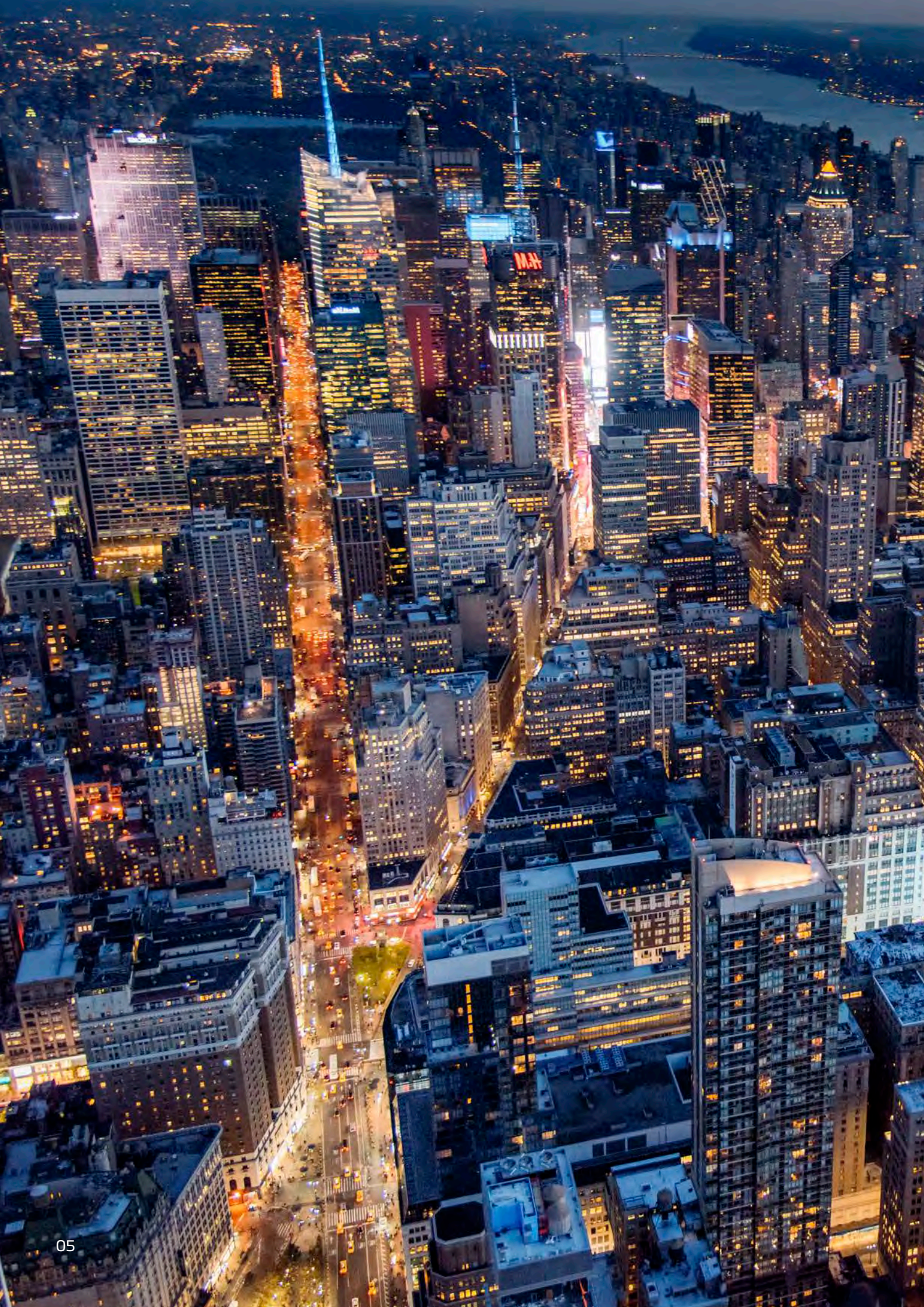

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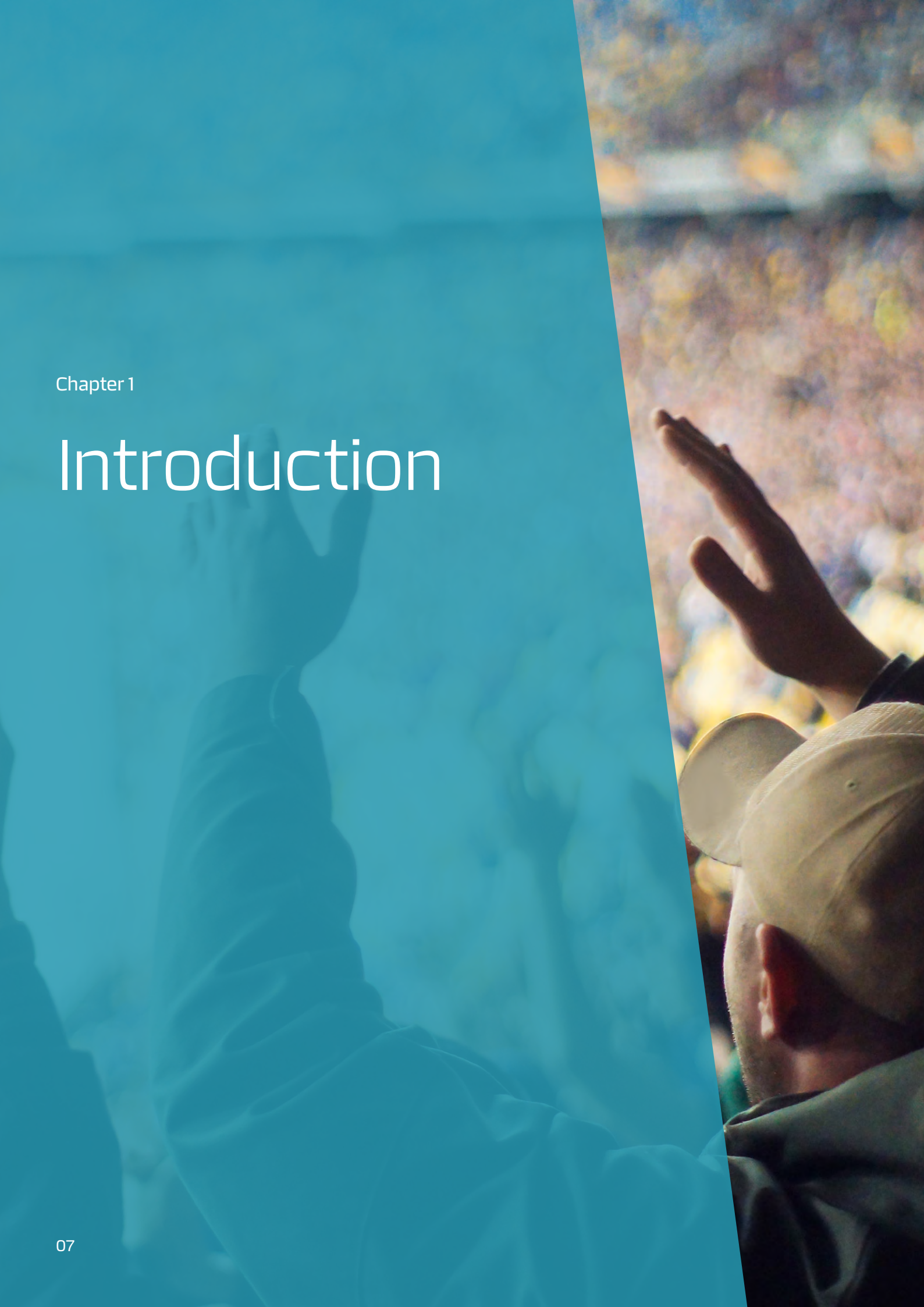
Chapter 1

Introduction



1.
Introduction

Imagine attending a large-scale event — a sports tournament, an industry fair or music festival — in 2030. You are one of a few participants that have chosen to book a flight and travel to attend, three time zones away, in person. Most participants are connecting from their homes around the globe. Organizers have chosen to provide an enhanced virtual experience, possibly in the Metaverse.

Driverless VIP pickup limousines shuttle people from the airport to the venue. Most of the exhibitors' stands are staffed by robots, and high-tech vending machines offer products to in-person visitors. Face recognition cameras are deployed as a substitute for regular ID checks and to reduce waiting times in queues. In order to minimize public health risks — a new infectious disease outbreak has affected the host country's neighbor — communal eating areas are closed and 3D-printed food is served. Augmented reality is deployed to provide attendees with additional information about the event, enriching their overall experience.

As futuristic as this may seem, this new, restricted world of "megaevents" may not be as strange and limiting as it may first appear. Events with virtual elements have managed to attract new participants even amid the current COVID-19 pandemic: GITEX in Dubai in December 2020 offered virtual tickets which widened the audience. In 2021, the World Economic Forum – typically held in person at the Swiss ski resort of Davos – was entirely virtual. In the United States, the National Football League (NFL)'s annual Super Bowl went ahead at a stadium in Florida at 20% capacity under a plan arranged with public health authorities, with masked fans seated mostly in pods of two or four people.[1]

In fact, we expect some version of the scenarios described above to be the norm for the megaevents of the near future, as the severe disruption COVID-19 has inflicted on event planning prompts cities, local and national governments and event organizers to rethink their approach.

The use of technology will be a major tool for unlocking the best mix of capability, impact and safety for host cities and nations. Emerging Fourth Industrial Revolution (4IR) technologies and beyond will enable the transformation of megaevents and provide much-needed flexibility to match event objectives with optimal social, economic and sustainability outcomes for years to come. The question is how different types of technology can help achieve hosts' objectives for a range of events. They will need to balance the enduring value and spontaneous human interaction that comes with in-person attendance, with the safety and accessibility of virtual experiences. Given what has been learned about switching to fully virtual or hybrid events during the past year, we expect that by 2030, events that combine in-person and virtual experiences will be the norm. Welcome to the hybrid future of megaevents.

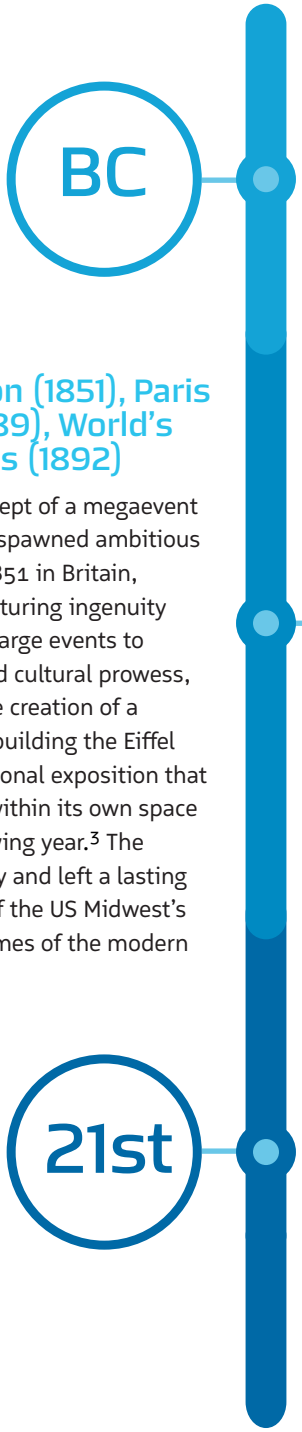
Chapter 2

The Megaevent Challenge

2.
The Megaevent Challenge

What are Megaevents?

Mega events, like Great Exhibitions or the modern Olympic Games have been defined as large-scale, 'one-off' spectacles that 'have dramatic character, mass popular appeal, and international significance' (Roche 2000, 1). Though temporary, they nonetheless have had a disproportionate impact not only on their host cities and nations, but are also seen as unique reflections of changes wrought by the industrial revolution (Briggs 1965).[2]



BC: Olympic Games (776 BC)

People have been gathering in large numbers to witness sporting and cultural spectacles, for religious reasons or to exchange goods, services and make contact for commercial reasons for a long time. The earliest Olympic games in ancient Greece, in 776 BC, were probably the first documented mass sporting event, for instance.

19th Century: Great Exhibition (1851), Paris International Exposition (1889), World's Fair (1892), Modern Olympics (1892)

It took until the 19th century for the concept of a megaevent to take root, as the Industrial Revolution spawned ambitious projects such as the Great Exhibition of 1851 in Britain, showcasing the engineering and manufacturing ingenuity of the time. Other nations started to use large events to show off their own economic, political and cultural prowess, sometimes marking the occasion with the creation of a landmark building, as Paris did in 1889, building the Eiffel Tower for the city's hosting of an international exposition that year. Chicago built a vast temporary city within its own space in 1892 to host the World's Fair the following year.[3] The event drew 750,000 people on its first day and left a lasting architectural legacy in the development of the US Midwest's capital. And in 1896, the first Olympic games of the modern era took place in Athens.

21st Century Scaled up Events: Hajj, World Cup, Expo

In the 21st century, the annual calendar has been full of different types of megaevents, ranging from the Olympics and Paralympics, FIFA World Cup and other international tournaments, to long occurring religious events such as the Hajj in Mecca, Saudi Arabia and Kumbh Mela in India, in addition to conventions and exhibitions in many cities across the globe. These include signature, industry-specific events such as the Detroit Motor Show in the automotive world, the SIBOS financial services event, the CES consumer electronics show in the US, and the Canton Fair in Guangzhou, China. On a smaller scale are international music festivals, clubbing events and live shows.

Why do megaevents matter?

Thanks to their sheer scale, megaevents are perceived to bring an immediate boost to a host city or nation's economy, attracting visitors and generating employment, facilitating investment in infrastructure, as well as enhancing brand exposure. They can create an important "legacy effect" with the right repurposing of venues and associated infrastructure after the event (although the extent to which cities succeed in doing so remains the subject of vigorous debate in academic and policy circles).

But it's not just economies that can benefit. In 2015, London's mayor issued a report describing how the hosting of the 2012 Olympics in the city had generated other legacy effects, including inspiring the take-up of sport among the population.[4] And, as the World Health Organization (WHO) pointed out last year mass gatherings are "not merely recreational events; they have important implications on the psychological well-being of [a] large number of individuals ... [and] can play an important role in promoting healthy behaviors (e.g. sports)".[5]

Studies have noted that throughout the pandemic, people's stress and anxiety steadily rose. These warning signs indicated deterioration in mental health, particularly among medical workers.[6] Combining all of the above raises a potentially interesting question: will the return of megaevents, even in a hybrid form, contribute to improved wellbeing throughout society, through the positive, interactive experiences that they offer?

COVID-19 Disruption means Megaevents have to Transform

The megaevents industry has been seriously disrupted as the pandemic closed borders, grounded airlines and forced restrictions on gatherings of all sizes. The first signs of disruption to the events industry came in early 2020, as the reality of coronavirus was starting to dawn, with conference and exhibition delegates swapping handshakes for fist and elbow bumps as caution started to guide human behavior.

Then came the event cancellations — taking a heavy toll on the $1 trillion-a-year global events business. For some countries, the cancellation of big events within their borders has had a significant effect: the cancellation of the Geneva Motor Show in 2020 deprived the local economy of about SFr200 million ($209m), the Financial Times reported.[7]

Most megaevents that followed into 2021 were either cancelled or postponed, including the Tokyo Olympics, Expo 2020, Coachella and the World Economic Forum's annual meeting. The annual pilgrimage of Hajj was hugely reduced in capacity from two million to 1,000 people, for example.[8]

The scale of this disruption and the potential for different kinds of upheaval in the years ahead means business as usual is no longer an option for megaevents for the foreseeable future. Another external element of disruption megaevent organizers need to consider is the increase in extreme weather. This may not seem an obvious or immediate issue for event planners but it is worth pausing to consider recent weather effects in some of the world biggest cities: in early 2021, unusually freezing conditions hit Texas, home to two large cities, Dallas and Houston, causing large-scale power outages, while in 2018, Paris was on flood alert after the river Seine reached its highest level in over a century.

Thus, megaevent planners have to adapt to the challenges and changes — some of them permanent — thrown up or accelerated by COVID-19, making it likely that hybrid events will be the norm by 2030.

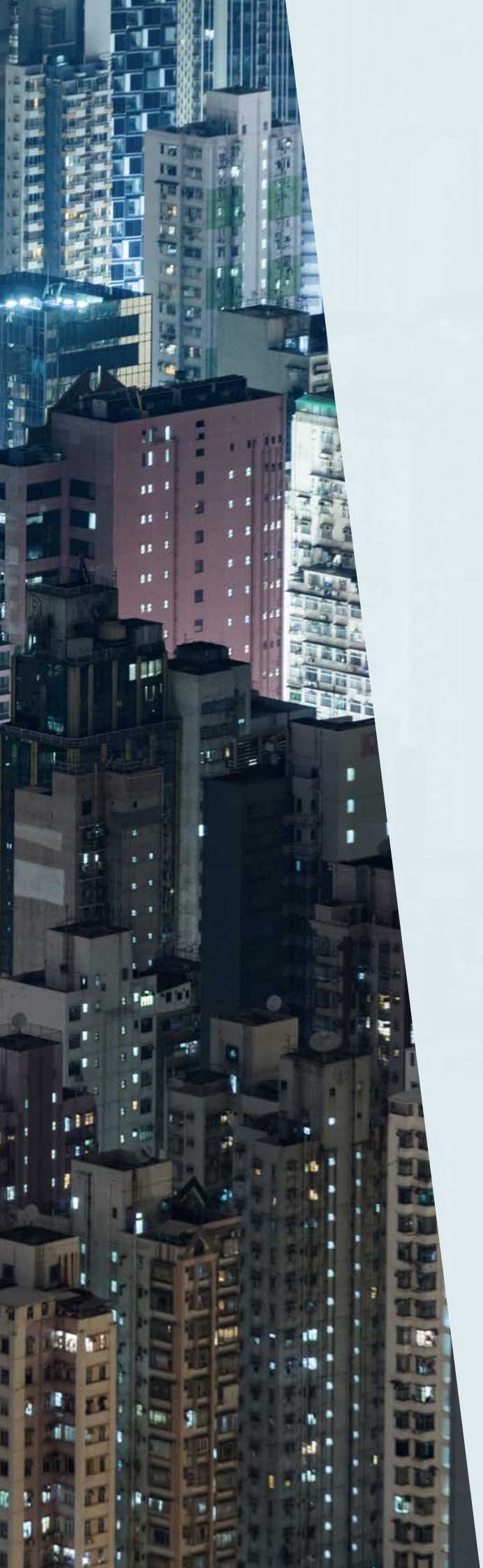
There will be specific challenges in the following areas:

Crowd Management
Host cities must have procedures in place that monitor physical distancing to keep attendees safe, as well as adhere to mandates of social distancing in a future health crisis similar to COVID-19. The responsibility to monitor large crowds starts from the moment they arrive in host cities and continues after they attend the megaevent itself. Cities need to develop enhanced capabilities to monitor large crowds and direct them to safety in case of unplanned incidents. Managing crowds in both a 'business as usual' and crisis mode is critical for event operators, particularly during religious events and pilgrimages, which have huge, crowd volumes congregating in a single location. Operational challenges such as pilgrim mobility and crowd management are exacerbated by the number of languages spoken by visitors.

Public Health
In addition to crowd management measures to minimize the risk of infectious disease transmission, there are several other considerations that megaevents organizers need to keep in mind such as:

- Hygiene standards: Planners will have to reconsider how planned activities can be conducted safely and hygienically. For example, adopting contactless payments could minimize the risk of spreading an infectious virus. In the first quarter of 2020 alone, Mastercard reported a 40% increase in contactless payments.[9]

- Intelligent catering: In order to minimize public health risks, megaevent planners will need to rethink the approach to offering food and beverage services. Buffets may now be problematic, and instead, event planners could consider ready-to-go food. Additionally, there could be limits on the number of visitors in a catering area, while ensuring sufficient hand sanitizer stations are deployed,[10] in line with the guidelines WHO issued in March 2020 for COVID-19-ready workplaces and events.[11]



Public Safety/Security

Hybrid events straddle physical and cyberspace, each complementing the other. This brings added considerations for megaevent planners and host cities, as they need to go beyond physical security and put in place adequate cybersecurity measures to protect remote attendees – many of them government leaders and senior officials — participating on multiple platforms.

A report by Interpol noted a significant increase in cybercrime, including attacks on critical infrastructure, as organizations, businesses and governments began to deploy remote working systems during the pandemic. The cyberattacks included online scams/phishing attacks, disruptive malware, malicious domains and misinformation.[12]

All of these strands have wider implications for host cities as they work with event managers to learn from their experience in combating the virus to be better prepared for future emergencies. The pandemic's unprecedented impact on every aspect of urban life has provided compelling data and information about how to improve crisis responses and recovery strategies, as we laid out in a recent, in-depth report into building sustainable, tech-enabled futures in some of the world's most vibrant cities, post-COVID-19.[13] Several solutions that were adopted to better manage the pandemic will continue to prove useful in the future to enhance megaevent management to minimize crowd management, public health and public safety/security risks.

Environmental Sustainability

Megavents can have a significant impact on the environment including carbon-related emissions involved in the construction of the megavent site and operational emissions associated with transportation of event-goers and waste production during the event.

The COVID-19 pandemic imposed stringent travel restrictions leading megaevent organizers to provide a virtual experiences for their events, such as music festivals, sports events. These travel restrictions catalyzed a decrease in carbon emissions mainly caused by transportation. According to the Global Epidemic and Mobility Model (GLEAM), 200 countries reported a significant drop in air transportation and automobile users during the peaks of the pandemic, which ultimately resulted in a significant drop in CO2 emissions. An estimated 278 million people attended sporting events in 2019, which generated over 2.5 billion tons of CO2 emission due to transportation in comparison to the 912 million tons of emission generated in 2020 due to a 50% cut in attendance caused by travel restrictions. This represented a reduction of 1.5 billion tons in one year.

Moving forward and at the onset of the climate crisis, mega event organisers need to prioritize interventions that can reduce environmental impact, taking learnings from managing events during the COVID19 pandemic.[14] Technological advancements such as web 3.0 can help contribute to delivering a unique and engaging virtual experience for megaevent attendees, while significantly reducing environmental impact otherwise caused by travel and resource consumption on-site.[15]

Chapter 3

The Megaevent of the Future

3.
The Megaevent of the Future

"A careful return to in-person events and exhibitions should be welcomed when the time is right, alongside the emergence of new models of virtual and hybrid conferencing."
Financial Times editorial, January 15, 2021.[16]

Future Scenarios for Megaevents

It is clear that the way megaevents were held pre-COVID-19 will not necessarily return, and that organizers have to plan for a hybrid future. Many megaevents since the COVID-19 outbreak have been subject to postponements and cancellations, which is becoming a new norm for event planners. Host cities for megaevents have three main options as they consider how best to proceed as lockdowns ease and vaccination rollouts accelerate globally.

Scenario 1: Conventional with Limitations

- In this scenario, the host city proceeds with the event as scheduled, but with limitations on capacity and more stringent operating procedures to minimize risk
- Implications: socially risky relative to other scenarios, but retains maximum impact for the economy, and gives religious events the chance to go ahead in person.

Case Study 1: The Hajj

The 2020 Hajj a religious gathering in the holy city of Mecca, Saudi Arabia, was the first test of whether, and how, megaevents could take place during a pandemic. Due to the event having to fall on a fixed date as per the lunar calendar, such an event cannot be postponed. The Saudi authorities took a cautiously open approach to the event, restricting it to 1,000 worshippers when it took place over a week at the end of July and start of August, compared to 2.5 million in 2019.[17] Mask wearing was mandatory and physical distancing of 1.5 metres between worshippers was required.[18]

The 2021 Hajj, was restricted to individuals that have received two doses of the COVID-19 vaccination or those who were previously infected and received one shot of the vaccine. The Saudi authorities took a cautiously open approach to the event, restricting it to 60,000 worshippers when it took place over a week at the end of July, compared to 1,000 worshippers in 2020 and 2.5 million in 2019.

To protect the health of the pilgrims and mitigate the risk of the virus spreading, Saudi authorities implemented innovative technological procedures. Electronic cards were issued to all pilgrims with their medical contact details that provided access to religious sites, accommodations and transportation.[19] Health authorities could monitor crowded areas at all times and identify individuals that have come into close contact with a positive case. Robots were used to prevent close physical contact, disperse large gatherings, sanitise the sites and distribute water to the pilgrims.

For the 2022 Hajj gathering, Saudi Arabia will allow 1 million vaccinated pilgrims, under the age of 65. Travel bans are being eased in the region and pilgrims are required to present a negative PCR test no longer than 72 hours before arrival. The Saudi Authorities have suspended all social distancing measures, with masks only required in closed spaces.

Case Study 2: Kumbh Mela / Magh Mela

India's Kumbh Mela is the largest gathering of people on the planet, celebrated four times over the course of 12 years. The location of the festival rotates between four pilgrimage sites on the banks of holy rivers at Haridwar on the Ganges in the Uttarakhand, Ujjain on the Shipra river in Madhya Pradesh, Nashik on the Godavari river in Maharashtra and Prayagraj at the confluence of three rivers - Ganga, Yamuna and Saraswati - in Uttar Pradesh. In 2019 the event attracted 120 million Hindus, with the state authorities spending $600m on creating a 32 square kilometre temporary city for visitors in Prayagraj, involving 250 kilometres of roads, 22 pontoon bridges and 122,000 toilets.

The 2021 event was shorter than the usual three months, taking place throughout April. Those interested in attending were required to register with the Uttarakhand government and obtain a COVID-19 negative medical certificate from a community health centre, district hospital or medical college in their state. Only healthcare personnel who had been vaccinated were on duty. All attendees wore masks and maintained a six feet distance from others.

Despite these measures, the Kumbh Mela turned into a super-spreader event. This highlights how religious events involving mandatory in-person attendance need to be controlled through strict measures related to hygiene, public health and crowd management.[20] A top Hindu Seer died from COVID with 80 other men testing positive due to the lack of strict regulations and guidelines. The religious ceremony contributed to an influx of positive cases in India, resulting in 2 million new infections since April 2021.[21]

In 2022, a similar religious gathering, the Magh Mela was held on a smaller scale only allowing devotees, who have taken both doses of the coronavirus vaccines to attend.[22] If devotees had only taken one dose of a vaccine, a second was administered on site. As an additional precautionary measure, PCR and antigen testing was conducted in various areas of the event as well.[23]

Scenario 2: Hybrid

- In this scenario, the host city proceeds with the event with considerable limitations, in addition to introducing an enhanced virtual offering
- Implications: maximum social legacy for sporting and performing arts events as in-person and virtual access enhances and diversifies spectators' options to participate

With the vast spread of the Omicron variant in December of 2021, over 2,029 flights were cancelled globally during Christmas Eve. 448 of those flights were cancelled in the US alone. The reason being, a direct impact of the variant on the flight attendants and crews. This forced the Centers for Disease Control and prevention (CDC) in the US to cut the quarantine guidelines for fully vaccinated individuals that have contracted COVID, but are asymptomatic to 7 days, with a proof of a negative PCR.

Case Study 1: Expo 2020, Dubai

Expo 2020 was among the most highly anticipated events of 2020 but — like many others — was postponed due to the COVID-19 pandemic.[24]

As megaevents in the COVID era have adapted to include a complementary virtual experience to the in-person experience, Expo 2020 followed suit. The event committed to harnessing cutting-edge technology to deliver an enriched visitor experience, with planners using the time resulting from the postponement of last year's event to work on refining the virtual experience, which included the option of livestreaming key events and exploring the Expo 2020 site and pavilion through a virtual 3D model.[25]

To ensure the safety of the event, Expo 2020 developed a set of 10 key safety measures; social distancing, sanitization, mandatory vaccination for all staff and volunteers. Numerous fines were imposed to those that violated any COVID rules, ranging from 10,000AED to 50,000AED.

Visitors had to have either a proof of vaccine or a negative PCR test within 72 hours, which were checked prior to allowing visitors entry to the site. Additionally, PCR testing facilities were made available for Country Pavilion staff, frontline workers, and entertainers. In March 2022, in line with national COVID 19 regulations, Expo organizers announced that masks were no longer required in outdoor spaces.[26] By the end of the Expo, over 24 million physical visits were recorded as well as over 200 million virtual visits, exceeding the pre-COVID 19 set targets. However, the mix of visitors had changed from the initial plans, reducing the percentage of international visitors from 70% to approximately 30%. The international visits gap was compensated by local visitors, which is a testament to how well managed the pandemic was in the UAE.[27]

Case Study 2: GITEX

In December 2020, Dubai hosted the only major technology event to go live in 2020. GITEX Technology Week 2020 comprised of 1,200 exhibitors, 300 start-ups, and 350 in-person speakers.[28] While it was the first in-person megaevent to be held in Dubai since the pandemic began, for the first time, guests were also able to buy virtual tickets. This had the effect of not only boosting attendance but also opening the event up to an audience that might not have known about the event, or attended it at all. Nonetheless, in 2020, only 30,000 delegates registered for the event, down from 100,000 delegates in previous years.[29]

In 2021, GITEX returned to its full capacity, welcoming 3,500 exhibitors from over 140 countries.[30] The event imposed no cap on capacity. Attendees were only required to present a negative PCR test 72 hours prior to the event or proof of vaccination. Face masks were required to be worn at all times. Attendees could book a PCR test at the venue with results being made available within 24 hours.[31]

Case Study 3: Tokyo Olympics

The postponement of the 2020 Tokyo Olympics to 2021 marked only the fourth time since 1896 that the Olympics did not proceed as planned. The other postponements were in 1916, 1940 and 1944, during world wars. Bringing order to some of this complexity, the International Olympic Committee (IOC), International Paralympic Committee (IPC) and Tokyo 2020 Organising Committee in February jointly published four "playbooks", developed from work by the WHO, the Japanese government, Tokyo's Metropolitan Government, and independent experts and organizations from around the world.[32]

The playbooks — one each for athletes and officials, international sports federations, broadcasters, and press — laid out detailed requirements and procedures to follow to ensure a safe and healthy games. Athletes should take a Japanese government-approved COVID-19 test 72 hours before travelling, obtain a certificate if the result is negative, maintain a distance of two metres from other athletes (one metre from others), and express support for fellow athletes "by clapping, not singing or chanting". They must also prepare a list of all the people they expect to have close contact with while in Japan (including roommate, coach and physiotherapist) and submit the list for validation by a "COVID-19 liaison officer," who will use it to help with contact tracing if needed. There is also a ban on the use of public transport without special permission.

Event organizers took the opportunity to launch an inaugural Olympic Virtual Series, which was be the first-ever, Olympic-licensed event for non-physical virtual sports and includes video games such as eBaseball, virtual regatta sailing, Gran Turismo motor racing, and Zwift's bike racing platform. The series aims to mobilize virtual sport, e-sports and gaming enthusiasts around the world in order to reach new Olympic audiences. This is in line with the recommendations of the IOC's Olympic Agenda 2020+5 which aims to encourage the development of physical and non-physical forms of sports.

Over 250,000 participants representing at least 100 countries participated in the Olympic Virtual Series in 2021, according to the International Olympic Committee. Moving forward, the International Olympic Committee is exploring turning the virtual series into an annual event with the first in-person edition anticipated in late 2022.[33]

The Tokyo Olympics were held without any spectators with tight quarantine rules imposed on athletes. Despite this, throughout the tournament in the Olympic village, a total of 430 individuals tested positive for the coronavirus, with most of them being Japanese officials and contractors. This showed the vulnerability of 'bubbles' that are created for sporting events and emphasized the importance and challenge of adopting precautionary measures both inside the sporting event venues as well as outside; inside the sporting venues, mass testing and high vaccination rates limited the spread.[34]

A report carried out using genomic sequencing published in late 2021 confirmed that there was no spread of the coronavirus between Olympic games participants and the local population, which indicates the success of the stringent countermeasures put in place. Authorities adopted a 3C approach; Avoid close spaces, crowds and close contacts. The athletes and volunteers were encouraged to go home when not competing or working. This helped avoid the formation of large crowds or group gatherings. The success and key learnings from the countermeasures adopted served as inputs to the planning of the Olympic Winter Games Beijing 2022 which were outlined in the Beijing 2022 Playbooks.[35]

China implemented a similar "closed-loop" system in the Beijing Winter Olympics. A bubble-like ecosystem with tight COVID restrictions that includes dedicated airport terminals, transport, hotels, training venues and permitted access to specific destinations. Visitors from out of town have to upload their vaccination card and monitor their temperature before their arrival to Beijing. A 72 hour negative PCR test is required to enter the city and unvaccinated visitors have a 21 day quarantine. The Chinese authorities reported a few cases of COVID due to the strict rules and regulations applied to the visitors and participants of the games.

Case Study 4: Tennis Grand Slam tournaments (US Open and Australian Open)

An event that attracted almost 740,000 fans over two weeks in 2019 was forced to proceed in August 2020 with no in-person fans due to COVID-19. There were also fewer staff and officials at the event, with hawk-eye technology used to reduce the number of line judges. Protocols in place for players and their teams inside the tournament arena included a provision that any player testing positive would be dropped from the tournament. The impact of holding the event virtually was very significant, bearing in mind that the US Open usually relies on broadcast and sponsorship deals revenue. This was reduced by 80% as a result, forcing the organization to tap into its reserves to fund the tournament.

However for the sponsors, it was an opportunity to showcase innovative ways to activate brands, including a "fan cam" by American Express, which recorded fans' "best" cheers and submitted them for a chance to appear on screens on the tournament grounds.[36]

Nonetheless, overall viewership declined by 45%, which could be down to the less enticing atmosphere at the stadium as a result of having no fans. Crowds going crazy is part of the allure of watching sports on TV, according to sports analysts.[37]

Taking lessons from the US Open, major tournaments in 2021 began to return to a form of normalcy including limited in-person attendance. The Australian Open in February 2021 was carried out in a hybrid format, with some games played with a 50% capacity crowd and other games played with no spectators during a five-day lockdown imposed by the Victoria government to contain a COVID-19 outbreak.[38]

The French Open 2021 at Roland Garros was also held with limited attendance. A limit of 1,000 spectators and a curfew of 9 PM were originally set, causing night sessions to be held without any spectators. By June 9, the limit was increased to 5,000 and a curfew of 11 PM. An exception was made on June 11 in a semifinal match to allow spectators beyond the curfew time, facilitated by the French Prime Minister and tournament organizers.[39]

The Australian Open 2022 was held in January with the authorities imposing strict COVID restrictions. The Australian government issued a no capacity limit to the stadiums. However, closer to the event a 50% cap was imposed on crowd capacity at Melbourne Park with attendees expected to wear masks at all times except when eating and drinking.

All attendees and players were expected to be fully vaccinated. All players were set to stay at the same hotel accomodation to minimize the risk of spreading the virus and were tested on site and monitored to avoid social gatherings outside of the premises.[40]

Case Study 5: UEFA Champions League

The 2019/2020 edition of the UEFA Champions League was disrupted by COVID-19 and put on hold in March 2020 as travel bans were imposed across the world. The pan-European football tournament resumed for the quarter-finals in August 2020, but held behind closed doors as single-match knockout ties at neutral venues in Portugal, rather than the conventional format of playing two fixtures, one home and one away.[41]

In the 2020/2021 season, as countries began to open up, matches from the group stage onwards were allowed to be held with spectators up to a maximum of 30% capacity, if allowed by local health authorities.[42]

Due to travel limitations, matches could also be moved to new venues if required. The final this year was originally supposed to be held in Istanbul, Turkey. However, various factors — including a travel ban advising against all non-essential travel from the UK to Turkey when two English teams were playing in the final — led event organizers to shift the venue to Portugal, and limit the number of fans (6,000 per team) attending in person.[43] Portugal was on the UK's 'green' list of countries with no quarantine requirements when the final was held on May 29 at a capacity of 33%.[44]

The 2022 edition of the UEFA Champions League final held in Paris in May was at full stadium capacity.[45]

Scenario 3: Fully virtual

- In this scenario, the host city proceeds to making the scheduled event fully virtual, leveraging new concepts/ spaces such as the Metaverse
- Implications: safest and most environmentally-friendly due to reduction in travel, but ineffectual for sports or religious events, and introduces new risks that need to be mitigated through robust cybersecurity measures

Case Study 1: World Economic Forum (WEF)

The annual WEF gathering of world leaders, policymakers, economists and business people typically takes place yearly, around January and in-person in Davos, Switzerland. In 2021, due to COVID restrictions, the annual meeting was initially postponed until May 2021 to Singapore, then postponed to August, while a virtual Davos Agenda meeting took place in January over five days. To facilitate reaching a wider audience, the WEF rolled out a digital membership option for the first time. This could be a permanent option for future events, even as they return physically. It will be interesting to see how many politicians and senior business figures chose to save time by attending such events remotely in future, rather than flying in.[46]

Due to a spike in Omicron cases in the beginning of 2022, the WEF delayed their in person meeting in Davos to May 2022; which will be the first time the event is held in person in 2 years. Instead, in January 2022, the WEF carried out the Davos Agenda 2022 fully virtually, with an expanded online presence through virtual platforms.[47]

Case Study 2: MDL Beast 2020

In 2019, the Saudi Arabian city of Riyadh hosted the inaugural music and cultural festival MDL Beast. It was notable on a number of fronts, featuring the world's tallest temporary stage (winning a Guinness World Record citation) and attracting over 400,000 attendees over three days, making it the largest such festival in the Middle East. The event is a good example of how Saudi Arabia is showcasing cultural, artistic and entertainment experiences in line with its Vision 2030 reform agenda. In 2020, COVID-19 forced the event to go entirely virtual, attracting 600,000 online attendees. Renamed MDLBeast Freqways, it took place over a 12-hour period in June, and involved an online collection of hour-long videos of musicians from around the world playing electronic music in landscapes of their home country, each video styled as a musical flight on "Freqways" to that destination.[48]

The 2021 edition of MDL Beast saw a return to an in-person experience attracting over 700,000 visitors across 4 days with a requirement to be double-vaccinated.[49]

To enhance the virtual experience, MDL Beast collaborated with 360VUZ to provide a virtual 360 view of the festival on their mobile app. This platform offers viewers that did not get a chance to attend physically to enjoy it live virtually.[50]

In the next few years, it is anticipated that most megaevents will evolve to an adapted physical form supplemented with a virtual component. However the fact that virtual and hybrid events like the examples above have already shown themselves to be viable means that host cities can learn from the results of those experiences to establish a framework for planning their own events. The level of adaptability to a virtual offering for megaevents will depend on the type of event (Figure 1):

Figure 1: Level of Adaptability of Events based on Type

Type of Event	Religious Events	Sports, Performing Arts	Meetings, Incentives, Conferencing, Exhibitions (MICE)
Adaptability to Virtual Format	**Low**	**Medium**	**High**
Rationale	Typically require physical presence. Relatively low adaptability to switching to partially or fully virtual format.	It is possible for sports and cultural events to be held with no in-person spectators, relying solely on virtual fans tuning in. However, has implications for visitor experience.	MICE events can fully leverage virtual solutions that have minimal impact on the visitor experience.

Chapter 4

Approach to Measuring the Full Impact of a Megaevent

4.

Approach to Measuring the Full Impact of a Megaevent

"As countries loosen their public health and social measures based on local epidemiology, the 'safety nets' provided by such measures to reduce and control the transmission of COVID-19 will no longer be available. This makes conducting thorough risk assessments for planned mass gathering events even more important."
World Health Organization

Key planning recommendations for mass gatherings in the context of COVID-19.[51]

Whether you are dealing with how to proceed with a megaevent with a long history that has been interrupted by the pandemic or whether you are considering launching a new event, assessing the right approach may seem daunting. There are many considerations, and the methodology of the "new normal" in the megaevents space is by no means fully developed.

There are some precedents and practices that can be drawn upon, from the experience of previous epidemics. For example, international collaboration enabled the Vancouver 2010 Winter Olympic Games to take place during the H1N1 pandemic, and the Rio 2016 Olympic Games during the Zika outbreak.[52]

However, a substantive framework for approaching megaevents can be helpful. PwC has for over a decade used a well-developed and tested framework to help guide decision-making in a range of fields, including sustainability and climate change, and urban development: Total Impact Measurement and Management (TIMM).[53] This provides a new reference point for decision-making so that, instead of relying on shareholder return alone, various other non-financial impacts are incorporated and valued, such as social and environmental impact. It's a holistic view of the factors businesses need to understand to identify risks, opportunities and maintain a positive impact on society.

TIMM consists of four components that are applied to megaevent assessment in the following ways:

- **Social impact:** The values for and consequences of megaevents on society such as health, safety and security are measured, including public infrastructure and services, livelihoods and human capital.
- **Environmental impact:** The impact the megaevent has on natural capital (use of natural resources) as a result of greenhouse gas (GHG) emissions, waste, land use, and water and energy impact.
- **Tax impact:** Values a megaevent's contribution to and impact on the public finances, including taxes on profits, people, production and property, as well as environmental taxes.
- **Economic impact:** Measures the effect of megaevent activity on the economy in a given area by measuring changes in economic growth (output or value added) and associated changes in employment. Inputs include visitor experience, profits, intangibles, investments, job creation and brand exposure.

In the future, these impact dimensions could expand to include innovation and technological impact. That is, to what extent has the event enabled us to introduce more innovations to the host city and the world.

In the table below (Figure 2), we apply the TIMM framework to the three scenarios described in chapter 3 above, to assess their social, environmental, tax and economic impact, and how they would affect different types of events:

Figure 2 - Applying TIMM to the Three Scenarios

Scenario:	Conventional with Limitations	Hybrid	Fully Virtual
	Megaevents are held in person with limitations.	Megaevents that offer an in-person experience plus a virtual experience.	Megaevents that are held fully virtually.
Impacts: Social	• Riskiest scenario near-term unless stringent measures put in place such as mandatory COVID-19 vaccination and testing. • Risk of super-spreading at mega-events can be high. • However, significant positive potential legacy impact related to repurposing of infrastructure, human capability development through volunteering, part-time jobs.	If visitor numbers are reduced: • In near future, moderate risk scenario, unless stringent measures put in place such as mandatory vaccination and testing. • Physical crowd management has to be carefully planned, in addition to stringent cybersecurity measures.	• Near term, safest option from a health perspective, by minimizing virus spread. • Sufficient attention has to be given to ensuring robust cybersecurity measures.
	MICE: • Medium social legacy impact due to opportunities for creating lasting impact on local community through cultural exchange.	**MICE:** • Maximum social legacy impact as the combination of in-person with virtual allows for multiple mediums for cultural and knowledge exchange.	**MICE:** • Medium social legacy impact as virtual experience can reach a wider audience and offer unique experiences that promote the local culture. Little effect on local community.
	Sporting Events: • Medium legacy impact related to fostering a spirit of sports locally.	**Sporting Events:** • Maximum social legacy impact as the combination of in-person with virtual maximizes reach and allows for multiple mediums for promoting a culture of sports locally and several emerging technologies can be used.	**Sporting Events:** • Ineffectual scenario given that in-person spectators are key element of sporting events; fully virtual sports megaevents will have very limited local social impact.
	Shows and Performing Arts Events: • Medium social legacy impact as it contributes to promotion of local culture.	**Shows and Performing Arts Events:** • Maximum social legacy impact as the combination of in-person with virtual maximizes reach and allows for multiple mediums for promoting local culture and several emerging technologies can be used.	**Shows and Performing Arts Events:** • Medium social legacy impact as virtual experience can reach a wider audience and offer a unique experience that promotes local culture; little effect on local community.

	Religious Events: • Maximum social impact as it contributes to local community livelihoods.	**Religious Events:** • Minimal social impact due to limitations in the benefits virtual elements can bring to the local community.	**Religious Events:** • Ineffectual scenario as physical presence is a mandatory requirement for some religious events.
Environmental Applies to all Types of Events Equally	Maximum impact on the environment due to: • Event site set up (building materials, construction, transportation. • Event logistics (flights, transportation). • Event operations (water, energy consumption, waste generation, noise pollution, air quality). • Consideration should be given to identifying opportunities for minimizing environmental impact and taking measures to offset impact.	Reduced impact on the environment as event site can be minimized to cater to smaller amount of visitors.	Minimal impact on the environment as emissions related to event site setup, logistics and operations are eliminated.
Tax	Maximum impact on fiscal budgets due to high infrastructure, logistics costs. Maximum revenue generated from event-related tax income such as taxes on profits, people, property, and environmental taxes.	If site area is reduced, reduced impact on fiscal budgets relative to fully conventional scenario. Reduced revenue generated from event-related tax income.	Minimal impact on fiscal budgets due to minimized spending on capital infrastructure; instead, spending will be concentrated on virtual solutions. Minimum revenue generated from event-related tax income such as taxes on profits, people, production and property, as well as environmental taxes.
	MICE: • MICE events will typically be costly to run as they leverage existing multipurpose venues or a new venue is built with a long-term vision to be repurposed.	**MICE:** • No additional tax impact as a cost however offers additional opportunities for revenue generation through selling of virtual offerings.	**MICE:** • Minimal tax impact as costs or as tax revenue.
	Sporting Events: • Maximum tax impact in terms of setup and operation costs as typically requires new infrastructure to be developed (for future megavents).	**Sporting Events:** • No additional tax impact as a cost, however offers additional opportunities for revenue generation through selling of virtual offerings.	**Sporting Events:** • Significant tax cost impact for governments, given the need to spend on infrastructure and set up, while offering minimal tax revenue in return, due to lack of in-person spectators.
	Shows and Performing Arts Events: • No significant tax impact since events are typically conducted in existing venues.	**Shows and Performing Arts Events:** • No significant tax impact on setup and operational costs since events typically conducted in existing venues.	**Shows and Performing Arts Events:** • No tax impact from anticipated costs or potential revenues.

	Religious Events: • Tax impact may exist as religious sites may need to undergo expansion or structural improvements. • Operational costs can be offset by visitor fees.	**Religious Events:** • No additional tax impact generated due to limitations in the benefits virtual.	**Religious Events:** • Ineffectual scenario as physical presence is mandatory requirement for some religious events.
Economic	Maximum impact on local economy due to (applies to all types of events equally): • Visitor attraction and associated local spending on airlines, hotels, food and beverage. • Job creation to develop infrastructure, logistics as well event operations. • Employment for part-time workers through upskilling, repurposing of site as a year-round attraction.	Relative to conventional scenario, if visitor number is reduced, reduced local economic impact: • Multiple revenue opportunities: in-person and online tickets, advertising, sponsorship. • Enhanced user experience due to combination of in-person and virtual experiences. • Maximum international exposure for host city.	Limited impact on local economy as private sector benefits minimized to a select few type of vendors: • Revenue limited to digital tickets and advertising, sponsorships. • Visitor experience will be compromised if limited to virtual.
		MICE: • Having multiple channels for MICE events can maximize economic impact give facilitation of more transactions with local vendors, while creating new jobs.	**MICE:** • Fully virtual events will negatively affect the visitor experience due to limitations on networking and possible associated economic benefits.
		Sporting Events: • Having a virtual option for sporting events could create additional jobs to make up for jobs lost from conventional scenario.	**Sporting Events:** • Limited impact as identified above.
		Shows and Performing Arts Events: • Virtual option for shows and performing arts events could create additional jobs.	**Shows and Performing Arts Events:** • Limited impact as identified above.
		Religious Events: • Virtual option for religious events could create additional jobs.	**Religious Events:** • Limited impact as identified above.

Chapter 5

Technology, a Game Changer?

5.
Technology; a Game Changer?

From now on, megaevents will need to take into account not simply the use of technology as a practical problem-solver — whether that is around health and social distancing, or virtual attendee experiences — but also its role as an enabler of new practices and possibilities in the events space. One big benefit is how it facilitates networking, which has for so long been based on in-person interaction. People attending such events in the future will increasingly be using virtual reality headsets, video calls and social media in their daily lives, whether for work or leisure. It's not a stretch to posit the idea that by 2030 the whole concept of megaevents, as well as smaller events, could have been up-ended entirely and that a whole new way of interacting using technology has become commonplace across populations. If the Metaverse adoption scales up and it becomes pervasive, much of our future interactions, at megaevents that lend themselves to a virtual format, could take place there.

Beyond networking, the use of technology provides event organizers and hosts with accurate data on attendee behavior and priorities, both online and in-person. This can be used to reduce costs and maximize the efficiency of running mega events, potentially helping with the perennial challenge of the massive upfront costs associated with hosting them.

Enabling technologies, and their applications, include:

Robotics: By 2030, a significant proportion of on-the-ground events and exhibitions jobs could be staffed by service robots. Use of such robots is already growing fast: the International Federation for Robotics sees compound annual growth in sales of service robots running at 26% up to 2023.[53] High-tech, robo-vending machines can be deployed to offer products to in-person visitors, with an element of social media gamification to further promote the event, such as the use of a Twitter hashtag within a geo-fenced area to receive dispensed goods. Robots could also be used as live virtual guides, controlled by in-person visitors, and interacting on screen in real time, through a translator if required.[54]

Touchless technology: Contactless solutions, including ticketing, check-in and product and exhibitor interactions, all managed via QR codes could be provided. Additionally, wellness kiosks could be deployed offering touchless thermal scanners for temperature readings, motion-activated hand sanitizers dispensers, and slots to hold boxes of gloves or masks.[55]

Facial recognition: The use of this technology for security identification is already quite widespread, including in China and Japan. But it is becoming clear that it could also be used to detect and prevent the spread of viruses. In Japan, authorities used facial recognition technology at the Olympic Games to record spectators' faces and body temperatures, and to assess mask wearing. Cameras could also be placed strategically at the entrance to athletes' villages to monitor whether individuals are adhering to government rules on movements around the Olympic site.[56]

Holograms: Hologram technologies can be used to develop realistic, high definition visual representations. This has the ability to significantly transform the visitor experience in applications such as stage performances, live presentations and teleconferences, through offering an immersive and interactive experience.

High-tech sanitisation: Solutions have been developed to maximize the efficiency of sanitising large venues, such as electrostatic sprayers (some of which can cover 18,000 square feet in under an hour) and sanitising lights for cleaning hard-to-reach areas and surfaces.[57]

Artificial intelligence (AI): By 2030, AI will no longer be discussed as a concept or add-on feature, it will be a pervasive technology, underpinning almost every aspect of the event experience, from the logistical — ticket sales, venue and transport booking, and attendee management — to the experiential.

Internet of Things (IoT): We predict that by 2050, and to an extent by 2030, almost every object we encounter at a physical event will be connected and designed to anticipate and respond to attendees' needs. From signposts that offer personalized directions to invisible touch points that remind you when your next session is and how long it will take to get there, connected technology will remove any element of manual scheduling and labor — factors that often turn an otherwise immersive event experience into a cumbersome logistical one. One application in particular, Bluetooth low energy (BLE) beacons (known also as Apple iBeacon technology), could be particularly useful in promoting social distancing and, potentially, contact tracing on-site through proximity alerts. Such beacons emit a signal that can be picked up by BLE-enabled devices.[58]

Virtual and augmented reality: Virtual collaborative sessions that allow an event to transcend geographical boundaries and time could make for a more inclusive experience, with technology allowing a degree of connectivity we can still only begin to imagine. One enabling technology is augmented reality (AR), which PwC defines as presenting digital information in the real world through a mobile device or handset. AR has the potential to blend the distinction between the physical and virtual elements of a hybrid megaevent, putting the event center stage as an experience that can be felt in multiple ways.[59]

Virtual reality (VR) technology, meanwhile, promises to take users to an alternative space and time outside the conference hall, significantly affecting product demonstrations.[60] It does this by immersing users in a fully digital environment through a headset or surrounding display. The environment can be computer-generated or filmed in 360-degree video. VR could also "democratize" events by allowing an entire department to attend remotely, in cases where a company can only afford to send one key delegate to an in-person event.[61]

Case Study: Technology for Hajj and Umrah

Smart Cards and Tracking Bracelets

Smart cards have been used to facilitate performance of the Hajj in Saudi Arabia for pilgrims since 2019, providing a complete digital identity that covers personal, medical and residential details, as well as allocated accommodation and transport information. The design of the card uses a set of color groups related to the programme of the event, and includes near-field communication (NFC) technology to read Hajj data through self-service devices. It also contains a bar code that Hajj workers can read to improve Hajj services for pilgrims. Authorities also used tracking bracelets linked to a smartphone app.[62]

Digital Applications

To better manage Umrah visits during the pandemic and ensure social distancing regulations were enforced, authorities developed a smartphone application called 'Eatmarna,' which translates as "let's perform Umrah".[63] Given its success, authorities have continued to use the application despite restrictions being loosened. Any pilgrims wishing to perform Umrah today must obtain a permit through the application. This a testament to the legacy of some technological solutions that were developed and adopted initially to better manage the pandemic but have proven to be useful post-pandemic.[64]

Virtual Reality

COVID-19 has accelerated the development of VR solutions for religious events, particularly as an educational tool to help prospective pilgrims to train for the various stages of the Hajj in advance of conducting their pilgrimage in person.[65] London-based Labbaik VR, for example, a virtual reality company focused on pilgrim training, uses tens of thousands of high-resolution images painstakingly placed on a detailed 3-D model of Makkah, so people can experience the site prior to their pilgrimage using virtual-reality headsets such as the Oculus Rift.[66]

Technology Integration to Tackle the Three Core Challenges

There are technologies that could usefully be applied, if integrated in the right way, to the three core challenges that we discuss above: crowd management; public health, and physical and cybersecurity.

Crowd Management

Traditionally, crowd management has relied on turnstiles, barriers, ticket machines, manual security and, in some places, on surveillance cameras combined with facial recognition software. The availability of network data, coupled with IoT sensors (to track crowd density across a venue) could allow for more efficient operations, involving increasing the number of gates, assigning and reassigning personnel for various services and dealing with crowd density issues in areas of a venue where demand is higher.

Public Health

Examples of technologies that can be used and integrated by megaevent planners include:

- Data dashboards to collate real-time public-health data, including confirmed cases, deaths and testing figures, to keep event planners informed and support in refining interventions.
- Symptom-based case identification and widespread access to community testing and self-testing, with automation and acceleration of reporting to public-health databases.
- Digital contact tracing that automates tracing on a scale and speed not easily replicable without digital tools. This reduces reliance on human recall, particularly in densely populated areas with mobile populations.
- Aggregated location data collected by smartphones via GPS, cellular network and Wi-Fi can monitor real-time population flows, identify potential transmission hotspots and provide insights into the effectiveness of public-health interventions such as travel restrictions on human behavior.[67]

Physical and Cybersecurity

Event planners will need to think about integrating cybersecurity and physical security measures, given that digitization is in place in both the online and physical world. Cybersecurity is critical for any system that exists online — which is about every system in existence today.

It is a critical juncture for online event managers tasked with ensuring cybersecurity. To ensure participation, it is important for them to move from the traditional notion of cybersecurity to digital trust. A complete event lifecycle-driven cyber strategy is the important first step for online event managers and security leaders amid sweeping, rapid megaevent digitization. This reset not only defines the expanding role of a dedicated Chief Information Security Officer (CISO) but also affects the way events set cyber budgets, invest in security solutions, plan for resilience, and enhance their security organizations. It determines whether CISOs may grow to become stewards of digital trust, able to lead their events securely into the new era with strategies both to protect online event value and to create it.

Considering that online events could also depend on physical infrastructure, the cyber strategy for events must be that of encompassing and bridging the physical equipment needs with the virtual world created. The cyber strategy has to seamlessly provide experiences that match the speed and boldness of physical events and requires agile, forward-thinking security and privacy strategies, investments, and plans. The combination of physical and cybersecurity has to deliver consistent system performance, with security and privacy throughout the event ecosystem amid constant and changing threats over the life of the event.

Figure 3: Role of Technology across the Megaevent Lifecycle:

Stage in Lifecycle

Planning and Selection	Operations	Legacy
Leveraging big data and predictive analytics with AI to quantify potential impact and identify desired outcomes. Use of modelling tools with AI capabilities for crowd management to assess different scenarios.	Beacons for social distancing and contact tracing proximity alerts. Use of mixed reality to enhance participant experience. Use of AI for facial recognition at event to ensure contactless registration. Sensors to collect data on venue occupancy, crowd movements to aid decision making. Near-field communication (NFC) and other location-based tracking technologies to collect data on participant behavior/preferences.	Leveraging big data and predictive analytics with AI to monitor effects and generate insights (such as participant preferences) for future events.
Integration of physical and cybersecurity measures.	Development of 3D virtual worlds for participant engagement.	
Use of robust cybersecurity measures.	Use of enhanced live streaming with interactive features. Use of AI for event chatbots and live translation and personalized experience.	

Chapter 6

What Needs to be Done to Adapt to this New World?

6.

What Needs to be Done to Adapt to this New World?

As we have set out, a framework for decision-making and the necessary technologies exist to create megaevents that are fit for purpose in a post-COVID-19 era. But stakeholders must, first and foremost, align and cooperate together seamlessly to ensure the success of megaevents in the future. At a high level, the following guidelines could be useful:

- International organizations and associations responsible for megaevents should provide host cities with guidelines and recommendations for successful megaevent execution based on successful implementations worldwide.

- Host cities, local and national governments should conduct a holistic total impact assessment of the megaevent and develop and enforce local policies and regulations in line with global recommendations and guidelines that will ensure success and a lasting impact.

- The private sector should work collaboratively with the public sector to propose innovative solutions and provide input where necessary to enhance the megaevents experience and impact.

There are several tools and mechanisms that can be leveraged to foster collaboration and coordination between stakeholders, including establishing committees at the selection/inception stage that include all key relevant stakeholders, and hosting regular forums for megaevent industry participants to continuously exchange opinions, knowledge, experiences.

Case Study: Cooperation in UAE

The UAE government recognized the importance of multi stakeholder collaboration and coordination early on which contributed to the success of megavents such as Expo 2020. Particularly:

- Identified role of federal entity, National Emergency Crisis and Disasters Management Authority (NCEMA) to drive nation-wide procedures related to COVID-19. It operated under its mandate to as the main national body responsible for regulating and coordinating all efforts of emergency, crisis, and disaster management, as well as developing national plans for responding to emergencies. The national directives were cascaded down to local health authorities such as Dubai.

- Developed an official application for contact tracing and health status related to COVID-19 that identifies PCR results and vaccine history across the Emirates, which integrates with private healthcare institutes that offer PCR testing facilities.

- Effectively collaborated with hospital service providers to ensure provision of quarantine facilities with professional health workers.[68]

These multistakeholder coordination efforts, coupled with high testing and vaccination rates, (UAE reached one of the highest per-capita testing rates worldwide), contributed to a gradually safe return to ensure an optimized megaevent experience, such as the Expo 2020.

CONCLUSION

Megaevents have long had a unique role in convening human beings for entertainment, education and commerce. Their beneficial effects are many, whether in the joy and wonder of an Olympic event, the spiritual nourishment of a religious event, or the profitable pursuit of networking and sales at an industry convention. But they need to adapt in order to be able to continue to deliver such experiences in a post-COVID-19 era.

Accordingly, host cities of megaevents need to rethink how to approach megaevents in the future given that the frequency of future shocks is expected to increase. Host cities and megaevent planners need to become dynamic and agile in the planning process, ensuring they can deliver both an in-person and online experience to ensure success.

During the event planning process and in order to ensure maximum impact, event planners are encouraged to use a impact measurement and management framework, which ensures a holistic impact assessment that includes economic, social and environmental factors. This framework can be used to evaluate the impact of the different scenarios under consideration for the megaevent being planned. By deploying the most appropriate solutions cities and local and national governments can re-invent the megaevent in a collaborative way that will ensure its utility and impact for years to come.

Technology is the key tool that will help stakeholders in the transformation of megaevent planning and execution. It can help ensure a new, sustainable way to conduct megaevents that ensures a positive visitor experience both in-person and virtually.

Finally, an effective multi-stakeholder approach is paramount to the success of future megaevents given the involvement of multiple entities in the COVID era. Each stakeholder, from local to national government, as well as international organizations and megaevent planners, has a different role to play. This must be clearly defined at the outset, while also ensuring the right mechanisms for coordination and alignment are in place.

Endnotes

1. https://www.washingtonpost.com/sports/2021/01/22/super-bowl-attendance-tampa/
2. Roche, M. 2000. Mega-Events and Modernity: Olympics and Expos in the Growth of Global Culture. London: Routledge.
3. "Megaevents: national pride or city branding?", Future Learn, European University Institute https://www.futurelearn.com/info/courses/cultural-heritage-cities/0/steps/30918
4. https://www.olympic.org/news/great-britain-enjoys-lasting-legacy-from-2012-olympic-games
5. Key planning recommendations for mass gatherings in the context of COVID-19, WHO, (May, 2020) https://www.who.int/publications/i/item/10665-332235
6. De Kock, J.H., Latham, H.A., Leslie, S.J. et al. A rapid review of the impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well-being. BMC Public Health 21, 104 (2021).
7. https://www.ft.com/content/7f70e0fc-5d75-11ea-b0ab-339c2307bcd4
8. Hani Jokhdar, Anas Khan, Sari Asiri, Wael Motair, Abdullah Assiri, and Mohammed Alabdulaali. "COVID-19 Mitigation Plans During Hajj 2020: A Success Story of Zero Cases". Health Security Vol. 19, No. 2. Apr 2021.133-139.
9. https://www.cnbc.com/2020/04/29/mastercard-sees-40percent-jump-in-contactless-payments-due-to-coronavirus.html
10. https://www.eventsforce.com/blog/7-ways-events-will-change-in-a-post-covid-19-world/
11. https://www.who.int/docs/default-source/coronaviruse/advice-for-workplace-clean-19-03-2020.pdf
12. https://www.interpol.int/en/News-and-Events/News/2020/INTERPOL-report-shows-alarming-rate-of-cyberattacks-during-COVID-19
13. https://www.pwc.com/m1/en/publications/building-resilient-smart-cities-endure-covid-19-future-shocks.html
14. https://www.researchgate.net/publication/342396636_Environmental_change_the_sport_industry_and_COVID-19_In_PM_Pedersen_BJ_Ruihley_B_Li_Sport_and_the_pandemic_Perspectives_on_Covid-19%27s_impact_on_the_sport_industry_pp_TBD_Routledge, https://www.medicalnewstoday.com/articles/how-covid-19-has-changed-the-face-of-the-natural-world#COVID-19-and-air-and-water-pollution
15. https://www.mdpi.com/2311-5629/4/4/57/pdf, https://www.virtualedge.org/benefits-of-web-3-0-for-the-event-industry/
16. https://www.ft.com/content/c0f10645-8b52-4c35-95d4-d76aecd91d2a
17. https://gulfnews.com/world/gulf/saudi/hajj-2021-saudi-arabia-may-allow-symbolic-number-of-pilgrims-from-abroad-1.79114475,
18. https://www.meed.com/saudi-may-mandate-covid-19-vaccines-for-hajj-2021, https://www.arabnews.com/node/1538466/saudi-arabia
19. https://www.france24.com/en/live-news/20210721-smart-cards-and-robots-saudi-arabia-s-digital-hajj
20. https://www.bbc.com/news/world-asia-india-57005563
21. https://www.livemint.com/news/india/top-seer-at-kumbh-mela-in-haridwar-dies-of-covid19-11618576522875.html
22. https://www.hindustantimes.com/cities/others/magh-mela-2022-only-fully-vaccinated-pilgrims-to-be-allowed-to-attend-camp-at-fair-101638034741301.html
23. https://www.hindustantimes.com/cities/others/magh-mela-2022-lakhs-of-pilgrims-take-dip-at-sangam-on-maghi-purnima-101645035261325.html
24. https://www.arabianbusiness.com/news/463385-demand-for-this-years-expo-2020-dubai-is-100-there
25. https://www.khaleejtimes.com/news/millions-of-visitors-to-join-expo-2020-both-in-dubai-and-online / https://virtualexpodubai.com/
26. https://english.alarabiya.net/News/gulf/2022/03/01/EXPO-2020-Dubai-scraps-mask-mandate-in-outdoor-spaces,
27. https://gulfnews.com/expo-2020/expo-2020-dubai-recorded-more-than-24-million-visits-over-its-six-months-1.86911202
28. https://www.entrepreneur.com/article/362345
29. https://www.futurismtechnologies.com/blog/the-story-of-futurism-technologies-at-gitex-2019 https://www.wamda.com/2020/12/facing-new-realities-gitex
30. https://thefintechtimes.com/gitex-global-2021-dubai-round-up/
31. https://www.albawaba.com/business/gitex-2021-everything-you-need-know-about-tech-event-1451216
32. https://olympics.com/ioc/tokyo-2020-playbooks
33. https://www.insidethegames.biz/articles/1122501/ioc-singapore-esports
34. https://www.aljazeera.com/news/2021/8/10/did-the-tokyoolympics-fuel-japans-covid-19-surge
35. https://olympics.com/ioc/news/new-data-shows-no-covid-19-spread-between-tokyo-2020-participants-and-local-population
36. https://www.usopen.org/en_US/news/articles/2020-08-26/us_open_fan_cam_powered_by_american_express.html
37. https://www.usatoday.com/story/sports/media/2020/10/08/pandemic-why-tv-ratings-sports-have-been-down-since-returning/5913720002/
38. https://www.google.com/url?q=https://www.theguardian.com/sport/2021/feb/12/fans-to-be-locked-out-of-australian-open-as-covid-19-lockdown-impacts-tennis&sa=D&source=editors&ust=1621829444200000&usg=AOvVaw0M5wa4a9itns0Z-GC5Rtoy
39. https://www.theguardian.com/sport/2021/jun/11/novak-djokovic-rafael-nadal-french-open-mens-semi-final-roland-garros
40. https://www.abc.net.au/news/2022-01-17/australian-open-covid-omicron-policy-rat-testing/100754798
41. https://www.uefa.com/uefachampionsleague/news/025e-0f9a3f8c5c4d-3323c8a96a4d-1000--champions-league-to-resume-on-7-august/

42. https://www.uefa.com/insideuefa/mediaservices/mediareleases/news/0262-1081de31d4dc-eb42ed3fe9e8-1000--partial-return-of-fans/
43. https://www.uefa.com/insideuefa/mediaservices/mediareleases/news/0269-1243f864391e-53c7874f0ae0-1000--uefa-champions-league-final-to-move-to-portugal-to-allow-6-000-/
44. https://www.thestadiumbusiness.com/2021/05/25/uefa-confirms-capacity-for-champions-league-final/
45. https://www.thisisanfield.com/2022/04/uefa-confirm-champions-league-final-ticket-allocation-and-info/
46. https://www.weforum.org/press/2021/05/media-advisory-special-annual-meeting/
47. https://www.weforum.org/events/the-davos-agenda-2022/about
48. https://thefestivals.uk/mdlbeast-freqways-world-music-day/
49. https://english.alarabiya.net/life-style/2021/12/20/More-than-700-thousand-people-attended-Saudi-Arabia-s-MDL-BEAST-in-4-days, https://www.timeoutriyadh.com/music/everything-mdlbeast-soundstorm
50. https://www.prnewswire.com/news-releases/360vuz-collaborates-with-mdlbeast-to-host-the-biggest-and-loudest-music-festival-soundstorm-301449767.html
51. https://www.who.int/publications/i/item/10665-332235
52. https://bjsm.bmj.com/content/bjsports/54/16/946.full.pdf
53. https://developer.apple.com/ibeacon/Getting-Started-with-iBeacon.pdf, https://developer.apple.com/ibeacon/
54. https://www.kioskmarketplace.com/articles/mobile-social-gamification-apps-key-next-gen-vending-kiosks/
55. https://www.ilkogretim-online.org/fulltext/218-1642605999.pdf
56. https://www.japantimes.co.jp/news/2020/10/22/national/facial-recognition-coronavirus-olym
57. https://www.officecrave.com/articles/clorox-total-360-sprayer-overview
58. https://developer.apple.com/ibeacon/Getting-Started-with-iBeacon.pdf, https://developer.apple.com/ibeacon/
59. https://www.pwc.ch/en/publications/2020/Seeing_is_believing_PwC_AR_VR.pdf
60. https://www.linkedin.com/pulse/events-2050-future-exhibitions-paul-denny/
61. https://www.g2.com/categories/vr-collaboration
62. https://www.arabnews.com/node/1712376/saudi-arabia
63. ttps://www.arabnews.com/node/2060591/corporate-news
64. https://www.zawya.com/en/legal/regulations/umrah-reservations-available-eatmarna-app-must-be-updated-saudi-ministry-wp1z1gok
65. Los Angeles Times (https://www.latimes.com/world-nation/story/2020-07-31/coronavirus-brings-new-technology-hajj)
66. https://wired.me/technology/virtual-reality/hajj-2020-pilgrimage-vr-saudi-arabia/
67. https://www.nature.com/articles/s41591-020-1011-4
68. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8585940/

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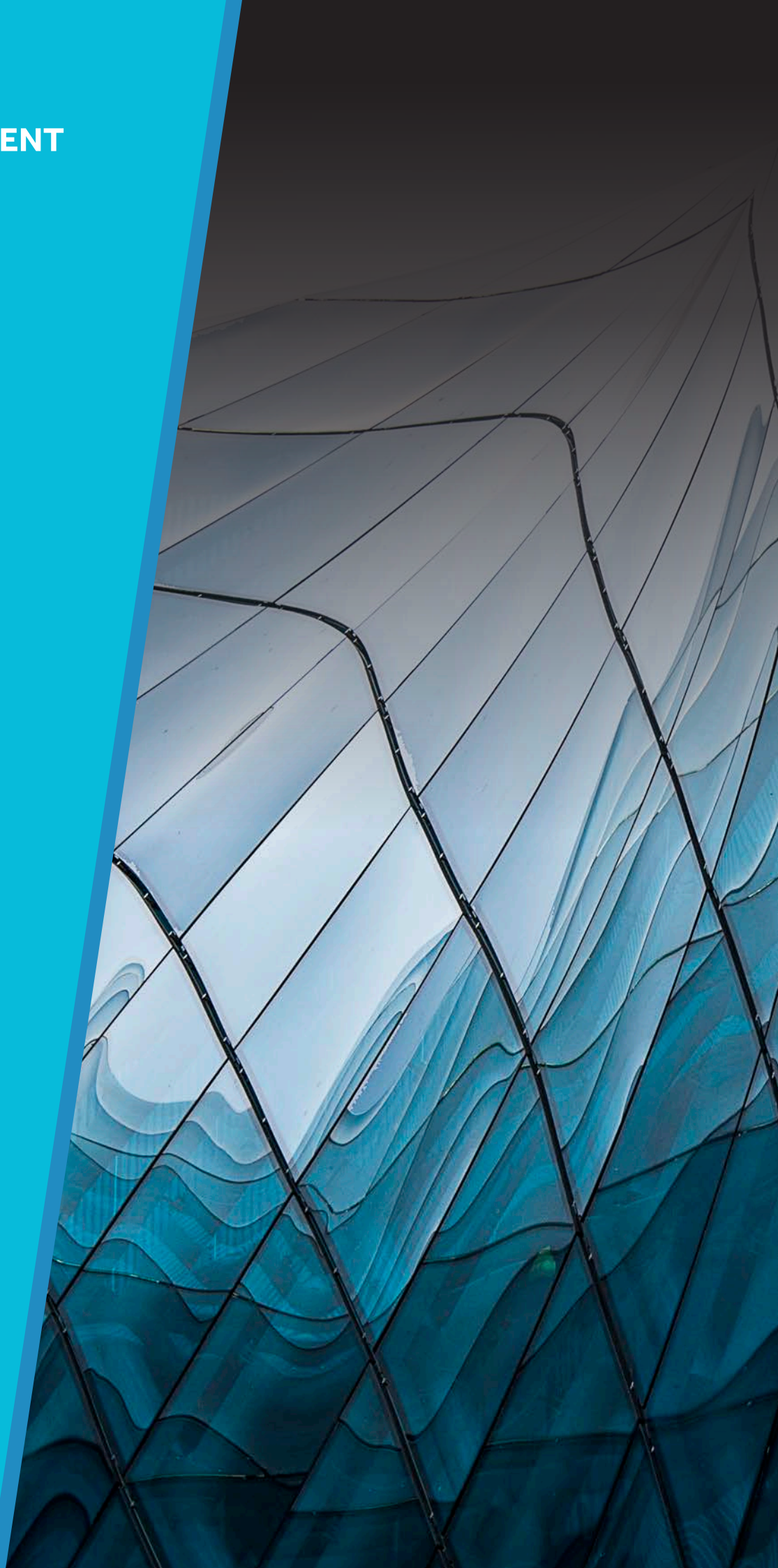

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