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A Middle East perspective on the metaverse

Is the region ready to seize the US$15 billion opportunity?

Contacts

Dubai

Tony G. Karam
Partner
+971-4-436-3000
tony.karam
@strategyand.pwc.com

Dany Karam
Partner
+971-4-436-3000
dany.karam
@strategyand.pwc.com

Jad N. Baroudi
Principal
+971-4-436-3000
jad.baroudi
@strategyand.pwc.com

About the authors

Tony G. Karam is a partner with Strategy& Middle East, part of the PwC network. Based in Dubai, he is the leader of the digital team in the region. He has 25 years of experience across three continents helping organizations develop and deliver on complex transformation strategies and stand up mission critical systems. He helps clients apply technology innovation to create sustainable business and social impact.

Dany Karam is a partner with Strategy& Middle East. Based in Dubai, he is a member of the digital team in the region. He has over 17 years of experience applying digital and analytics to enable business strategies and drive frontline transformations. In particular, he focuses on shaping and driving large, complex digital and data transformations, product and platform strategies, and helping build ventures, blending digital technology with deep industry expertise to tackle disruption.

Jad N. Baroudi is a principal with Strategy& Middle East. Based in Dubai, he is a member of the digital team in the region. He has 13 years of experience advising chief experience officers and senior government officials in the Middle East on how to shape the future of their organization in response to digital disruption and innovation. He specializes in corporate venture building and venture capital, digital business transformation, and data and artificial intelligence strategy.

Sharona Boonman, Karim Al-Masri, Ankur Mittal, and Raveesh Rai also contributed to this report.

EXECUTIVE SUMMARY

Imagine you're a real estate developer, meeting virtually with architects and designers on three continents to test a 3D model of a proposed office and retail complex. Long before committing to a plan and a budget, you build a metaverse twin to experiment with architectural designs. You can test your cost structure, on-site renewable energy systems, and preventive maintenance in order to see how well they work before installing them. During construction, you embed sensors that feed data to the metaverse twin, allowing owners and operators to virtually experience the complex. You can test thermostat settings for different areas and seasons, assess maintenance issues, see how furnishings look, and more.

Welcome to the metaverse—a world of possibilities that extends beyond next-generation gaming and internet-based home buying or shopping. The metaverse will change how we work, transact, plan, design, build, shop, recreate, travel, and live.

The metaverse has significant potential to energize and transform key sectors in the Middle East. In particular, the metaverse has enormous possible impact in the Gulf Cooperation Council (GCC) countries.[1] The region is already seizing the opportunity, with important metaverse initiatives in Saudi Arabia[2] and the United Arab Emirates (UAE).[3]

The metaverse's potential contribution to GCC economies could be around US$15 billion by 2030, with more possible throughout the rest of the Middle East. Metaverse elements and applications are developing swiftly. Business leaders should immediately begin preparing strategically and technologically to take advantage of the metaverse's transformative possibilities.

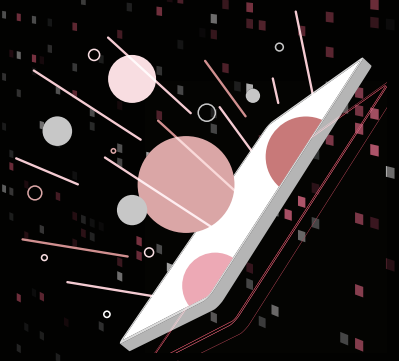
WHAT IS THE METAVERSE?

Precisely because the metaverse is in its infancy and its underlying technologies and structures are still developing, defining it can be slippery. The metaverse is neither a place nor a technology. Instead, think of it as the culmination of the evolving human–computer interface. Consider how that interaction has grown. The earliest days of the computer era featured mainframes and punch cards. Then, we had the personal computer with its screen and mouse. Today, we hold in our hands mobile devices with touch screens, we use voice activation, and apps are hyper-personalized. We play and interact through augmented reality (AR) and virtual reality (VR). Then, from that long chain of ever-intensifying human–computer connection and communication, we have created the metaverse, the ultimate interaction of humans and computers, an experience unlike anything that came before it.

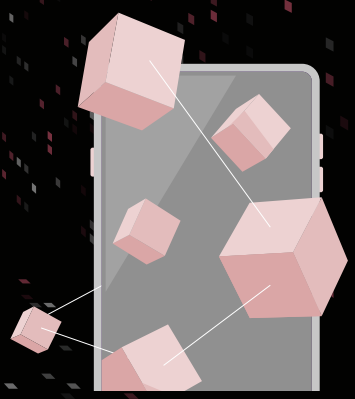
The metaverse is a convergence of technologies: an assemblage that creates a pervasive, immersive simulated experience so realistic that it is a parallel to reality. It can also be as intense as reality, because metaverse interaction is more than a solo experience. The metaverse allows groups of users to experience a simulated world together.

Underpinning the metaverse is a constellation of advanced technologies, including:

VR: a mock 3D visual (or other sensory) environment that the individual interacts with through headsets, goggles, gloves, or body suits.



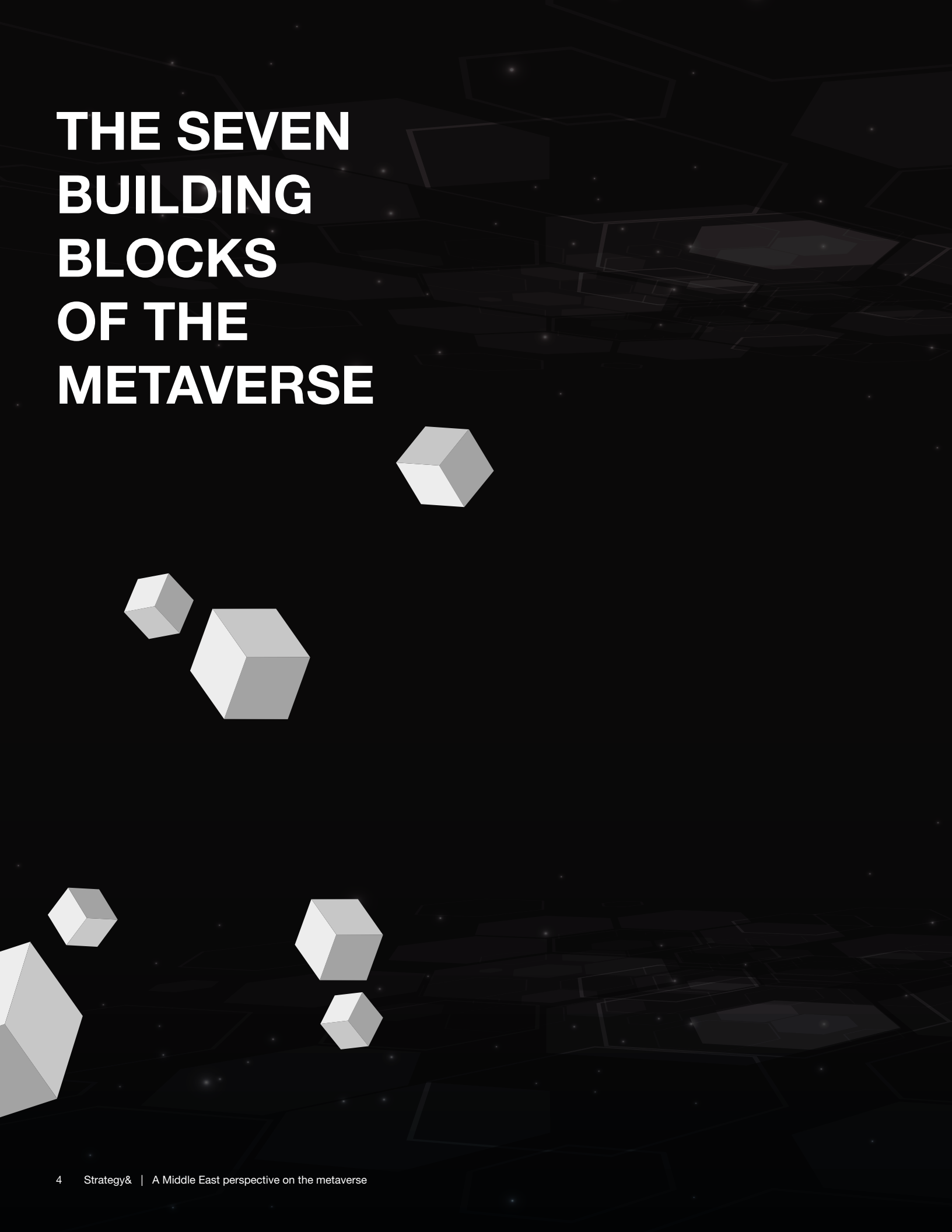
AR: which superimposes interactive virtual content on the real world. One example: eyewear that provides data points to users as they move through the virtual world.



BLOCKCHAIN: a digital ledger that enables secure, decentralized economic and financial transactions.

HAPTIC TECHNOLOGY: which creates an artificial touch-like experience through the use of sensor-triggered vibrations or motions. Common uses today include space exploration, medicine, and video games.

THE SEVEN BUILDING BLOCKS OF THE METAVERSE




USE CASE
(Possible experiences)
Innovate experiences and engagement
Reimagine socialization and collaboration
Digitize the physical world
ENGAGEMENT
(Hardware devices that customers interact with)
AR/VR devices
Mobile
Web
Holographic devices
Smart wearables
METAVERSE TYPE
(Nature of the structure and control)
Centralized
Decentralized
Enterprise
Private
DIGITAL ASSETS
(Elements present when user logs on)
Avatars
Virtual objects
Infrastructure and landscape
Digital payment tokens
Sensory actions
FUNCTIONALITIES
(Capabilities of the metaverse)
3D Modeling/ Visualization
Currency
Behavioral imitation
Communication
Platform
Authenticity
Ownership
Payment modes
Interoperability
Intellectual property
3D reconstruction
Transactions
Emotional intelligence
TECHNOLOGIES
(Technologies that power the objects' capabilities)
Software
Platform
Data
Computing
Cybersecurity
REGULATIONS
(Requirements for metaverse design)
Industry and government regulations
(Financial, broadcasting, intellectual property, data, privacy, etc.)

Use cases
The differentiated experiences that digitize the physical world, facilitate seamless collaboration, and create a new reality. Distinct and compelling experiences are what the metaverse is all about.

Engagement
The hardware that gives users access: artificial reality headsets, mobile devices, holographic devices that create virtual 3D images, smart wearables, and the internet.

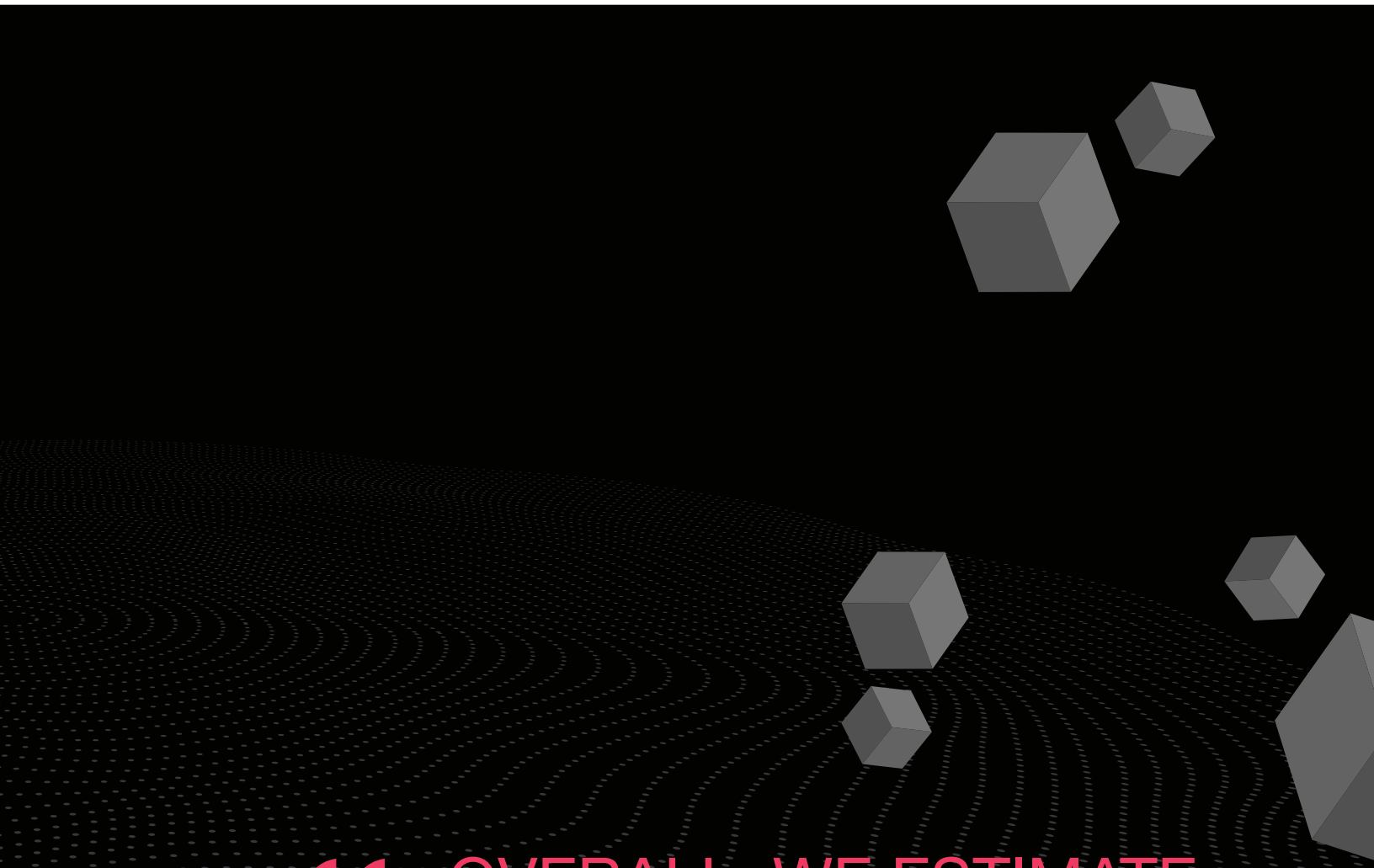
Metaverse type
The kind of structure and controlling entity. A centralized metaverse might be controlled by a video game maker, by an enterprise metaverse, or by a company that promotes its own digital tools and services. In a decentralized metaverse, users are in control. A metaverse can also be private.

Digital assets
Avatars and their virtual possessions (such as clothing, or non-fungible tokens),[5] along with the landscape and physical infrastructure, digital payment tokens, and sensory actions that support bodily movement.

Functionalities
The key aspects of the user experience that animate interactions, that authenticate transactions, and that safeguard user identity: 3D modeling and visualization, 3D reconstruction (which captures the appearance of objects), interoperability (which lets users take their avatars across virtual spaces), behavioral imitation, transaction, communication, and emotional intelligence.

Technologies
The metaverse's powertrain: computing tools such as the internet of things, 5G, and edge computing;[4] data tools such as artificial intelligence (AI), machine learning, and data management systems; platforms such as blockchain; and software applications such as avatar development, 3D modeling, volumetric video, and payment services.

Regulations
Industry and government rules on issues such as data privacy, broadcasting, finance, and intellectual property, which together enable a well-functioning ecosystem.



> OVERALL, WE ESTIMATE THE METAVERSE WILL INJECT $15 BILLION INTO GCC ECONOMIES BY 2030.

METAVERSE POSSIBILITIES IN THE GCC

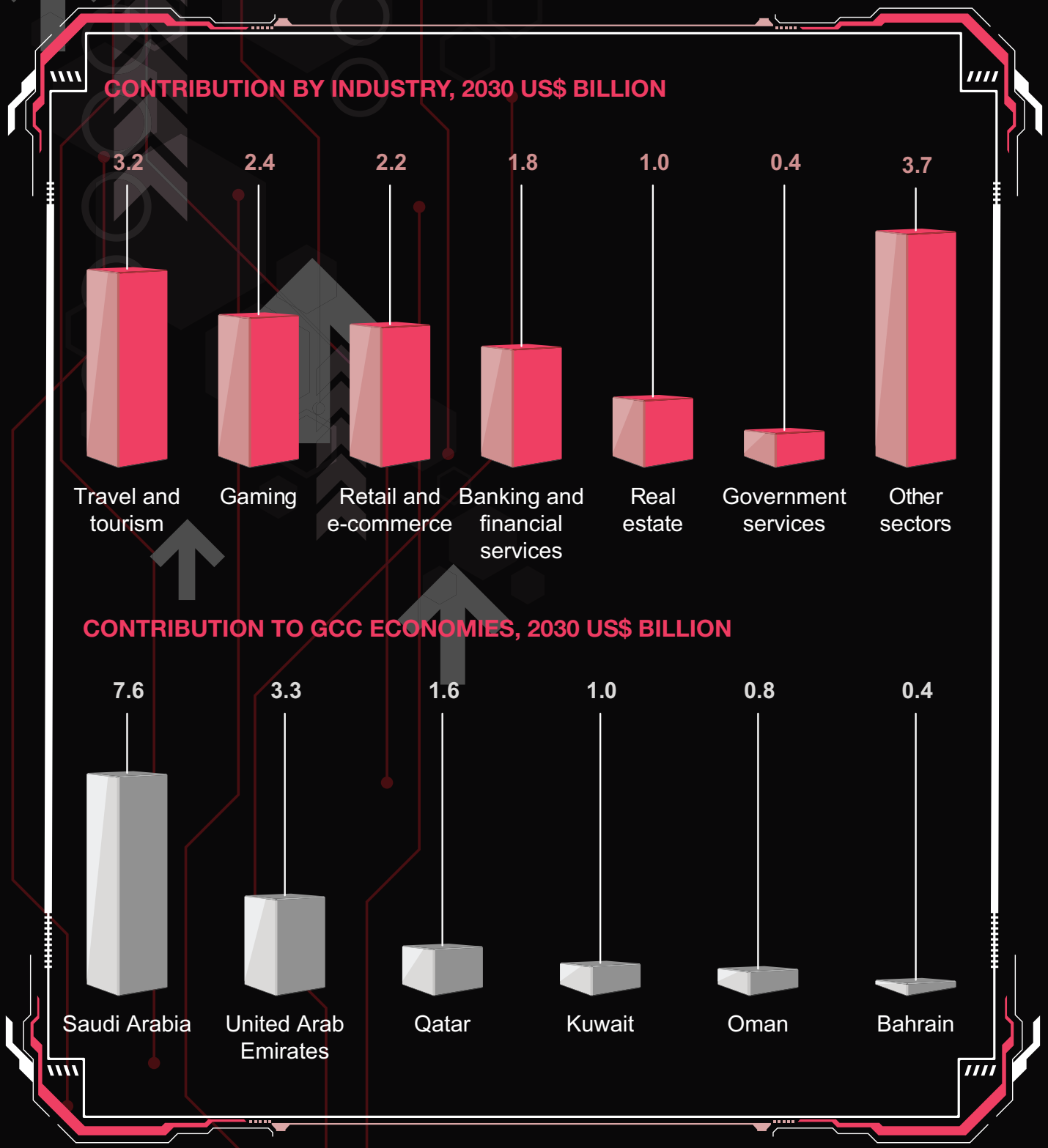
The metaverse is attracting substantial investment. The total value of the metaverse is expected to come close to $800 billion worldwide by 2024, and GCC countries are already active participants.[6]

In July 2022, Dubai formally launched its metaverse strategy, with the aim of Dubai becoming a leading metaverse economy. Dubai's new metaverse strategy is designed to add $4 billion to the economy and result in 40,000 new jobs over the next five years.[7] The United Arab Emirates (UAE) has established the Middle East's first metaverse incubator[8] to develop early-stage metaverse and Web3 applications.[9] Saudi Arabia's $500 billion city of NEOM has a metaverse component that already is being used to develop the city by informing construction and providing architects, engineers, designers, and others with ways to collaborate and customize aspects of the project for real estate clients.

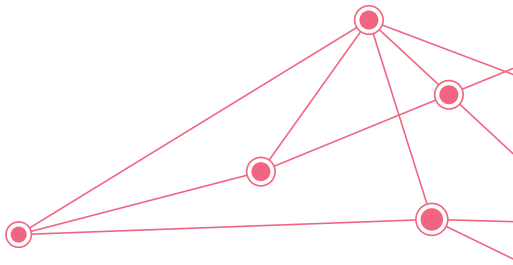
Overall, we estimate the metaverse will inject $15 billion into GCC economies by 2030. We broke down its potential GDP contribution across the economy and by country. The projections assessed growth in the component technologies, platforms, hardware, and software, as well as the economic contribution of new metaverse applications such as content creation, shopping, and so on (*see Exhibit 2*).

EXHIBIT 2

Projected metaverse economic contribution in GCC countries, 2030



The question is, how might the metaverse energize sectors that are already established and projects that are already underway in the GCC region? Consider these examples.



Travel and tourism

The travel and tourism sector has the potential to reap the greatest economic gain from the metaverse: an estimated $3.2 billion throughout the GCC by 2030. Expanding travel and tourism opportunities is an important part of Saudi Arabia's Vision 2030 economic diversification initiative.[10] The country is using cutting-edge technology to reach its aggressive target of 100 million tourists (foreign and domestic) by 2030.[11] Indeed, beyond travel and tourism, the metaverse's projected $7.6 billion contribution to the Saudi economy can contribute to Vision 2030's goal of attracting foreign direct investment inflows of SAR388 billion (US$103.5 billion) annually by 2030.[12]

Travelers crave experiences, and experiences—albeit simulated—are the core promise of the metaverse. The travel industry can translate that capability into tours of religious and cultural sites, fashion and food festivals, spa and health retreats, and entertainment and sports events. An immersive virtual experience can encourage in-person visits—and later on, tourists can relive their in-person experience through the metaverse. For example, students, historians, and tourists from around the world could experience the historic city of AlUla, home to the country's first UNESCO World Heritage Site, via the metaverse.[13] Qiddiya—which is planned to be the world's largest entertainment city, almost three times the size of Walt Disney World in the United States—could attract almost double its annual goal of 14 million visitors by offering them immersive entertainment and leisure facilities that combine extended reality and metaverse for participation in major live events.[14]

Financial services

We project that the metaverse can create $1.8 billion in value for the GCC's banking and financial-services sector. The GCC region has managed to establish four financial technology (fintech) hubs.[15] Given its increasing prominence in global finance, the UAE in particular stands to gain from the metaverse.[16] The Central Bank of the UAE plans to introduce digital currency within the next three years. The growth of fintech will require blockchain technology and crypto currencies, central to metaverse transactions, which can enable innovation in lending (including crowdsourcing) and secure payment systems.[17] Indeed, with the evolution toward Web3, fintechs that use blockchain will constitute the economic rails of the metaverse, ensuring the monetization of metaverse experiences. Commercial Bank International has just delivered precisely the kind of personalized banking experience that the metaverse enables by launching the GCC's first virtual banking location, doubtless the first of many to come.[18]

Real estate

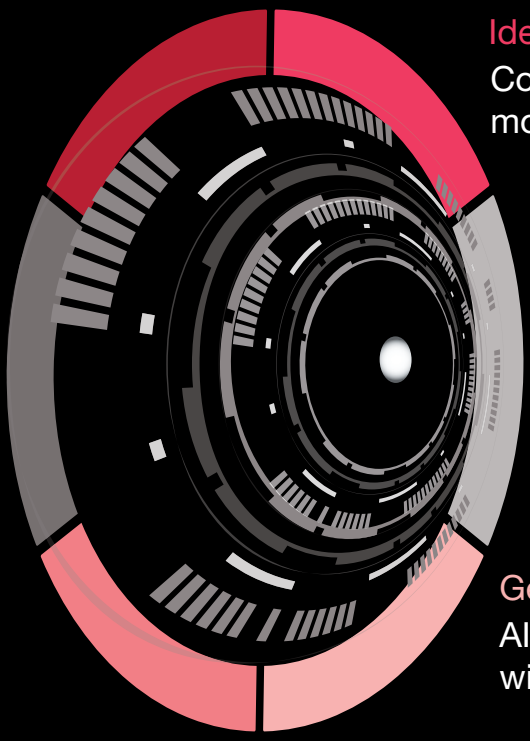
By our estimates, the metaverse could add $1 billion to the GCC real estate sector by 2030. Consider its possibilities in NEOM, the futuristic Red Sea city in northwest Saudi Arabia. NEOM is already a huge fixture on the global real estate market, 41 percent of respondents in a recent survey called it the world's most attractive giga project (a project exceeding $10 billion).[19] The metaverse is perfectly suited to enhancing the project and redefining the experiences it offers. Indeed, NEOM's technology and digital subsidiary is working to create XVRS, a metaverse in which people can visit NEOM. XVRS will allow them to do so completely virtually, or, if they so choose, they can be physically at NEOM and explore it virtually. They can appear as avatars or as holograms.[20] The metaverse representation of NEOM will shape how the city is built. Embedding an immersive experience in NEOM real estate will also enable virtual visitors to customize and personalize their residences.

SIX WAYS TO SEIZE THE METAVERSE OPPORTUNITY

The components of the metaverse are continuing to develop rapidly, its potential is becoming clearer, and its role is growing. So organizations need to move decisively to prepare for the future. There are six ways to start formulating a metaverse strategy (*see Exhibit 3*).

Six ways to start formulating a metaverse strategy

Imagine the possibilities
What are the most compelling ways to bring your offerings to life?



Identify relevant business use cases for pilot projects
Consider which cases best serve your business model and purpose

Build a robust digital infrastructure
Scalability and cloud capability are crucial

Get on the ball with blockchain
Blockchain is the payment infrastructure of the metaverse

Get smarter about data
AI, machine learning, and next-gen analytics will be critical for insights and decision making

Make cybersecurity a priority
Systemwide, there is far more user data to protect

Imagine the possibilities

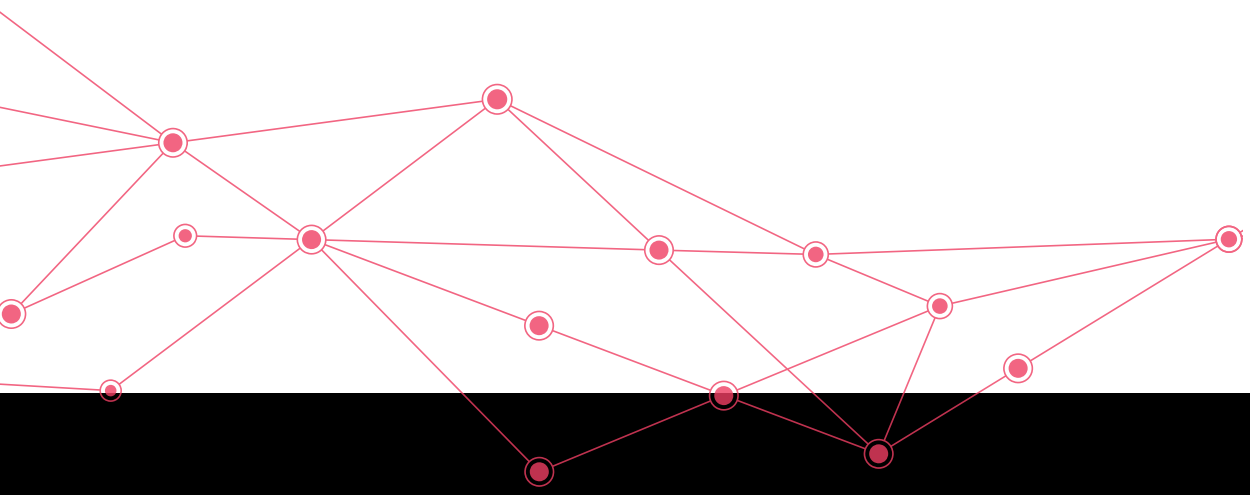
One major goal of the metaverse is to offer a markedly better user experience than what is currently available—to offer something that is almost lifelike. As a starting point, organizations should get creative. They should imagine how they can provide realistic experiences to customers in a make-believe environment. Whether it's, say, a 3D representation or avatars and their belongings, organizations should consider the most compelling way to bring to life their particular offerings. That means an immersive experience that highlights the value of interacting with the organization and its products, while instilling confidence among both customers and the public.

Identify relevant business use cases for pilot projects

It is easy to be swept away by the hype surrounding the metaverse. Companies must think strategically and practically about the use cases best suited to their business model and most aligned with their organizational purpose and aspirations—and then develop pilot projects. For example, a retail bank deciding its most effective first moves should weigh the relative benefits of either developing a metaverse loan application process or using an avatar application to prevent fraud. Above all, it is crucial to start experimenting today while the metaverse is still maturing, because in a few years it might be too late to catch up with the competition.

Build a robust digital infrastructure

Having a robust digital infrastructure in place is a prerequisite for developing metaverse experiences. The metaverse requires massive computing power, which means that organizations' digital operations must expand considerably. Cloud computing capacity and other digital infrastructure driving the metaverse will need to be scaled up.



Get on the ball with blockchain

Ensuring authenticity and maintaining a clear chain of custody records is critical for the decentralized transactions of the digital economy. The payment infrastructure of the metaverse relies heavily on blockchain. At its core, blockchain provides the security and anonymity necessary to support transactions. No organization can realistically consider the commercial capabilities of the metaverse unless it understands and is prepared to invest in this technology.

Get smarter about data

Data is the lifeblood of the digital world. To reap the benefits of data, companies must improve their data analytics and management capabilities continually. The metaverse will require a massive expansion of those capabilities as the volume of data increases exponentially. Companies need robust, scalable data architectures and next-generation advanced analytics powered by machine learning. They also need people with related skills, such as proper data governance and data management skills. These capabilities, moreover, are vital for guiding decision making, and for design and operations purposes.

Make cybersecurity a priority

Businesses need to embed cybersecurity throughout their operations. They must not treat cybersecurity as an end point, or, worse, an afterthought. User acceptance depends on the assurance that organizations will safeguard customer and visitor information. In the metaverse, that information goes well beyond a user's payment and account information; it encompasses the full range of their movements and activities in the metaverse itself. As a starting point, companies must build their cyber defenses with stronger infrastructure and systems, along with the necessary human expertise.

CONCLUSION

The road ahead is likely to be winding and long. The underlying technologies of the metaverse are complex, are not fully developed, and interact in complicated ways. Governments and companies need to resolve various regulatory issues, particularly those regarding data privacy, data storage, and financial services. There are risks, known and unforeseeable, that could trigger setbacks or disappointment. However, not one of these issues is stopping the metaverse, as the growing number of metaverse applications in the GCC demonstrates. As the metaverse's theoretical and practical issues are overcome, the promise of value creation can only grow.

ENDNOTES

1. The GCC countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

2. Ben Flanagan, "Saudi Arabia's New Metaverse Will Help Design $500bn City IRL," *Wired*, February 1, 2022 (https://wired.me/technology/saudi-arabias-new-metaverse-will-help-design-500bn-city-irl/).

3. Fintechnews Middle East, "Dubai Launches Its Official Metaverse Strategy," July 20, 2022 (https://fintechnews.ae/12722/fintechdubai/dubai-launches-its-official-metaverse-strategy/).

4. Edge computing is the converse of the cloud approach in that it occurs close to the source (whether the computer, internet of things devices, or edge server) to reduce latency and bandwidth use.

5. Non-fungible tokens are unique blockchain assets.

6. Matthew Kanterman and Nathan Naidu, "Metaverse May Be $800 Billion Market, Next Tech Platform," Bloomberg Intelligence, December 1, 2021 (https://www.bloomberg.com/professional/blog/metaverse-may-be-800-billion-market-next-tech-platform/).

7. Leen Al-Rashdan, "Dubai's Metaverse Plan Targets 40,000 Virtual Jobs in Five Years," Bloomberg, July 19, 2022 (https://www.bloomberg.com/news/articles/2022-07-19/dubai-s-metaverse-plan-targets-40-000-virtual-jobs-in-five-years#:~:text=Dubai%20is%20seeking%20to%20break,city's%20GDP%20in%20five%20years); Fintechnews Middle East, "Dubai Launches Its Official Metaverse Strategy," July 20, 2022 (https://fintechnews.ae/12722/fintechdubai/dubai-launches-its-official-metaverse-strategy/).

8. Rizwan Choudhury, "Middle East's First Metaverse Incubator Opens in Dubai World Trade Centre," Mashable Middle East, April 12, 2022 (https://me.mashable.com/tech/16584/middle-easts-first-metaverse-incubator-opens-in-dubai-world-trade-centre).

9. Web3 is the internet's move toward decentralization. In Web3, traditional intermediaries—such as mobility platforms, banks, and government offices—become obsolete.

10. Saudi Arabia, "Vision 2030, Economy and Business, Promoting Local Content and National Industry" (https://www.vision2030.gov.sa/thekingdom/explore/economy/#:~:text=Saudi%20Vision%202030%20aims%20to,and%20create%20sustainable%20job%20opportunities).

11. Karim Abdallah, Marwan Bejjani, Dima Sayess, Vivek Madan, and Melissa Rizk, “Destination Middle East: Boosting the Region’s Position in Global Tourism,” Strategy&, 2020 (https://www.strategyand.pwc.com/m1/en/ideation-center/ic-research/2020/destination-middleeast-global-tourism.html).

12. Alaa Swilam and Enas Alashray, “New Saudi Investment Strategy Aims for $100 Bln Annual FDI Flows—SPA,” Reuters, October 11, 2021 (https://www.reuters.com/world/middle-east/new-saudi-investment-strategy-aims-100-bln-annual-fdi-flows-spa-2021-10-11/).

13. AlUla (https://www.experiencealula.com/).

14. International Trade Administration, “Saudi Arabia—Country Commercial Guide: Travel, Tourism, and Entertainment,” 2022 (https://www.trade.gov/country-commercial-guides/saudi-arabia-travel-tourism-and-entertainment).

15. Jorge Camarate, Mark Stanley, Dr. Antoine Khadige, and Patricia Keating, “Fintech in the Middle East: Building on the Momentum,” Strategy&, 2022 (https://www.strategyand.pwc.com/m1/en/strategic-foresight/sector-strategies/financial-sector-consulting/fintechbuildingmomentum.html).

16. Jody Waugh, “Where to from Here? The Future of the UAE Finance Industry,” Al Tamimi & Co. (https://www.tamimi.com/law-update-articles/where-to-from-here-the-future-of-the-uae-finance-industry/).

17. Naveen Joshi, “Exploring the Galaxy of Fintech Services within the Metaverse,” *Forbes*, May 10, 2022 (https://www.forbes.com/sites/naveenjoshi/2022/05/10/exploring-the-galaxy-of-fintech-services-within-the-metaverse/?sh=2c753cb414b8).

18. Dana Alomar, “UAE In-Focus—UAE Bank Enters Metaverse; CVC-Owned TMF Group Acquired by Abu Dhabi’s Wealth Fund,” *Arab News*, July 24, 2022 (https://arab.news/m2k7k).

19. Marco Ferrari, “NEOM First Choice among Giga-Projects for Saudi Arabian Homebuyers: Survey,” *Al-Arabiya News*, February 23, 2022 (https://english.alarabiya.net/business/property/2022/02/23/NEOM-first-choice-among-giga-projects-for-Saudi-Arabian-homebuyers-Survey).

20. Ben Flanagan, “Saudi Arabia’s New Metaverse Will Help Design $500bn City IRL,” *Wired*, February 1, 2022 (https://wired.me/technology/saudi-arabias-new-metaverse-will-help-design-500bn-city-irl/).

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