EDITOR **NIR KSHETRI**
University of North Carolina at Greensboro;
nbkshetr@uncg.edu

National Metaverse Strategies

Nir Kshetri, University of North Carolina at Greensboro

Many countries are viewing the metaverse as essential to their economies, developing national blueprints to grow the metaverse industry. This article examines said strategies of China, Saudi Arabia, South Korea, and the United Arab Emirates.

Governments are realizing that the adoption of metaverse technologies such as augmented reality, virtual reality (VR), and digital twins is essential to achieve their national economic, social, and political goals. Unsurprisingly, national and subnational governments have used various metaverse technologies such as VR and digital twins in the public sector for quite some time. In 2015, the Singapore government started working with French software corporation Dassault Systèmes to develop the city-state's digital twin, known as *Virtual Singapore*.[1] Virtual Singapore offers the city's 3D semantic model, in which the data's meaning can be related to the real world. It can display land attributes, different forms of transport, and components of buildings and infrastructures.

Similarly, in 2018, Finland's capital Helsinki launched "Virtual Helsinki" (https://www.youtube.com/watch?v=pNefQvZelFg). VR studio ZOAN created the metaverse, which is described as a digital twin of the Helsinki City Centre. Users can wear VR headsets to tour the city.[2]

More recently, several countries have pursued more expensive and grandiose metaverse strategies. This article delves into diverse strategies that several nations have developed and implemented to capitalize on the metaverse megatrend. Specifically, we focus on four nations: China, Saudi Arabia, South Korea, and the United Arab Emirates (UAE).

NATIONAL METAVERSE STRATEGIES

Table 1 presents national metaverse strategies of four major economies. The next sections review the key components of their metaverse strategies.

CHINA

In October 2021, the China Institute of Contemporary International Relations (CICIR), which is the 11th Bureau of the Ministry of State Security, launched what is referred

to as the *Chinaverse initiative*. The CICIR released a report, "The Metaverse and National Security," which analyzed the metaverse's national security challenges. This was arguably the Chinese Communist Party's (CCP's) first official statement on the topic of the metaverse. The CICIR report says, "It [the metaverse] will have a major social, political and economic impact on countries … and on political and cultural security … it could bring about major changes in the social structure."[3]

The phrase "use the virtual to enhance the real, use the virtual to strengthen the real" describes China's strategic approach to develop the metaverse. The phrase was reportedly first used in March 2022 by the assistant director of Shanghai's Economic and Information Technology Commission, who is also a Chinese People's Political Consultative Conference member. The recommendation here is to caution against an overemphasis on entertainment, which would arguably increase the risks of speculative investment.[4] This approach has been reinforced by the country's major constituencies. For instance, in September 2022, the title of a Xinhua opinion-editorial column used the same phrase, which emphasized removing the "fake bubbles" and making a "real development progress" using the metaverse.[4]

What is clear is that the Chinaverse is expected to be highly regulated. The country's entertainment industry is strictly regulated and controlled. For instance, before video games are released to the market, they must be approved by the government. The contents considered to be obscene or with excessive blood and violence are banned.[3] The Chinese government was also reported to be studying a registration system for metaverse users in an attempt to prevent them from influencing wider public opinion.[5]

China is also using the metaverse to promote the interests and agenda of the CCP. The government has established a CCP teaching center with immersive technology to foster the CCP's values. The center can be used to provide immersive training even in times of crises, such as a pandemic. The country is also working on a virtual factory concept, which will help reduce the consumption of energy, water, and raw materials as there is no need to develop physical prototypes before the production process.[3]

The metaverse's potential as an education platform has already been shown. For instance, the CCP's top cadre training school, the Chinese Academy of Governance, uses the metaverse system to enhance the

TABLE 1. National metaverse strategies of some major economies.

Country	Key elements of the metaverse strategy	Sample projects/goals
China	• The country has a strategic approach: "use the virtual to enhance the real, use the virtual to strengthen the real." • CICIR analyzed the metaverse's national security challenges. • The country is reported to be studying a registration system for metaverse users. • Shanghai: the metaverse as among the four "frontiers for exploration."	• The country is developing a teaching center with immersive technology to foster CCP values. • Shanghai: US$1.5 billion investment. Goal: to develop 10 leading companies and 100 small-sized firms and launch 100 products and services by 2025.
Saudi Arabia	• The metaverse is a key part of Vision 2030. • The country launched the National Gaming and Esports Strategy.	• The US$500 billion futuristic megacity NEOM will have its own metaverse. • Gaming and esports market: US$6.8 billion by 2030, 39,000 jobs.
South Korea	• The country launched K-metaverse 2022. • 2022: investment of US$185 million in metaverse-related projects.	• The country plans to select 70 K-metaverse companies and provide them with customized supports. • 2021: Seoul announced a five-year plan to build the city's digital twin; a beta test run of its first stage was in August 2022.
The UAE	• The country plans to measure economic success using gross metaverse product • The country plans to focus on tourism, education, government services, retail and real estate. • The country plans to launch a task force to evaluate opportunities for exporting culture. • Dubai: aims to make the city among the world's top-10 metaverse economies. Goal: attract more than 1,000 blockchain and metaverse companies and support more than 40,000 virtual jobs by 2030.	• The Ministry of Economy: plans to have its headquarters in the metaverse. • Dubai city's digital twin will be in the metaverse. • Sharjah: has plans for the "Virtual Transaction Centre—Metaverse."

CICIR: China Institute of Contemporary International Relations; CCP: Chinese Communist Party.

effectiveness of its party-building experience. Beijing-based VR firm Mengke is a major technology provider of the system. Users can remotely access virtual activities such as party conferences and party history lessons. The system allows participants to move around. They can use their virtual avatars and listen to virtual narrators. The new system was reported to have saved time and travel costs.[6]

Among the country's subnational administrative units, financial and commercial hub Shanghai has among the most developed metaverse strategies. In December 2021, the metaverse was mentioned as among the four "frontiers for exploration" by the Shanghai Municipal Commission of Economy and Information Technology as a part of its five-year development plan.[7]

In July 2022, Shanghai announced plans to invest 10 billion yuan (~ US$1.5 billion) in metaverse development.[7] The city expects to build a metaverse economy worth US$52 billion by 2025.[8] A major goal of the investment is to develop 10 leading companies and 100 small-sized firms in the metaverse sector. These firms are expected to launch 100 metaverse products and services by 2025.[9]

In August 2022, Shanghai established the "Metaverse and Virtual-Reality Interchange and Interconnection Research Institute." The Institute's mission also reinforces the country's ambition and emphasizes the use of "the virtual to strengthen the real." Its members include technology giants such as Huawei and Tencent.

SAUDI ARABIA
In early 2022, Saudi Arabia announced a US$1 billion investment in NEOM Tech & Digital Company, which is named after the country's US$500 billion futuristic Red Sea megacity NEOM. The city is under construction, and the first phase is expected to be completed by 2025. The whole project, however, will take 30–50 years to finish.[10]

NEOM'S first major project is a zero-carbon city to be built in a 170-km straight line, known as *The Line*.[11] A digital twin is being used in the construction of The Line. The city plans to launch its own metaverse.[12] The metaverse will make it possible for people from anywhere to visit NEOM virtually before making an investment.[13] Among many features of the futuristic city, residents will be able to host "holographic" parties.[13]

China is also using the metaverse to promote the interests and agenda of the CCP.

The country has also launched the National Gaming and Esports Strategy[14] and made an investment in metaverse gaming.[15] The esports industry is expected to create 39,000 jobs and contribute US$13.3 billion to the country's gross domestic product (GDP) by 2030.[16] Metaverse gaming is also expected to be a major component of the NEOM megacity project.[17]

The nation's gaming culture is a key driver of the strategy. According to a study by Boston Consulting Group, the Saudi Arabian gaming and esports market will reach US$6.8 billion by 2030. The country's 23.5 million people (67% of the population) identify themselves as game enthusiasts.[18]

SOUTH KOREA
A national blueprint has been developed by the South Korean government to develop the metaverse industry. Its ambitious national metaverse strategy is a key part of its digital transformation strategy. In 2021, South Korea launched the "Metaverse Alliance," which involved more than 200 entities. The country allocated approximately US$8 billion from its 2022 budget to facilitate digital transformation.[19]

The Ministry of Science, ICT and Future Planning and the National IT Industry Promotion Agency have launched a massive project referred to as *K-metaverse 2022*. A major goal of the project is to promote the country's globally competitive companies in the metaverse sector. The Welcome (http://www.thewelcome.co.kr/#1) is in charge of K-metaverse 2022 project. The plan is to select 70 K-metaverse companies based on strict criteria and provide them with customized support in areas such as technological development and human resources. Selected companies are planned to be at the early, middle, and advanced stages.[20]

In early 2022, South Korea announced a US$185 million investment to build a metaverse ecosystem throughout the nation.[21] The investment aims to create jobs related to its development and build virtual platforms for city services.[15]

In 2021, capital city Seoul announced a five-year plan to build the city's digital twin as an alternative channel to provide access to municipal services for citizens. It also envisions promoting virtual tourism. In August 2022, a beta test run of its first stage of the Seoul metaverse launched.[21]

THE UAE
In September 2022, the UAE government announced that the country will measure its economic success using gross metaverse product instead of GDP.[22] The minister of state for artificial intelligence (AI) noted that the metaverse strategy would focus on tourism, education, government services, retail, and real estate. The minister also announced a plan to launch a task force to evaluate opportunities for exporting the country's culture using the metaverse[23]

The country has started using the metaverse to increase effectiveness and efficiency in its administrative functions. For instance, the Ministry of Economy has opened its headquarters in the metaverse to connect and

collaborate. VR-immersive experiences are provided for different stakeholders, such as governments, global corporations, and the public. Advanced technologies are planned for deployment to sign bilateral agreements with other nations in the metaverse.[24]

Among the seven Emirates of the UAE, Dubai has the most ambitious metaverse plans. In July 2022,

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it launched the Dubai Metaverse Strategy, which aims to make the city among the world's top-10 metaverse economies. Its goal is to attract more than 1,000 blockchain and metaverse companies to the city and support more than 40,000 virtual jobs by 2030.[25] Dubai also announced a plan to launch the city's digital twin. The digital twin can help simulate actions and decisions virtually before implementing them in the physical world.[26]

Among other Emirates, in October 2022, the government of Sharjah launched "Virtual Transaction Center—Metaverse." In the metaverse platform, customer service agents process documents of its users. The metaverse platform also has information about government services provided by Sharjah's Department of Town Planning and Survey in audio and video forms.[27]

DIVERSE METAVERSE TRAJECTORIES: VARIOUS MOTIVATIONS AND DRIVERS

The diverse metaverse trajectories at national and subnational levels examined previously help us understand the economic, political, and social goals of metaverse policies. Nations also differ in terms of their motivations and drivers that influence their metaverse policies.

China has been described as a combination of an empire and a modern nation.[28] In general, China's state strategies toward information and communications technologies (ICTs) have been to balance economic modernization and political control.[29] In the early 1990s, for instance, China focused its attention on the Internet before most of the other developing countries, arguably to maintain control over the population.[30] This vision is likely to shape the Chinaverse. The Chinese government wants to develop a domestic metaverse that helps contribute to the CCP's objectives. The government's vision is to enable the private sector to develop key metaverse technologies.[3]

Although China arguably considers the metaverse to be a less strategic sector compared to other emerging technologies such as artificial intelligence (AI) smart cities and the Internet of Things, some strategic plans have been introduced by the national and local governments to promote this sector. Observers have noted that China has adopted a wait-and-watch or reactive approach with regard to the metaverse. The Chinese government has closely watched U.S. companies with grandiose metaverse projects such as Meta and Microsoft to understand the potential of the metaverse. If the metaverse turns out to be just a bubble with no economic basis or foundation, the progress made with underlying technologies can help develop other economic sectors. If it turns out to be a transformative innovation, China will be in a position to be a global metaverse leader.[3]

Some governments hope that their policies can play a key role in making their countries globally competitive in the metaverse industry. For instance, South Korea's goal is to be among the world's top-five metaverse leaders by 2027.[21] South Korea's metaverse sector got a big boost after the right-wing People's Power Party's Yoon Suk-yeol was elected the country's president. Yeol is viewed as the country's first crypto-friendly president. In the election campaigns, Yeol and his rival, the Democratic Party's Lee Jae-myung, made promises to promote a crypto-friendly environment to win votes of the young generation. Some observers viewed it as Asia's first crypto election.[31]

The oil-rich Gulf Cooperation Council (GCC) economies such as Saudi Arabia and the UAE have recognized the importance of reducing their reliance on oil and are implementing strategies to diversify their economies.[32] GCC governments have integrated emerging technologies such as AI into their national visions and strategic planning processes. They are incorporating the metaverse into their existing ICT strategies. For instance, the NEOM megacity project is a part of Saudi Arabia's Vision 2030 initiative.[12] The project is also viewed as a plan to reduce its reliance on oil revenue and diversify the country's economy.[33]

The GCC countries also view that investments in new innovations, such as the metaverse, can help increase their technological competitiveness. For instance, the UAE's metaverse investment aims to boost the country's status as a global technology hub.

However, the GCC economies' metaverse industries and markets face various structural, political, and societal barriers. Considering the metaverse gaming industry, for instance, Saudi Arabia has only ~ 100 pro esports players, which is 0.0005% of total gamers. The proportions for the United States and France are roughly six-times higher. Saudi players who aspire to become pro esports players have complained about unfavorable conditions in the country, such as a lack of funding to compete full-time and a lack of local competition. There is also a social stigma associated with an esports career.[18]

These barriers have also emerged as key impediments to attracting investments and developing international alliances and partnerships. For instance, in 2020, the U.S. video game developer, publisher, and esports tournament organizer Riot Games announced a sponsor partnership with NEOM for the European championship for the game League of Legends; NEOM would have benefited from the partnership. However, the partnership faced strong opposition from various stakeholders, especially lesbian, gay, bisexual, transgender, queer (LGBTQ) gamers because Saudi Arabia prohibits same-sex relationships as well as open LGBTQ activities. Within 24 h of its NEOM deal announcement, Riot Games withdrew from the commitment. Danish tournament organizer BLAST (https://about.blast.tv/) also terminated its partnership with NEOM.[17] BLAST's deal with NEOM involved helping the megacity develop a regional esports hub, advising on the creation of an esports academy and expanding esports in Saudi Arabia.[34]

These barriers have strong implications for the development of the Saudi Arabian metaverse industry and market, especially in light of the fact that the country desperately needs private sector and foreign investments. Although consultants have been paid significant fees, little actual construction has taken place.[33] Saudi Arabia announced a plan to raise US$300 billion by selling 5% of oil giant Saudi Aramco to invest in the NEOM project; this means a shortfall of US$200 billion.[10]

Governments are using emerging technologies to increase their state capacities and transform processes and practices to increase effectiveness and efficiency in their administrative functions. The metaverse is viewed as among the latest technologies to facilitate such processes. In the past few years, metaverse policies have gained momentum and legitimacy to stimulate the growth of national economies. Several nations have published their national metaverse strategies. These strategies vary widely in their aim and scope.

Socioeconomic and political factors have shaped the diverse trajectories and patterns of the metaverses. China's metaverse is likely to be highly regulated and controlled by the government. The country is less supportive of areas such as gaming and entertainment as these activities do not contribute to the mission of using "the virtual to enhance the real." This is in contrast to Saudi Arabia's strategy, which has developed the National Gaming and Esports Strategy. The UAE and Saudi Arabia are eager to attract foreign investments in metaverse projects. The aforementioned discussion makes it clear that countries such as Saudi Arabia need to devise policies that are viewed favorably by international investors, and improve their negative international image to attract foreign investments in this sector. ▣

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NIR KSHETRI is a professor of management in the Bryan School of Business and Economics, University of North Carolina at Greensboro, Greensboro, NC 27412 USA, and the "Computing's Economics" column editor for *Computer.* Contact him at nbkshetr@uncg.edu.