Smart Dubai — towards becoming the happiest city on Earth

Dr. Aisha Bint Butti Bin Bishr, Director General; Dr. Okan Geray, Strategy Planning Advisor;
Zeina El Kaissi, Head of Emerging Technology and Global Partnerships; Meera Al Shaikh, Senior Project Manager,
Smart Dubai Office, UAE

Dubai is one of the seven Emirates that constitute the United Arab Emirates (UAE) in the Gulf region with a population of over 3 million people. Dubai is a regional, vibrant economic hub with strategically competitive sectors such as tourism, trade and logistics, real estate, retail, financial services, healthcare and education. It is equipped with the world's busiest airport, the world's tallest building and the 9th largest port in the world.

Dubai's economy has grown 11-fold between 1975 and 2008 rendering it the fastest-growing economy in the world over the same period. During the past two decades, numerous strategic ICT and digital transformation initiatives in the city has altered and digitised various aspects of life. Dubai incorporates 'smart design' into its fabric and has been able to fuse cyber and physical infrastructure and systems while rapidly expanding to accommodate the next projected 30 million visitors by 2020.

Dubai has already achieved world-class leading city status with respect to various SDG 11 indicators as highlighted below.

Housing: No one lives in slums, and there are no homeless or informal settlements in Dubai. All households have registered titles.

Access to basic services: Dubai has achieved 100 per cent potable water supply and authorized electrical service, 100 per cent sustainable access to improved water source, and 100 per cent of the population has access to sanitation facilities as well as wastewater collection and treatment. The UAE, represented by Dubai utilities DEWA, maintained its first place globally, for the second consecutive year in all of the Getting Electricity indicators in the World Bank's *Doing Business 2019* report.

The city's population has access to healthcare facilities. And Dubai is well known as one of the safest cities in the world. 100 per cent of the population has completed primary education, and the secondary and tertiary education rates are high.

Access to Transport: Dubai with its high income and high GDP per capita status also has a high percentage of private vehicle ownership, a well-established modern multi-modal transport infrastructure on sea, land and air with an extensive public transport network, and is currently expanding its bicycle routes substantially across the city.

Inclusive and sustainable urbanization: Dubai has a relatively low population density, a high female participation rate in the workforce and a long term urban plan.

Environment and resilience: Dubai has had no natural disaster related deaths. It has 100 per cent regular solid waste collection. Dubai has achieved competitive results, surpassing major European and American utilities in efficiency and reliability; electricity transmission and distribution networks losses were reduced to 3.3 per cent compared to 6–7 per cent in the US and Europe, while water network losses were reduced to 6.6 per cent compared to 15 per cent in the US, which is one of the best results in the world. Dubai has also achieved one of the lowest records of customer minutes lost per year (CML) in the world — 2.39 CML compared to 15 minutes in Europe.

Long term strategies related to SDG 11
Dubai has already developed several long term strategies in addition to short and medium targets. The ciy's Carbon Abatement Strategy entails reducing carbon emissions by 16 per cent by 2021. The Dubai Clean Energy Strategy aims to provide 75 per cent of the ciy's energy from clean energy sources by 2050, 25 per cent by 2030 and 7 per cent by 2020. Dubai is currently building the world's largest single-site solar energy park with the initial phase already operational. Dubai's Smart Autonomous Mobility Strategy has a clear-cut target of transforming 25 per cent of all journeys in the city into driverless by 2030 and 12 per cent by 2021.

Smart Dubai initiative
The Smart Dubai initiative was launched in 2014 by vice-president and prime minister of the UAE, and The Ruler of Dubai, His Highness Sheikh Mohammad Bin Rashid Al Maktoum, to focus the city's unified effort towards its most valued asset — its people. The vision of Smart Dubai is: "To become the happiest city on earth."

Dubai also aims to become the smartest city in the world by harnessing digital innovation. It aims to take its smart city transformation to a level such that digital transformation has a significant and positive impact on the city. Smart Dubai, therefore, strategically embraces technology innovation to make city experiences seamless, safe, personalized and efficient, delivering an enhanced quality of life and ensuring sustainability.

Smart Dubai launched in 2017 its 5-year smart city strategy Smart Dubai 2021

Numerous actual implementations as well as proofs of concepts have been undertaken as part of the Smart Dubai initiative, such as massive Internet of Things (IoT) systems, data analytics, blockchain, hyperloop projects, innovative 3D printing initiatives, autonomous vehicles and drones trials, robotics, and artificial intelligence applications.

Smart Dubai strategy: Smart Dubai launched in 2017 its 5-year smart city strategy Smart Dubai 2021 which encompasses six dimensions: living, governance, environment, economy, mobility and people. The strategy also entails four cross-sectoral initiatives:

- Creating seamless city experiences and a paperless city
- Using shared and open data as a strategic asset to achieve city impact
- Creating internal government efficiency as a strategic competitive advantage
- Establishing a global and city-wide robust inclusive ecosystem accelerating Smart Dubai implementation.

Seamless city experiences
The vision of "becoming the happiest city on earth" has brought together Dubai entities to enhance and optimize various city experiences. Smart Dubai has formed a unique community of individuals designated "Happiness Champions" in more than 50 public and private sector entities to diffuse the culture of happiness through technology advancement.

City experiences implementation: An initial target of 100 city experiences was selected to be co-designed with the involvement of numerous stakeholders from public and private sectors as well as customers (users) of city experiences by adopting a design thinking and bottom-up innovation approach. Dubai city experiences directly impact and touch the daily lives of people in such cases as starting a business, commuting, driving, renting or buying property, travelling to Dubai, and enrolling in schools. Redesigned city experiences touch the lives of individuals, businesses and visitors in Dubai.

Enhancing city experiences with emerging technologies: Smart Dubai has adopted several emerging and disruptive technologies including blockchain, artificial intelligence (AI), and IoT to achieve strategic competitive advantage during the sectoral transformation of the country.

Dubai AI strategy: In 2016, Smart Dubai announced its first AI pilot application for what would become Rashid — the city's AI enablement layer. It was expected that much of the city's entrepreneurial community would look forward to opening businesses in the city, which is why, during Rashid's launch phase, Smart Dubai teamed up with the Department of Economic Development in Dubai, with Rashid assisting all new entrepreneurs with details on documentation and legalities for opening a new business. This function is still live and can be accessed on the Department of Economic Development website or via Dubai Now. Due to the success of Rashid's pilot phase, it can now answer questions related to any government query[1].

In 2017, Smart Dubai announced the city's AI roadmap and, since then has been working with partners across the city to implement AI wherever possible. The AI roadmap has identified 104 AI use cases, out of which 43 are currently being implemented, working with 13 government entities, and spanning 10 industry sectors.

Dubai IoT strategy: Dubai is a highly connected city with broadband internet penetration surpassing 95 per cent and

mobile penetration exceeding 250 per cent. Smart Dubai 2021 aims to further connect Dubai city resources and infrastructures. Water and energy networks (through smart meters), sewerage, drainage, waste management networks, buildings, traffic lights, ports, and seashores will be connected and monitored, enhancing city resilience. Several use cases in different phases are being implemented as part of Dubai's IoT strategy.

Happiness meter for city experiences: In line with the vision to become the happiest city on earth, Smart Dubai has implemented a simple yet powerful tool — the Happiness Meter to measure city experiences from more than 4,000 touchpoints. From its launch in 2015 until the end of 2018, more than 22 million votes have been collected from 172 entities and the overall happiness rating has reached 90 per cent at the city level. The Happiness Meter provides the city leadership with real-time access to happiness results creating transparency and an immediate feedback tool to city administrators for enhancing city experiences.

Dubai Paperless Strategy

His Highness Sheikh Hamdan Bin Mohammad Bin Rashid Al Maktoum, Crown Prince of Dubai and chairman of The Executive Council of Dubai, launched the 'Dubai Paperless Strategy' in 2018.

The Dubai Paperless Strategy addresses technology, legislation and cultural issues in order to digitize 100 per cent of government services by 2021, with no paper being used for any internal or external transactions, thus reaching a pinnacle in city digitization. The strategy entails the redesign of all main city sectors including mobility, energy, environment, society, education, health and public services, and related city experiences.

It is estimated that, after 2021, the strategy will save over 1 billion sheets of paper annually, amounting to the saving of approximately 130,000 trees and over US$ 350 million annually.

The Dubai Paperless Strategy addresses technology, legislation and cultural issues in order to digitize 100 per cent of government services by 2021

Data as a strategic asset
Smart Dubai launched two major and complementary initiatives called Dubai Data and Dubai Pulse.

The Dubai Data initiative aims to achieve seamless, efficient, impactful and safe data governance and data sharing at city level, contributing to Dubai's smart transformation, whereas Dubai Pulse forms the new digital backbone as the city platform built as a result of a Public-Private-Partnership.

The shared and open data have been identified as strategic assets for enhancing city experiences and happiness. Hence Dubai Data Law, Dubai Data Policies, Dubai Data Standards and Dubai Pulse are the key building blocks (enablers) for data. City-level Dubai Data Champions have been designated from both public and selected private sector entities. Well-defined curriculum-based training and skills boosting programmes have been conducted to accelerate data management and data science skills.

Data impact: By 2021, open and shared data has the potential to add approximately US$ 2.8 billion to Dubai's economy every year. Opening government data alone will result in an added value in the range of US$ 1.2 to 1.8 billion annually by 2021.

Internal government efficiency as a strategic advantage
Synergies in strategic ICT implementation such as IoT and data platforms, AI based systems, blockchain platforms, digital identity and payment, and common back-office functions compelled Smart Dubai to undertake an extensive approach for implementing shared ICT services and infrastructures.

Smart Dubai — shared ICT services: Smart Dubai has implemented and delivered more than 60 shared ICT services utilized by more than 50 entities — today more than 90 per cent of all Dubai government employees and more than 95 per cent of Dubai government budgets are managed by a

Smart Dubai aims to stay at the forefront of technological innovation for smart sustainable cities

Dubai Blockchain Strategy

Smart Dubai is currently leading the implementation of the Dubai Blockchain Strategy which intends to make Dubai the first city government to run all applicable transactions on blockchain by 2020. It entails an initial 20 well-defined public and private sector use cases and an implementation roadmap both of which significantly benefit from third party elimination, transaction ledgers, smart controls and/or automation.

As part of the strategy, Smart Dubai also runs several initiatives to attract the necessary talent to the region for the development of the technology.

single shared system. A total of US$ 1.2 billion savings were achieved in just over a decade. Smart Dubai has saved US$ 5.6 for every US$ 1 spent for its shared ICT services.

A robust global network and a city-wide ecosystem
Smart Dubai has flourished into a highly vibrant and productive ecosystem critical for its smart sustainable city transformation with a very broad stakeholder representation and engagement.

Smart Cities Global Network: Smart Dubai aims to stay at the forefront of technological innovation for smart sustainable cities. It launched Smart Cities Global Network in April 2018, the first of its kind, aiming to be the prominent international network of Smart Cities. Smart Dubai extends its partnership approach to all individuals and entities with

a passion for advanced technology and Fourth Industrial Revolution breakthroughs.

Global knowledge building: Smart Dubai has taken leadership and co-leadership roles in global initiatives undertaken by esteemed organizations such as the World Economic Forum, International Telecommunications Union, United for Smart Sustainable Cities, Global Happiness Council, SDG 11 Global Council, and the Hyperledger Foundation to exchange and create knowledge.

Startup support: The Dubai startup and entrepreneur community forms the foundation for application of emerging technologies in city services within the context of the 4th Industrial Revolution.

Smart Dubai has also launched the Global Blockchain Challenge, attracting global talent and entrepreneurs with concrete challenges from public and private sector entities in the city to spearhead its Dubai Smart City Accelerator. The accelerator was launched in 2017 and run by the Startupbootcamp network. It is an intensive programme supporting innovative companies in blockchain, AI, IoT and connectivity, urban automation and mobility, and open data, among others.

Smart Dubai is also collaborating with an ecosystem of startup financial support and other accelerators. Hence, Smart Dubai is striving to become the smartest and the happiest city on earth with a broad range of strategic and focused initiatives at city level.

3811-A ENDNOTES
These will appear at the back of the book

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1   See: https://rashid.ae for information on this AI application.

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