

CASE STUDY

DUBAI - THE FIRST CITY ON THE BLOCKCHAIN

JANUARY 2017

#SMARTDUBAI



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1. INTRODUCTION

1.1. BACKGROUND

Dubai is one of the seven emirates that constitute the United Arab Emirates (UAE). It is the most populous city and Emirate in the country with a gross domestic product of 82 billion USD.

Over the last 40 years, Dubai has succeeded in transforming into a global city and regional business and tourism hub. It has established an international reputation as an economic and investment center, attracting thousands of international companies that establish their regional headquarters in the Emirate's many free zones. The Emirate has been able to achieve this success by diversifying its gross domestic product through vast development in sectors such as tourism, real estate, retail, travel and logistics. It has also been recognized for attracting skilled talent from around the world.

Underlying this economic growth has been a strong and productive Government sector that has embraced technology and committed to excellence and digital city transformation. The city's technological journey began in 1999 with the announcement of its first ICT strategy which was followed by the launch of Dubai Internet City, Dubai e-



government, Dubai Smart Government and the Dubai Smart Office (see exhibit 1).

Today, Dubai is amongst the world's leading smart cities in its adoption of new technology and pioneering of innovative smart pilots. Recognizing the potential impact of the blockchain technology on city services coupled with a worldwide blockchain adoption trend that saw \$1.1 billion invested by the private sector in blockchain technology in 2016 alone, Dubai launched a city wide blockchain strategy in October 2016 with the objective of becoming the first blockchain powered city by 2020.

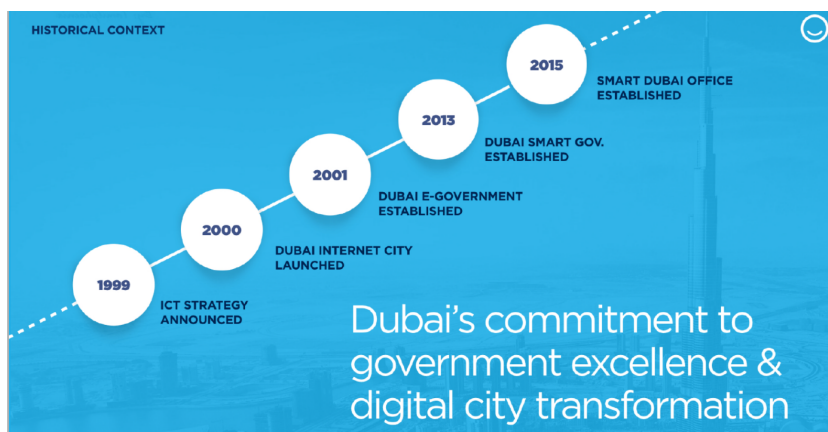


EXHIBIT 1 - DUBAI'S TECHNOLOGICAL JOURNEY



1.2. CHALLENGE AND RESPONSE

Dubai's rapid development in various economic sectors meant that traditional processes needed to be continuously updated to ensure efficiency and speed. Government effectiveness became increasingly imperative especially in Government to Consumer (G2C) and Government to Government (G2G) services.

In particular, the growth of the business, construction and tourism sectors saw the Government needing tighter controls over activities such as permissions (e.g. permits and No Objection Certificates (NoCs)) and transaction verification and tracking. Simple processes were getting ever more complicated with the addition of activities that were now in demand by the city's new businesses and residents. It was clear that Dubai needed an agile solution to streamlining its growing Government processes.

Dubai saw potential in blockchain as the solution. Blockchain is the technology that utilizes open distributed databases of transactions involving value. Its coding method allows for secure record keeping in distributed online ledgers where members share and confirm information with no central authority (see exhibit 2).

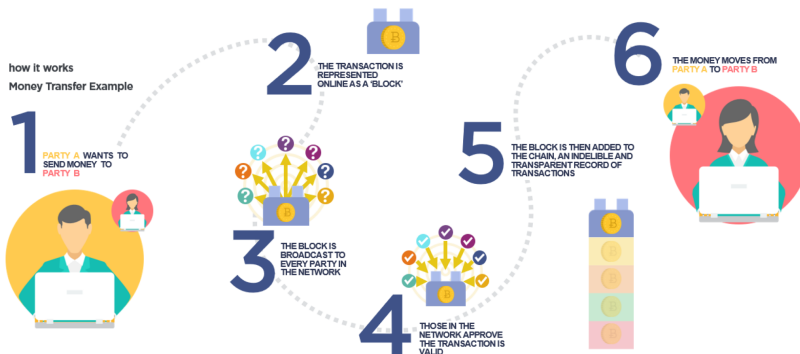


EXHIBIT 2 - HOW BLOCKCHAIN WORKS - MONEY TRANSFER EXAMPLE

Moreover, the blockchain economy is witnessing rapid growth with 600 new companies active in blockchain today, \$1.1 billion invested in blockchain by the private sector in 2016 alone and an expected market value of \$290 billion in 2019 (see exhibit 3).

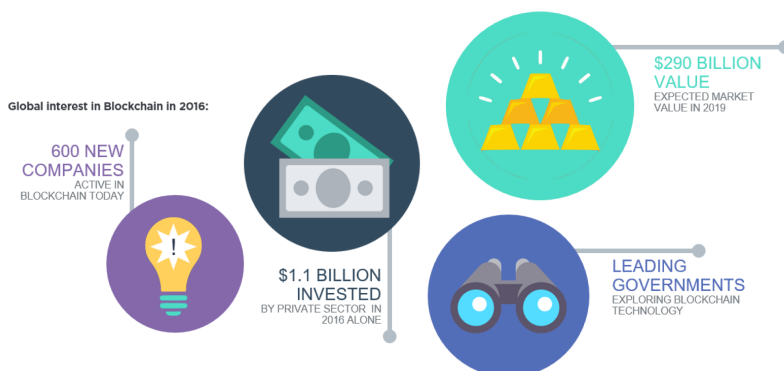


EXHIBIT 3 - GLOBAL INTEREST IN BLOCKCHAIN



Finally, Dubai's adoption of Blockchain technology at a city-wide scale comes at a time when the technology is increasingly being recognized as the ultimate trust machine. Blockchain eliminates the need for trusted third parties in transactions, an attribute which would contribute significantly to simplifying Dubai Government's evolving processes. The adoption of blockchain technology applies to the smart governance, smart economy and smart people areas of the U4SSC as the next sections will showcase.



2. THE SMART PROJECTS

2.1. VISION AND CONTENT

While Governments around the world are cautiously exploring a few blockchain applications each, Dubai is the first city that has the vision to fully explore the potential of this nascent innovative and rapidly evolving technology on a city-wide scale.

In October 2016, Dubai launched a city wide blockchain strategy with the objective of becoming the first blockchain powered city, driving the future economy by 2020. This ambition sees Dubai Government leading innovation and building the enabling ecosystem for it to thrive in both the public and private sectors.

The blockchain strategy is based on three pillars (see exhibit 4):

1. Government Efficiency

Implement blockchain technology in applicable government services.

2. Industry Creation

Support the creation of a blockchain industry through providing an enabling ecosystem that empowers start-ups and businesses.

3. Local and International Thought Leadership

Lead the global thinking on blockchain technology and become the hub for blockchain intellectual capital and skill development.



EXHIBIT 4 - THREE PILLARS OF THE DUBAI BLOCKCHAIN STRATEGY

The adoption of blockchain technology perfectly aligns with the city-wide vision of embracing technology innovation—enabling Dubai to offer the most efficient, seamless, safe and impactful experience for residents and visitors.

2.2. IMPLEMENTATION

The Smart Dubai Office (SDO) is leading the implementation of Dubai's Blockchain Strategy. A detailed roadmap that is organized around the blockchain strategy's three pillars has been developed. This roadmap defines the way forward for Dubai's blockchain ambitions.



For each pillar in the strategy, the city has a plan with actionable initiatives.

1. Government Efficiency

Dubai intends to first pilot blockchain on the most applicable Government services in 2017 before it proceeds to full implementation in 2018. The most applicable services are those that would benefit the most from the implementation of blockchain technology due to their need for third party elimination, transaction ledgers, smart controls and/or automation.

The piloting of blockchain will be done across the city in several sectors such as energy, transport and logistics, tourism, health, education and employment, economic development, safety and justice, social services, municipal and land works and smart districts (see exhibit 5). This process will involve the key Government champions in each sector such as the Dubai Electricity and Water Authority, the Roads and Transport Authority, the Dubai Tourism and Commerce Marketing Department, the Department of Economic Development, Dubai Police, Dubai Health Authority and many more public sector stakeholders that are key to sectoral adoption.

In order to roll out the blockchain pilots in an organized approach, Dubai recognized the importance of putting in place a governance framework that would ensure that all stakeholders are aware of their



roles and are receiving the support they need. For this purpose, the Smart Dubai Office will roll out workshops with each stakeholder with an objective to identify the best potential pilots in their sector and provide them with the technical standards and unified protocols for implementing their pilots. Moreover, it will support each entity in selecting a technical partner to implement the blockchain pilots.

By opening the door to blockchain technical partners from around the world to come to Dubai and pilot use cases in each entity, Dubai is stimulating the blockchain market and its own economy. In brief, the city is creating demand for businesses to thrive through innovation.



Energy



Transport and Logistics



Tourism



Health



Education and Employment



Economic Development



Safety and Justice



Social Services



Municipal and Land Works



Smart Districts

EXHIBIT 5 - DUBAI BLOCKCHAIN SECTORS



2. Industry Creation

In addition to rolling out blockchain in the Government, Dubai aims to create a blockchain industry where private companies and start-ups thrive and innovate. To achieve this aim, it has set four key action areas that would support in creating an enabling eco-system that would empower businesses as follows (see exhibit 6):

a. Policy Development

The policy implications of blockchain implementation will be continuously assessed and policy will be developed in a number of areas such as security, consumer rights, start up support and enablement, and financial technology.

b. Blockchain Accelerator

A blockchain accelerator will be launched to engage start-ups in exploring creative opportunities for blockchain implementation. The accelerator is also meant to operate as a knowledge hub that would raise the awareness and understanding of blockchain technology, its global adoption and Dubai's plans for it.

c. Global Blockchain Start Up Competitions

Dubai will roll out a number of global competitions to open a channel for start-ups to participate from all over the world in the ideation process for blockchain implementation across the city.



d. Private Sector Engagement

Dubai has set up the first Global Blockchain Council which is comprised of 46 members from the private sector and aims to enable a thriving blockchain ecosystem. A Local Private Sector Working Group will also be set up to engage closely with the Government on enabling the potential of blockchain locally.



EXHIBIT 6 - INDUSTRY CREATION ACTION AREAS

3. Thought Leadership

In this pillar, Dubai aims to lead the global thinking on blockchain technology and become the hub for blockchain intellectual capital and skill development.



For this purpose, it has set five key action areas as follows (see exhibit 7):

a. Skill Development

Dubai aims to become the regional and global hub for blockchain skill development by offering the most comprehensive and frequent training programs aimed at blockchain coders, policy makers, and strategists and project managers.

b. Intellectual Capital

Dubai will create and share intellectual capital related to its blockchain adoption through the development of case studies for each of its city pilots. It will also commission cutting edge research that would support the evolution of the technology.

c. Blockchain Speaker Series

Dubai will host blockchain experts and speakers on a regular basis in order to stimulate debate and discussions around the most pressing and controversial issues surrounding the adoption of blockchain technology on a city level.

d. International Blockchain Award

Dubai will recognize the best global city applications of blockchain and reward those cities for taking the initiative and pushing the innovation boundaries.



e. Academic Sector Activation

Dubai will heavily engage schools and universities in all blockchain activities such as pilot development, training, speaker events, and intellectual capital building.

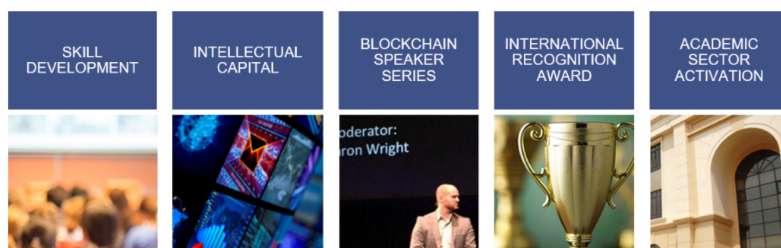


EXHIBIT 7 - THOUGHT LEADERSHIP ACTION AREAS

2.3. RESULTS

Given that Dubai will begin the implementation of its Blockchain roadmap in the first quarter of 2017, results will begin to show by the end of 2017 as Government entities start to implement blockchain pilots.

Results are expected to be in the form of transaction cost savings and reductions in transaction durations, resources and paper usage.



Once the blockchain pilots are identified with the Government entities, key performance indicators will be set and tracked.

The Smart Dubai Office has set a performance management framework that will track the progress on all the action items detailed in this case study on a regular basis.



3. CONCLUSIONS

Dubai's adoption of blockchain technology at a city wide scale is a testament to its commitment to drive innovation and provide the enabling ecosystem for business and start-ups to thrive. Blockchain is a nascent technology and only a bold city would take such a strong stance on developing the technology and exporting the intellectual capital and the skills it grows to the world to learn from.

The Emirate has a clear vision and roadmap on the way forward and by following through on this vision, it intends to lead globally in this field.

Dubai has been a pioneer in adopting blockchain technology at the city wide level. Dubai strongly believes that the approach and the overall framework adopted is quite novel and is easily transferable to other cities. The particular context of each city may vary in terms of specific services; however the approach is both scalable and also highly transferable.



A. REFERENCES

Dubai Blockchain Strategy 2016

Dubai Blockchain Implementation Roadmap 2017



B. LIST OF DISCUSSION PARTNERS/INTERVIEWS

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