

DLT and Securities Market Business

Blockchain Conference Abu Dhabi

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Content

- ADX at glance
- ADX approach to new technologies and DLT
- ADX DLT based e-Voting solution
- DLT news around the world
- ADX potential DLT enabled business opportunities
- Conclusions and next steps

ADX is regulated by the Securities & Commodities Authority (SCA)

UAE Capital market Structure



Abu Dhabi Securities Exchange (ADX) was established on 15th of November 2000 by Local Law No. (3) of 2000, the provisions of which vests the Market with a legal entity of autonomous status, independent finance and management, and gives ADX the necessary supervisory and executive powers to exercise its functions. Moreover, ADX has the authority to establish centers and branches outside the Emirate of Abu Dhabi, and so far it has done so in Al Ain, Zayed City, Fujairah, Ras Al Khaimah and Sharjah.

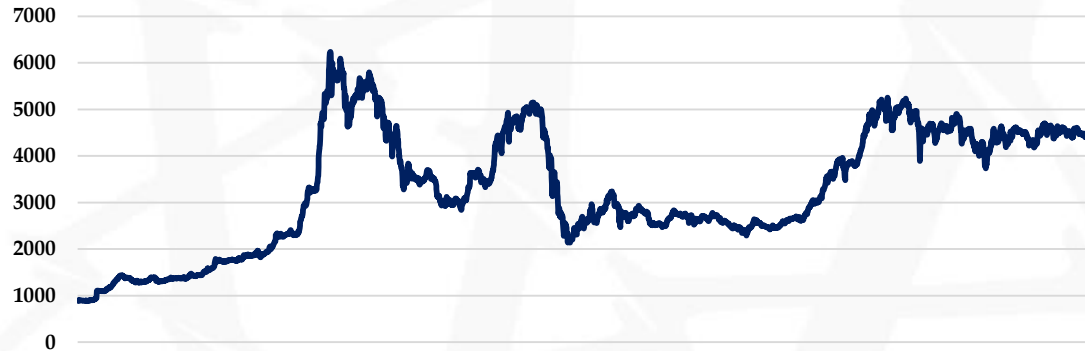
ADX's board of directors is comprised of seven members nominated by Amiri Decree. The members of the board hold office for a term of three years. The first board of directors was constituted by Amiri Decree No. (8) of 2000.

ADX At Glance

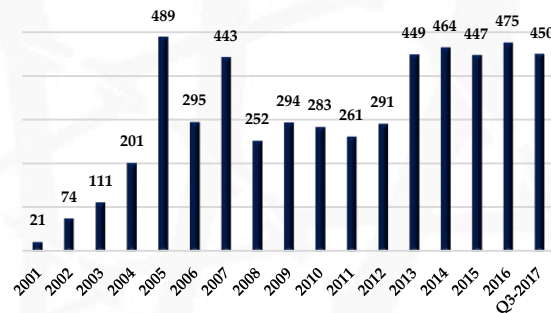
Key data points (As of end of Q3 2017 unless stated)

- ❑ Number of listed securities
 - 64 public listed companies (o/w 3 foreign)
 - 2 private listed companies (Second Market)
 - 1 AD Government Bond
 - 1 Convertible Bond
 - 1 Exchange Traded Fund
- ❑ Market capitalization
 - Domestic: AED 423.7 bn
 - Foreign: AED 26.4 bn
- ❑ Total Trading value (Buy + Sell)
 - Domestic AED 41.5 bn
 - Foreign AED 34.8 bn
- ❑ Total Trading volume (Buy + Sell)
 - Domestic 28.3 bn
 - Foreign 17.7 bn
- ❑ Number of brokers
 - 45
- ❑ Number of employees
 - 117
- ❑ Number of investors
 - 962 K
- ❑ Dividend Yield: 5.3%

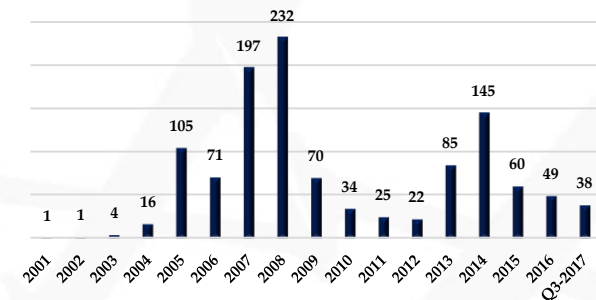
ADX General Index performance 2002-Q3 2017



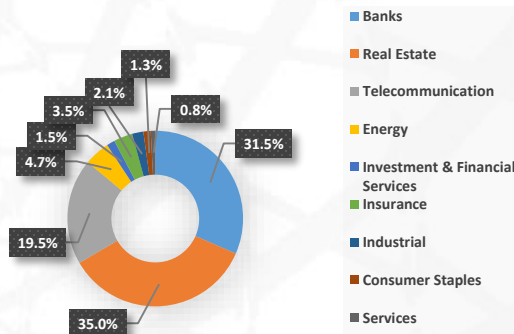
Market Capitalization (AED bn)



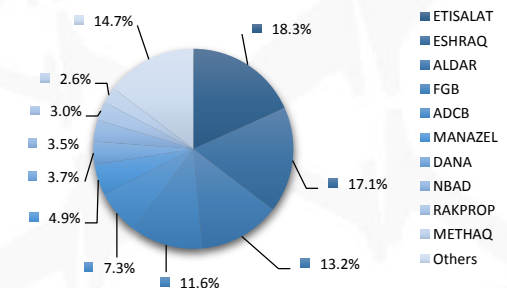
Trading Value (AED bn)



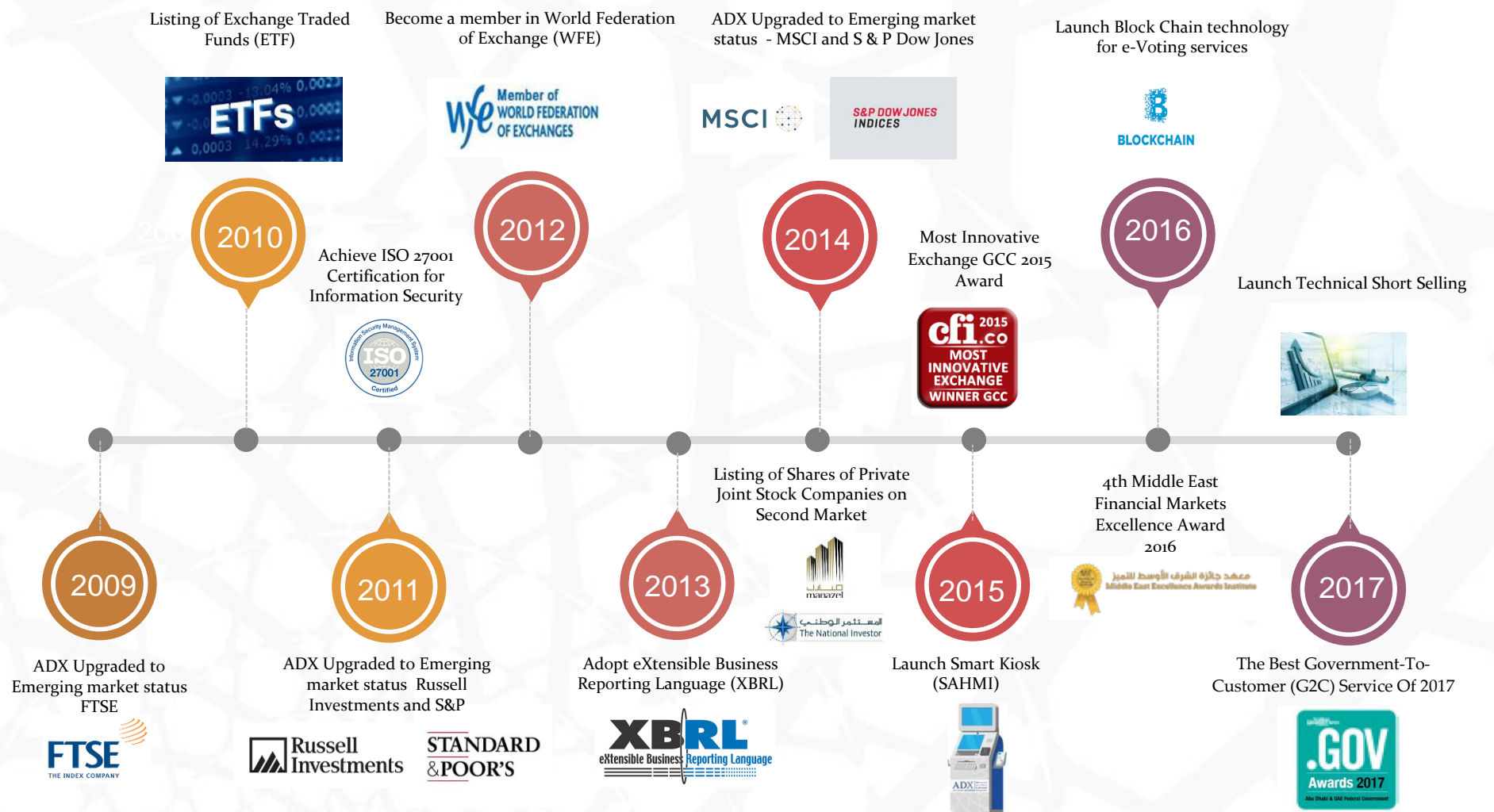
Key industries by trading value - 2016



Key listed companies by trading value - 2016



A Leading Innovative MENA Stock Exchange



Strong Access to Individual Investors Across the Globe

Total Investors In ADX

962 K

Institutional Investors - Domestic

1,905

Institutional Investors - Foreign

5,435

UAE investors

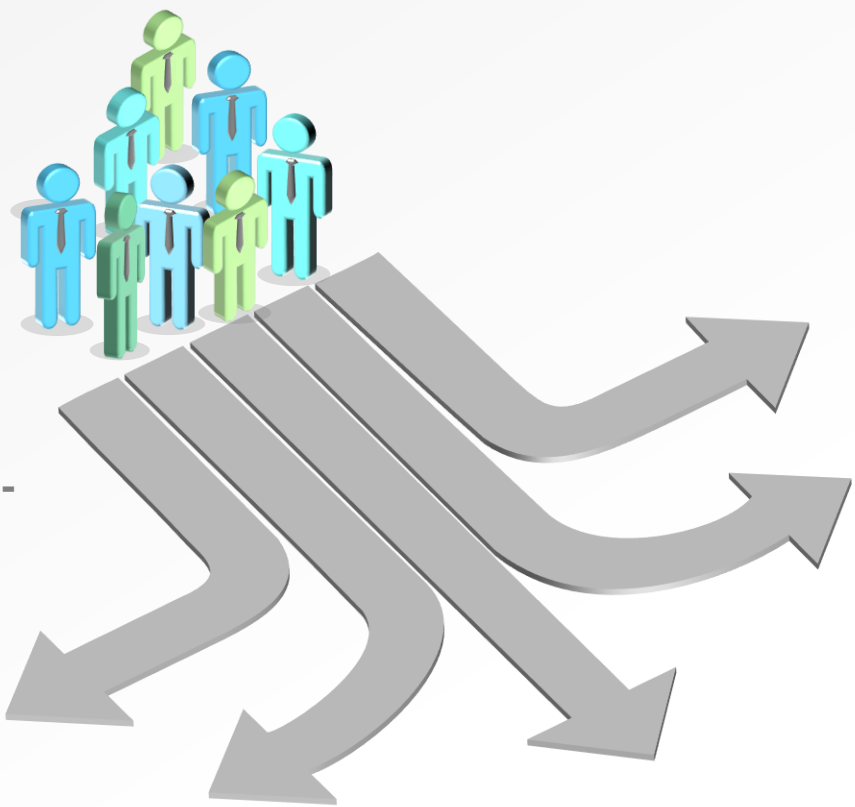
577 K

Arab Investors

340 K

Other Investors

44 K



ADX is A home of international Pension Funds

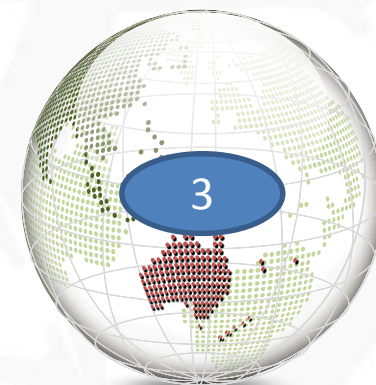
02
Europe



03
Asia



04
Australia



05
Africa and middle East



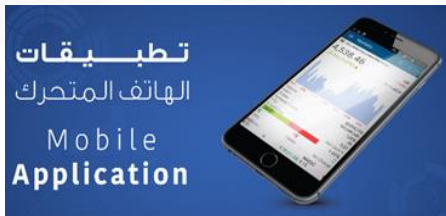
ADX سوق
أبوظبي
للأوراق المالية
ABU DHABI SECURITIES EXCHANGE

Source : 2015 Willis Towers Watson research

No of Pension Funds in ADX

281

A Wide Range of Service Delivery Channels In UAE

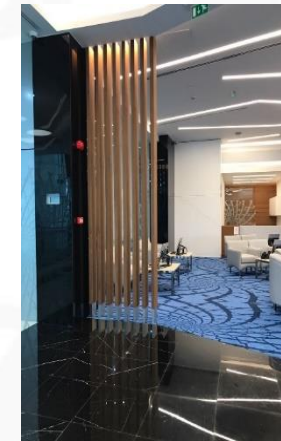
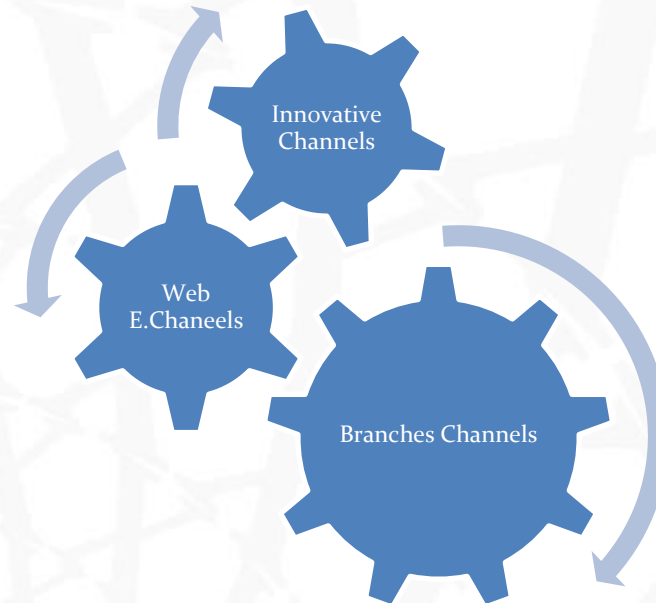


Abu Dhabi Region

Abu Dhabi
H.O

Al Dhafra Br.

Al Ain Br.



Northern
Emirates Region

Sharjah Br.

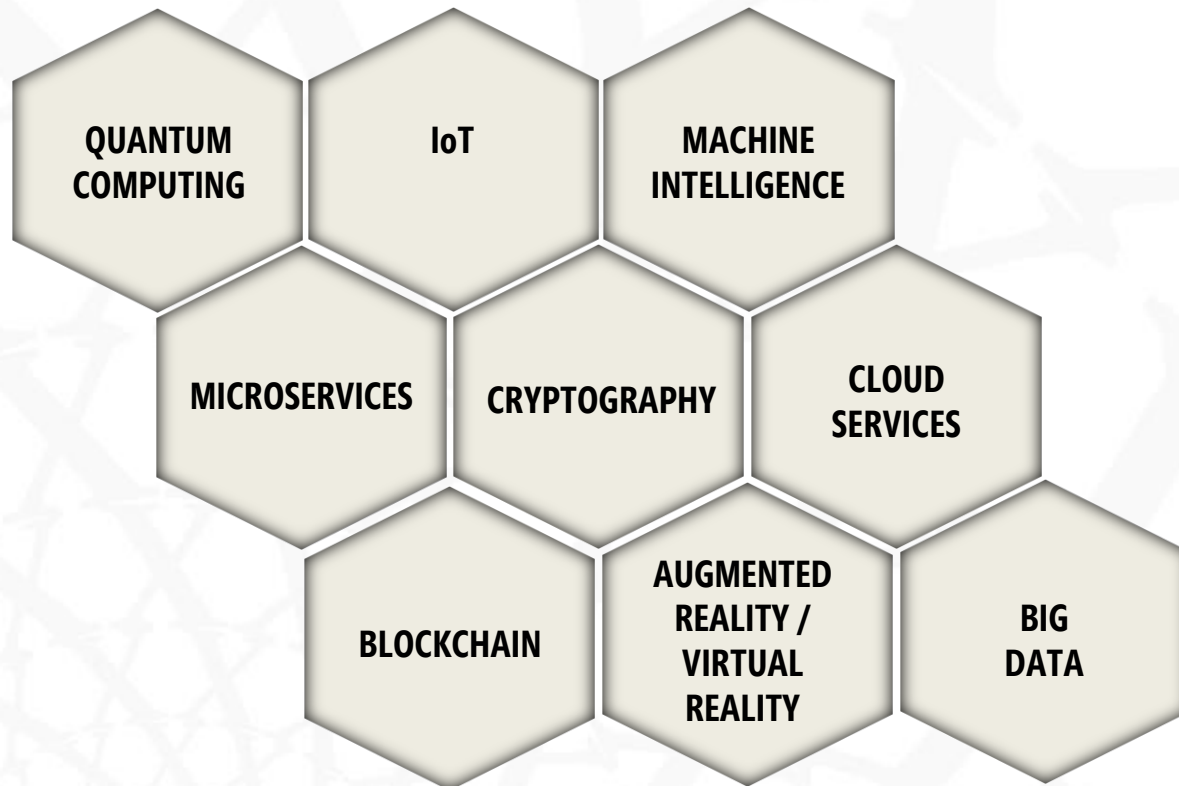
Ras Al-
Khaimah Br.

Eastern Emirates
Region

Fujairah Br.

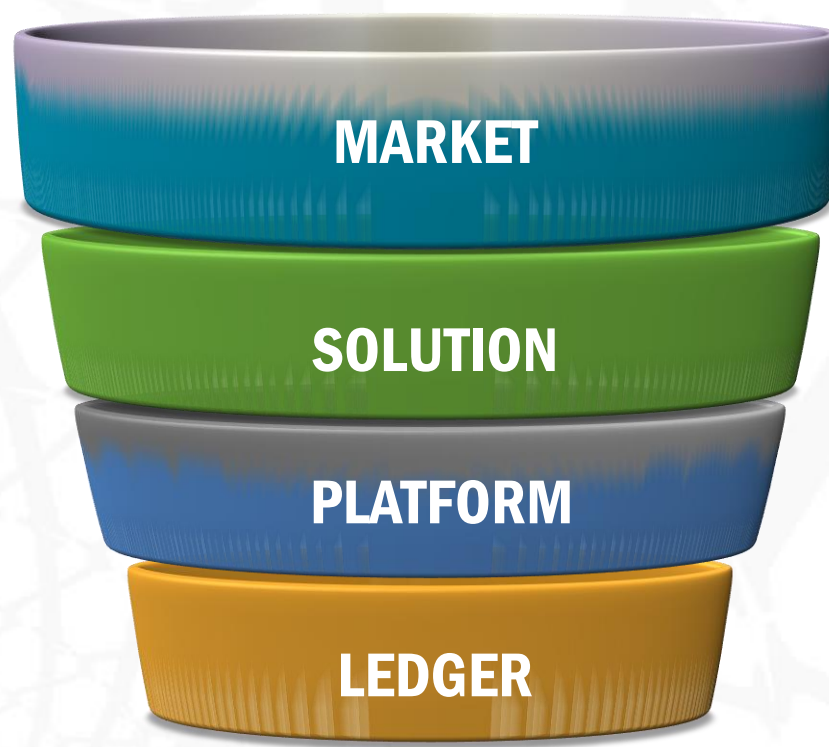
ADX approach to new technologies including DLT

Several new technologies affecting us

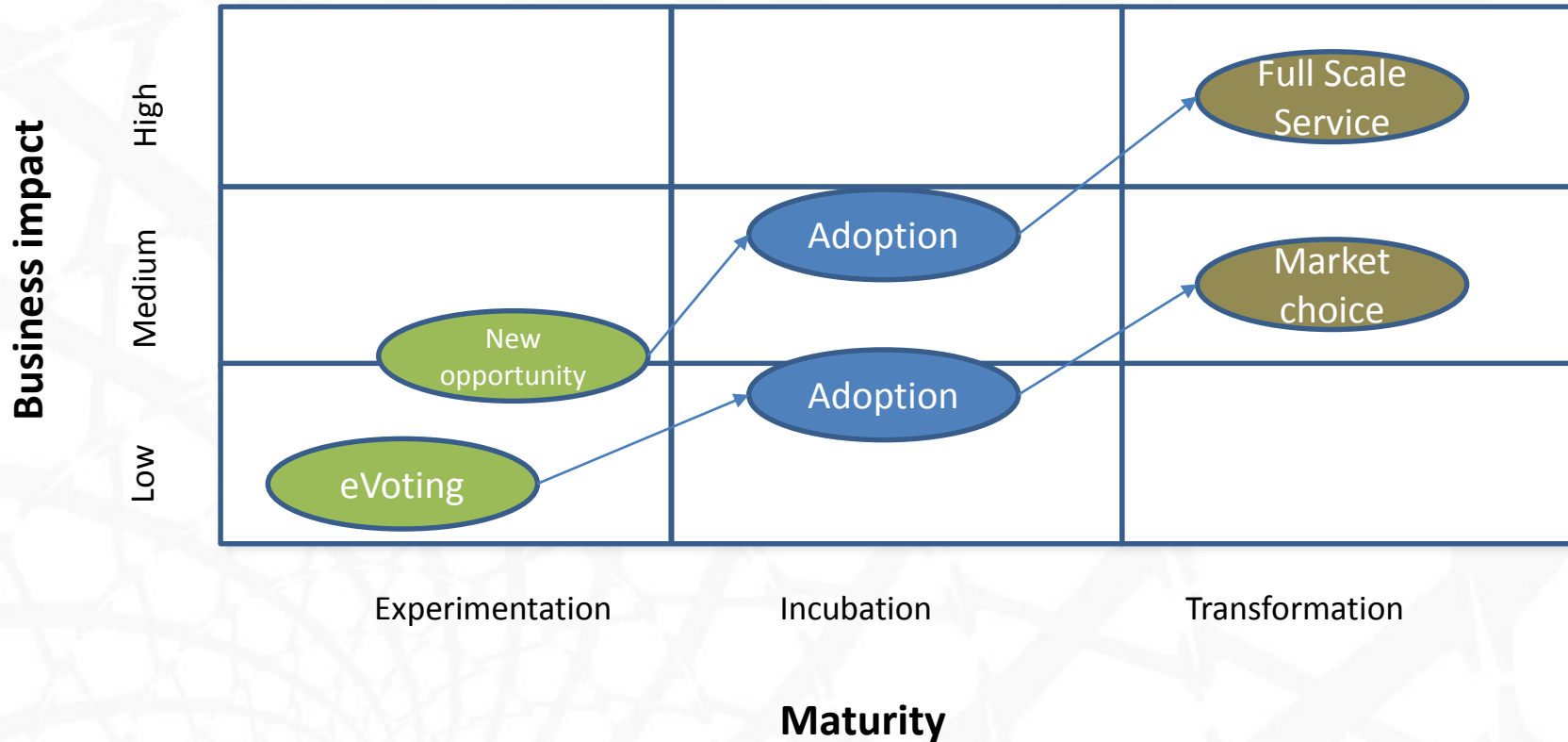


Top-Down Approach to Technology Innovation

Technology is
business enabler.
It should not lead
innovation!



From experimentation to business validation



ADX Blockchain based e-Voting solution

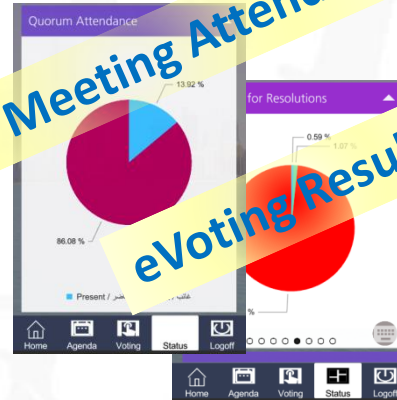
ADX DLT enabled e-Voting solution



Meeting Registration from Remote site



Mobile Voting - Onsite



Remote Meeting Attendance
eVoting Results

Emirates ID based Self Registration



Remote Voting
– Mobile/PC/Tablet

DLT news from the world

News from global markets

JP Morgan CEO Jamie Dimon
Bitcoin is a Fraud

ICO

Singapore Market Authority
*DLT spin-off projects to test
DLT with SGX*

Bundesbank

*No realistic prospect of
central bank-issued digital
currency being rolled out in
the foreseeable future*

UK FSA

*Building blockchain App for
mortgage reporting with R3
consortium*

ICO

Bank of England
*Blockchain not yet mature
for robust systems*

TMX of Canada
Collaboration with CCB

Accenture and McLagan
*DLT could save 30% of
investment banks
infrastructure costs*

ICO

Smart Dubai
*Announcing blockchain based
city*

ICO

China
Bans ICOs

ICO

Central Bank of Russia
*Bitcoins in capital market not
mature enough to be regulated.
Bans ICOs*

Deutsche Borse

Doubtful on blockchain

ASX

*Chess replacement
based on DLT?*

Hong Kong regulator
*Looking for regulating ICOs as
securities*

ADX potential DLT enabled business opportunities

DLT's opportunities

- Reducing complexity – enabling simplicity;
- Improving end-to-end processing speed and thus availability of assets and funds;
- Decreasing the need for reconciliation across multiple record-keeping infrastructures;
- Increasing transparency and immutability in transaction record keeping;
- Improving network resilience through distributed data management; and
- Reducing operational and financial risks.

Challenges

- Potential uncertainty about operational and security issues arising from the technology;
- The lack of interoperability with existing processes and infrastructures such as with payment systems;
- The lack of industry standards and shared rules;
- Questions regarding the soundness of the legal underpinning for DLT implementations;
- The absence of an effective and robust governance framework;
- Issues related to data integrity, immutability and privacy. DLT is an evolving technology that has not yet been proven sufficiently robust for wide scale implementation;
- Significant transition challenges.

Use case opportunity examples for experimentation

Securitized assets

- New not yet regulated markets and assets, without legacy and burden of history
- Registry keeping
- New ways to source capital
 - Crowdfunding, ICO
- Processing pre-IPO such as corporate finance bookrunning

Transaction processing

- Data sharing such as reference and KYC data
- Cross-border transacting (including collateral)

Other

- Workflow management
- Payment system integration, cryptocurrencies

Conclusions and next steps

Conclusions

- No urgency to replace core systems
- Concentrating the value and value chain! Looking for opportunities for re-intermediation!
- Further these need to be understood:
 - How technology impacts to the ecosystem especially those of ADX customer?
 - How systems of different technologies interact with each other such as with payment systems and customers back-office solutions?
 - What would be the payment system? Fiat or cryptocurrency or both? Who issues bitcoins?
 - Are regulators ready for DLT also from general legal perspective?

**ADX is a member of Global CSD Working Group
evaluating ICOs and other Digital Assets**



Thank you

Backup

BITCOIN

Bitcoin is the original cryptocurrency, and was released as open source software in 2009. Using a now distributed ledger known as the blockchain, the system allows users to transact without the need for a central authority, while avoiding the "double spend" problem.

The network currently consists of several thousands of distributed nodes, the majority of which are run by individuals, and is considered the largest of its kind in the world.

KEY FEATURES

- Blockchain - Foundation Technology
- Peer-to-Peer Payments Infrastructure
- No Double Spend Problem
- Low Processing Fees
- Decentralized
- Available to Anyone
- Anonymous (Pseudonymity)
- Transparent

INTERESTING FACT

In 2013, a single bitcoin bought less than \$10,000. BTC is one of the first real-world digital currencies.

Today, 100,000 BTC is worth around \$10 million. It's the only one you can use for anything but a digital asset.

1 BTC = 10,000 mBTC

BOTTOM LINE FOR BITCOIN

Bitcoin is the original cryptocurrency with the most liquidity and significant network effects. It also has the most active user base and the most significant track record.

LITECOIN

Litecoin was launched in 2011 as an early alternative to Bitcoin.

As a result, it has been successfully adopted and accepted by many users, including those who prefer a faster, more efficient, and more secure transaction system. It is also the only one that has a "hard fork" in its code.

KEY DIFFERENTIATIONS FROM BITCOIN

- A Single Cryptocurrency
- 4x Faster Block Generation
- Faster Transaction Processing
- 4x More Coins Max Supply (12.5M)

INTERESTING FACT

Litecoin is known as "Bitcoin's lighter twin". It was created by Charlie Lee, the son of the founder of Bitcoin, and is often referred to as "Bitcoin's lighter twin".

BOTTOM LINE FOR LITECOIN

Other altcoins have taken some of Litecoin's market share, but it still has an early mover advantage and some strong network effects.

RIPPLE

Ripple is a decentralized digital payment network. It is the only one that is not a cryptocurrency, but a payment network. It is the only one that is not a cryptocurrency, but a payment network.

KEY DIFFERENTIATIONS FROM BITCOIN

- Global Settlement Network
- World's First Day-End Settlement
- Backed by Major Banking Institutions
- No Mining Required

INTERESTING FACT

Ripple is the only one that is not a cryptocurrency, but a payment network. It is the only one that is not a cryptocurrency, but a payment network.

BOTTOM LINE FOR RIPPLE

Ripple is the only one that is not a cryptocurrency, but a payment network. It is the only one that is not a cryptocurrency, but a payment network.

THE CRYPTO UNIVERSE

COMPARING SIX MAJOR CURRENCIES

% OF THE CRYPTO UNIVERSE VALUE

Bitcoin (93%), Litecoin (7%), Ripple (3%), Dash (2%), Ethereum (2%), Ethereum Classic (2%), Other (2%)

2013

Value: \$1.7 B

2015

Value: \$4.1 B

2017

Value: \$144.2 B

METRICS BY COIN

Metric	Bitcoin	Litecoin	Ripple	Dash	Ethereum	Ethereum Classic
Market Capitalization	\$76.1B	\$4.15B	\$8.6B	\$2.6B	\$31B	\$1.7B
Daily Volume (24 hr moving avg)	\$9.6B	\$2.01M	\$5.3M	\$1.0M	\$5.8B	\$0.3M
Daily Transactions (24 hr moving avg)	261K	21K	600K	7K	373K	37K

ALL-TIME PEAK PRICE USD

Bitcoin: \$4,935 (Sep 1, 2017)
 Litecoin: \$264.22 (Jan 18, 2017)
 Ripple: \$4.42 (May 12, 2017)
 Dash: \$40.77 (Aug 16, 2017)
 Ethereum: \$412.93 (Jan 12, 2017)
 Ethereum Classic: \$20.42 (Nov 2, 2017)

DASH

Dash is an attempt to improve on Bitcoin in terms of speed of transactions, and anonymity.

KEY DIFFERENTIATIONS FROM BITCOIN

- Two-Tier Architecture
- Advanced Transactions
- Decentralized Autonomous Organization (DAO)
- Improved Anonymity

INTERESTING FACT

For each block mined, a 10% reward goes to the treasury. The treasury is used to fund development and other projects.

BOTTOM LINE FOR DASH

The transactions behind Dash are interesting, and could help to make the network more secure than other altcoins.

ETHEREUM

Ethereum is a decentralized platform that enables developers to build and deploy decentralized applications.

KEY DIFFERENTIATIONS FROM BITCOIN

- Platform for Making Decentralized Applications
- Multiple Industry Uses
- Uses Smart Contracts
- Other Powers The Network

INTERESTING FACT

Ethereum has a built-in decentralized system for managing the network. It is the only one that has a "hard fork" in its code.

BOTTOM LINE FOR ETHEREUM

Ethereum serves a different purpose than other cryptocurrencies, but it has a strong network and a strong track record.

ETHEREUM CLASSIC

Ethereum Classic is a decentralized platform that enables developers to build and deploy decentralized applications.

KEY DIFFERENTIATIONS FROM BITCOIN

- Platform for Making Decentralized Applications
- Multiple Industry Uses
- Uses Smart Contracts
- Other Powers The Network

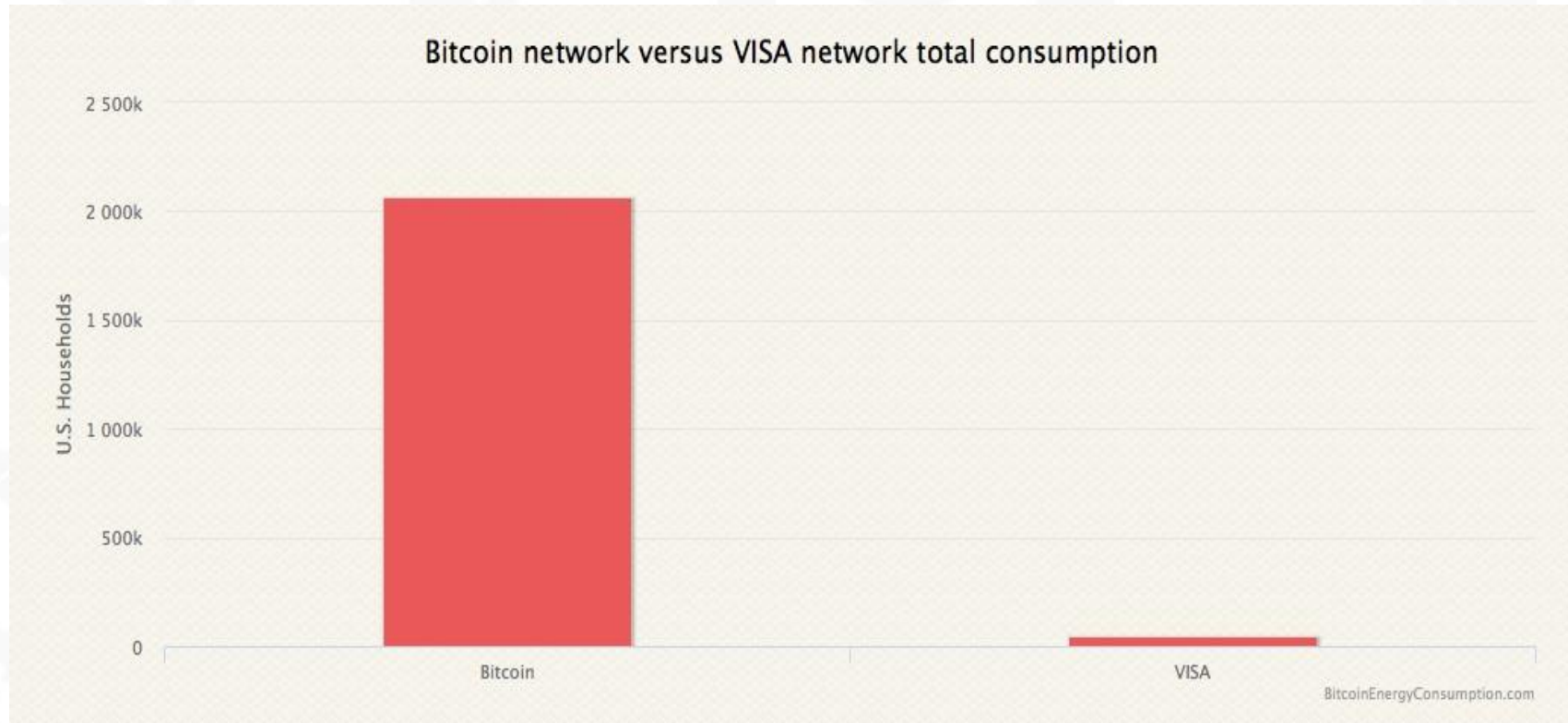
INTERESTING FACT

Ethereum Classic is a decentralized platform that enables developers to build and deploy decentralized applications.

BOTTOM LINE FOR ETHEREUM CLASSIC

Ethereum Classic is a decentralized platform that enables developers to build and deploy decentralized applications.

Energy intensiveness



Average annual energy cost of one bitcoin equates to 20 barrels of oil equivalent

Top 10 Mistakes in Enterprise Blockchain Projects

by Gartner Group

