

## **Blockchain Breakout Session**

Digital Money Symposium 26 January 2016



### What is a Blockchain?

# A blockchain is a distributed ledger database that uses a cryptographic network to provide a single source of truth.



A blockchain allows untrusting parties with common interests to co-create a **permanent**, **unchangeable** and **transparent record** of exchange and processing without relying on a central authority.



## Why is it significant?

- If the **Internet** is a disruptive platform designed to facilitate the **dissemination of information**.....
- ...then **Blockchain Technology** is a disruptive platform designed to facilitate the **exchange of value**



### What are the implications?

Disintermediation

Enables direct ownership and transfer of digital assets without need for an intermediary Speed & Efficiency

Faster settlement on a relatively cost effective and efficient network

Automation

Programmability enables automation of capabilities on the ledger (e.g. smart contracts) Certainty

Provides irrefutable proof of existence, proof of process and proof of provenance



## Blockchain is bigger than Bitcoin

Blockchains are platforms upon which various applications can be built, well beyond currencies.



## Example of Relevance of Blockchain in Banking

Blockchain's distributed ledger model has potential to take steps, time and cost out of financial flows

### Financial Intermediaries (Today)

- Requires trusted, centralized intermediaries
- Batch clearing and settlement
- Higher fees and costly infrastructure



### Financial Protocol (Emerging)

- No (or fewer) intermediaries required
- Near real-time processing and management
- Lower fees and reduced infrastructure cost





### Wide range of contemporary blockchain technologies



Source: Richard Brown, R3



### What are smart contracts?

Smart contracts are cryptographically-assured executable business logic that can move value.



Source: Richard Brown



### Evolution from cyber-libertarian hobby into the mainstream

### 2008

Bitcoin: A Peer-to-Prev Electronic Cash System

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### 2016





## Growing interest in blockchain



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# **Poll Results**

(30 Respondents)

### Level of Knowledge of Blockchain

### State of Blockchain Technology Adoption





### Attitude towards Blockchain

### Attitude towards Bitcoin





# **Blockchain Use Cases**

Proof of ownership of modules in app development Company: Assembly

Proof of ownership for digital content storage and delivery Companies: Blocktech (Alexandria), Bisantyum, Blockparti, The Rudimental, BlockCDN 

Points based value transfer for ride sharing Company - La'Zooz

Digital security trading: ownership and transfer Companies: Symbiont, Mirror, Spritzle, Secure Assets, BitShares, Coins-e, equilyBits, DXMarkets, MUNA

Digitization of documents/contracts and proof of ownership for transfers Company: Colu (Colored Coins)

Decentralized storage using a network of computers on blockchain Company: Storj

Decentralized IoT

fome automation: Chimera-Inc.io Industries: Filement

> Provides digital identity that protects consumer privacy Companies: Sho Card, Uniquid

> > Escrow/Custodian service

Company UbiWS

**Gaming** industry Companies: PlayCoin, Bittiplay Garning industry and loan servicing **Company, New System Technologies** 

> A smart contract IT portal executing order fulfilment in ecommerce/manufacturing

Proof of ownership and a marketplace for sales and purchase of digital assets

**Company: MyFowers** Enables authenticity of a review through trustworthy endorsements for employee peer review

#### Company: TRST.im

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Blockchain

(Use Cases)

Source: GrowthPraxis

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**AE** 

E-commerce

Company: Fundrs.org

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Decentralized prediction platform for the share markets, politics etc.

Company: Augur

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Decentralized patient records management Company - BitHealth (Healthcare IT)

Proof of ownership for digital content

Arts, pictures and images Companies Blockal, Bitproof, ascribe, Artplus Other companies: Chainy Link, Stampery

#### Digitizing assets: Improves anti-counterfeit measures

Consumer electronics. Automotive Degree Verification Companies: The Real McCoy, ChainLink, Company, Degree 01 Trust. Other companies: Everpass, BlockVerify

#### Provides digital identity that protects consumer privacy

internet, car locks. Onename Customer identification: Trustatom Elections Voting: Follow My Vota

Enables authenticity of a review

Helps users engage, share reputation and collect. Through trustworthy endorsements. feedback Company: The World Table

Company Asimov

Decentralized internet and computing resources to every home and business Company: ePlug

Digitizing company incorporations, transfer of equity/ownership and governance

Company: Otonomos

From 'Let's Talk Payments

"Whilst it is true that virtually ANY application COULD store its data on a blockchain, it is not true that ANY application WOULD WANT to do this."

Research grant reviewer, January 2016



## Poll Responses on Most Promising Use Cases

- Low-friction low-cost crossborder payments
- Digital legal tender
- Replacing traditional payment schemes
- Corporate action automation
- Exchange of assets with superfast settlement
- Know your customer (KYC)

- Sharing of personal data in innovative distributed and secure ways (e.g. health records)
- Ensuring integrity of code and systems
- Auditing services
- IoT (esp. with Smart Contracts)

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• Provenance (e.g. of used cars)

## **Blockchain Financial Use Cases**

### **Currency and Payments**

P2P (including Merchant Wallets)

Remittances

Merchant Processing

B2B, B2C

Networks & Consortia

### **Other Areas of Interest**

Trade

Markets and Securities

AML & Compliance

**Digital Identity** 



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# Blockchain Use Cases Non-financial





### **VERIFY DEGREE**

#### SUCCESS

Qualification verified by Imperial College London

Transaction details & Confirmed by Bitcoin network.



Name:	Kacper Zylka	
Date of birth:	08.10.1993	
University:	Imperial College London	
Qualification type:	Master of Engineering	
Course name:	Computing	
Year of graduation:	2016	
Degree classification:	First-class Honours	



# Verify the Existence of NDA Contract : Widget Manufacturing Consultation

View independent proof that the contract has been signed and recorded in a trusted public ledger

Home / Choose Contract Type / Initialise Contract Outline / Negotiate Contract Clauses / Sign Agreed Version / View Proof of Contract



#### View Proof of Contract Existence

See your contract hash and signatures recorded on a trusted public ledger

#### C BACK TO PREVIOUS STAGE & VEW CONTRACT CLAUSES AS PDF VEW FULL CONTRACT WITH CLAUSES AND SIGNATURES

Your contract has been recorded the form of a transaction in the Bitcoin Blockchain. The Blockchain is an immutable public ledger, which means it is transparent and easily verifiable through multiple independent sources, and it is not possible to alter or change transaction records.

Therefore proof of existence of your contract is permanently stored on the Blockchain.

The transaction identification number of your contract is:

bdf1d84893a26040028a5ad618fd1012f6c8e751dec35aab2b9fe91e04c1ffc8

#### Imperial College Centre for Cryptocurrency Research and Engineering



#### Imperial College Centre for Cryptocurrency Research and Engineering

# Blockchain Implementation Considerations

## Poll results: Biggest Challenges

Challenge	Number of Respondents	Percentage of Respondents
Finding the most appropriate use cases	16	53%
Developing an ecosystem	16	53%
Selecting and implementing an appropriate technology	7	23%
Security/privacy issues	6	20%
Scalability	3	10%

Additional challenges identified:

Legal/Regulatory (2), Stability/resilience of platform/provider (2), Engagement (1)



### **Timeframe to Production**

## **Dominant Emerging Platform**





Other: Credits (10%), Hyperledger R3 (3%)



### Challenges to blockchain adoption

- Determining optimal blockchain use cases
- Requires building an ecosystem/network of participants
- Technology is not yet industrial grade
- Requires integration into legacy systems or migration of current tech
- Requires fundamental business process redesign
- Will require adaptation of some regulatory and legal frameworks
- Unless asset remains digital, full benefit of blockchain cannot be fully realized

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# Comments Your experiences Q&A

Contacts: morgan.mckenney@citi.com and wjk@imperial.ac.uk

