Blockchain and Initial Coin Offerings

1st Annual Rotman CPA Ontario Centre for Accounting Innovation Research Conference

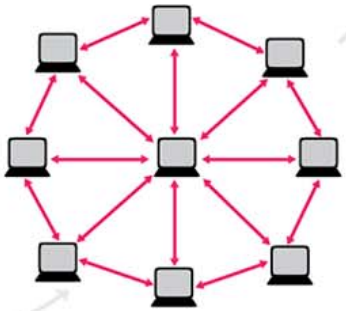
Nan Li, University of Toronto


Bitcoin Charts
Linear Scale
Log Scale
Zoom 1d 7d 1m 3m 1y YTD ALL
From Apr 28, 2013 To Oct 10, 2018
$320B
$240B
$160B
$80B
$0
Market Cap
$20,000.00
$15,000.00
$10,000.00
$5,000.00
$0
Price (USD)
Monday, Nov 27 2017, 23:14:13 UTC-04:00
Market Cap: 162,721,474,425 USD
Price (USD): 9,740.52
24h Vol: 5,360,010,000 USD
24h Vol
16B
0
Sep '13
Mar '14
Sep '14
Mar '15
Sep '15
Mar '16
Sep '16
Mar '17
Sep '17
Mar '18
Sep '18
2014
2015
2016
2017
2018
Market Cap
Price (USD)
Price (BTC)
24h Vol

What is a Blockchain?

- The blockchain is an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value-- Blockchain Revolution (2016)
- Distributed digit ledger, store records into blocks and share across a network of computers
- Each block is cryptographically secured and linked to the previous block by containing the hash value of the previous block
- To add a new block to the chain, a node must solve computationally intensive problems ("proof-of-work" or "mining")
- If the node earns the right to add the block to the chain, it will receive coins or tokens native to the blockchain
- If the content of a block is altered (either by owner or hacker), all hash values of this and subsequent blocks will change

Someone requests a transaction.



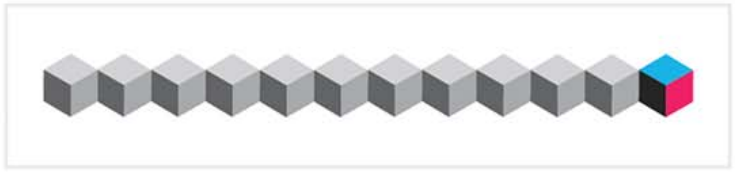
The requested transaction is broadcast to a **P2P network consisting of computers, known as nodes.**

Validation

The network of nodes **validates the transaction and the user's status using known algorithms.**

A verified transaction can involve **cryptocurrency,** contracts, records, or other information.

cryptocurrency



Once verified, the transaction is combined with other transactions **to create a new block of data for the ledger,**

The new block is then added to the existing blockchain, in a way that is permanent and unalterable.

The transaction is complete.

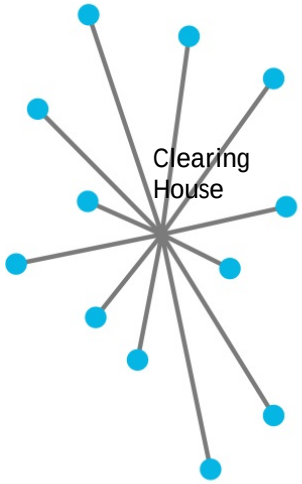
Has no intrinsic value in that is not redeemable for another commodity such as gold.

Has no physical form and exists only in the network.

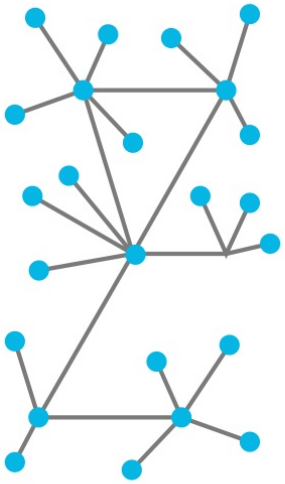
Its supply is not determined by a central bank and the network is completely decentralized.

Source:Blockgeeks

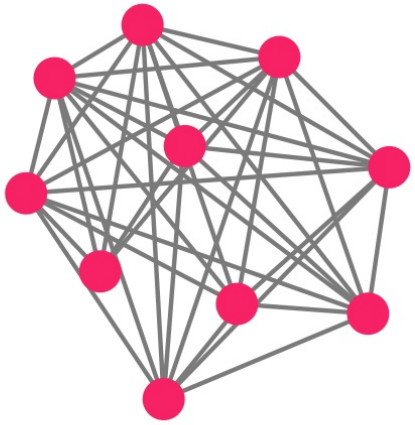
Centralized

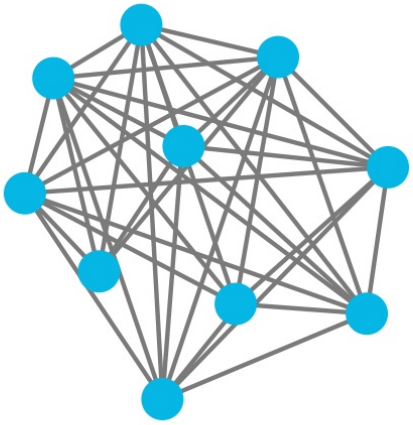


Decentralized



Distributed Ledgers





The New Networks

Distributed ledgers can be public or private and vary in their structure and size.

Public blockchains

Require computer processing power to confirm transactions (”mining”)

- Users (●) are anonymous

- Each user has a copy of the legder and partipates in confirming transactions independently

- Users (●) are not anonymous

- Permision is required for users to have a copy of the legder and participate in confirming transactions

Blockgeeks

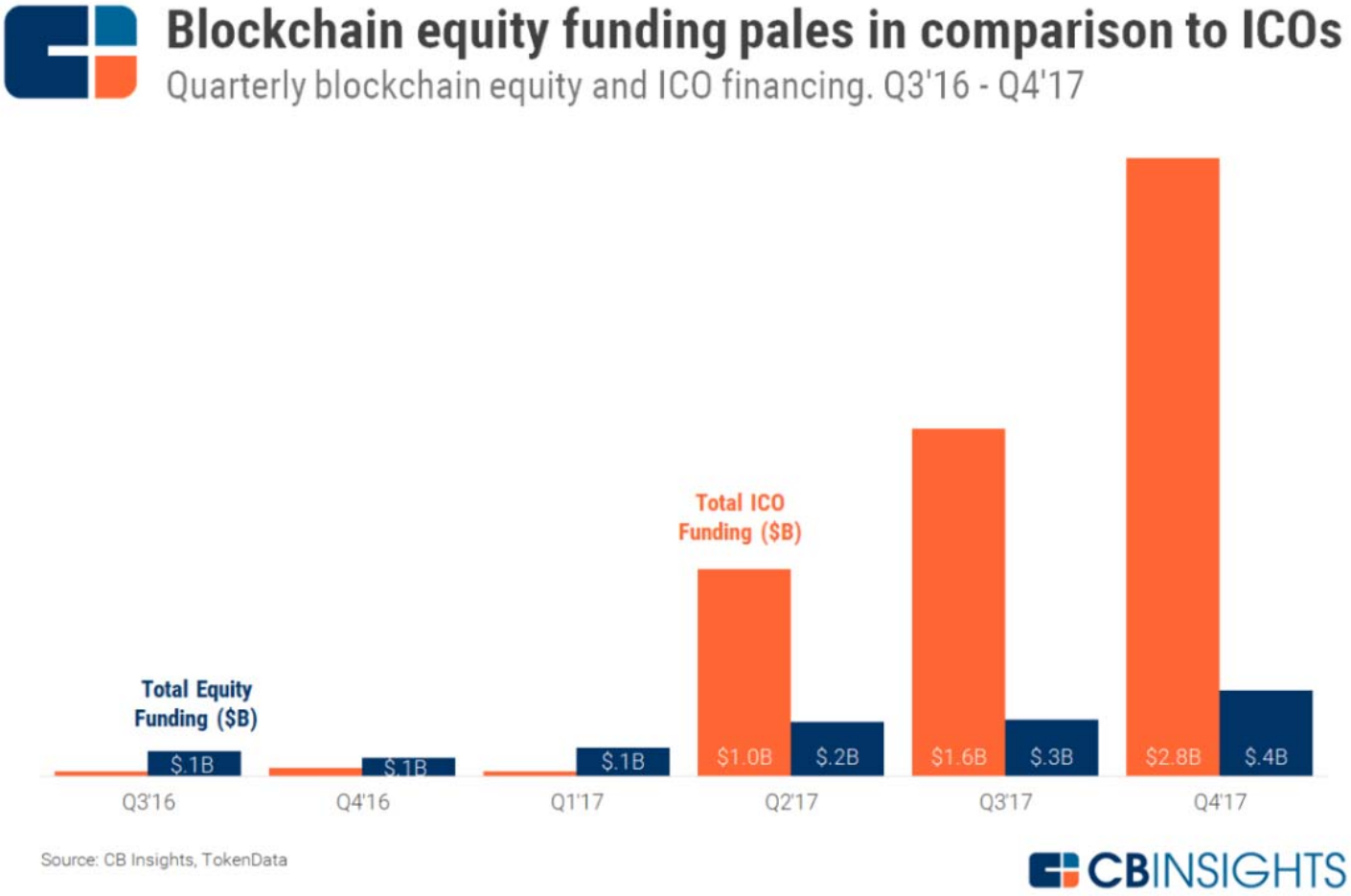
Blockchain Disruption

- Finance
  - Banking and Payments
- Government
  - Dubai aims to put all government documents on blockchain by 2020
- Healthcare
  - Store medical records and share with authorized professionals or patients
- Legal
  - Store records on properties
- Real Estate, Charity, Voting…

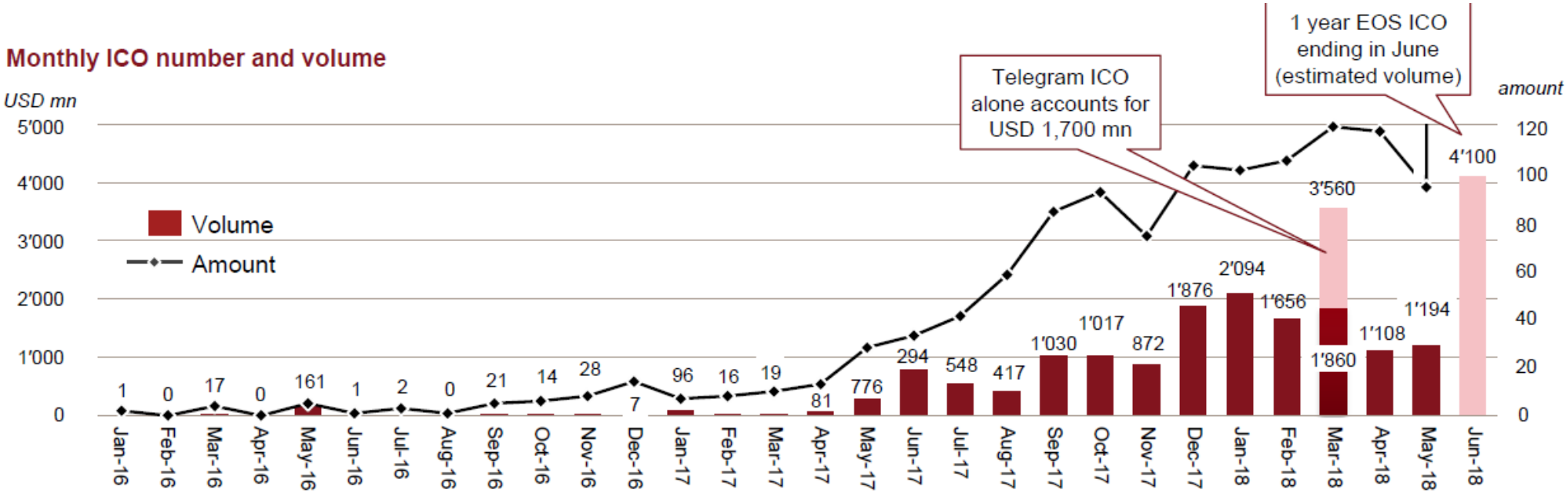
Initial Coin Offerings (ICOs)

- An innovative way for early-stage startups to raise funding
  - Selling newly invented blockchain-based tokens to early adopters and investors
- Advantages
  - Allows entrepreneurs to gauge customer interest at early stage
  - Allows platform adopters and individual investors to participate in startup financing

ICOs vs. VC Financing



Global Landscape of ICOs



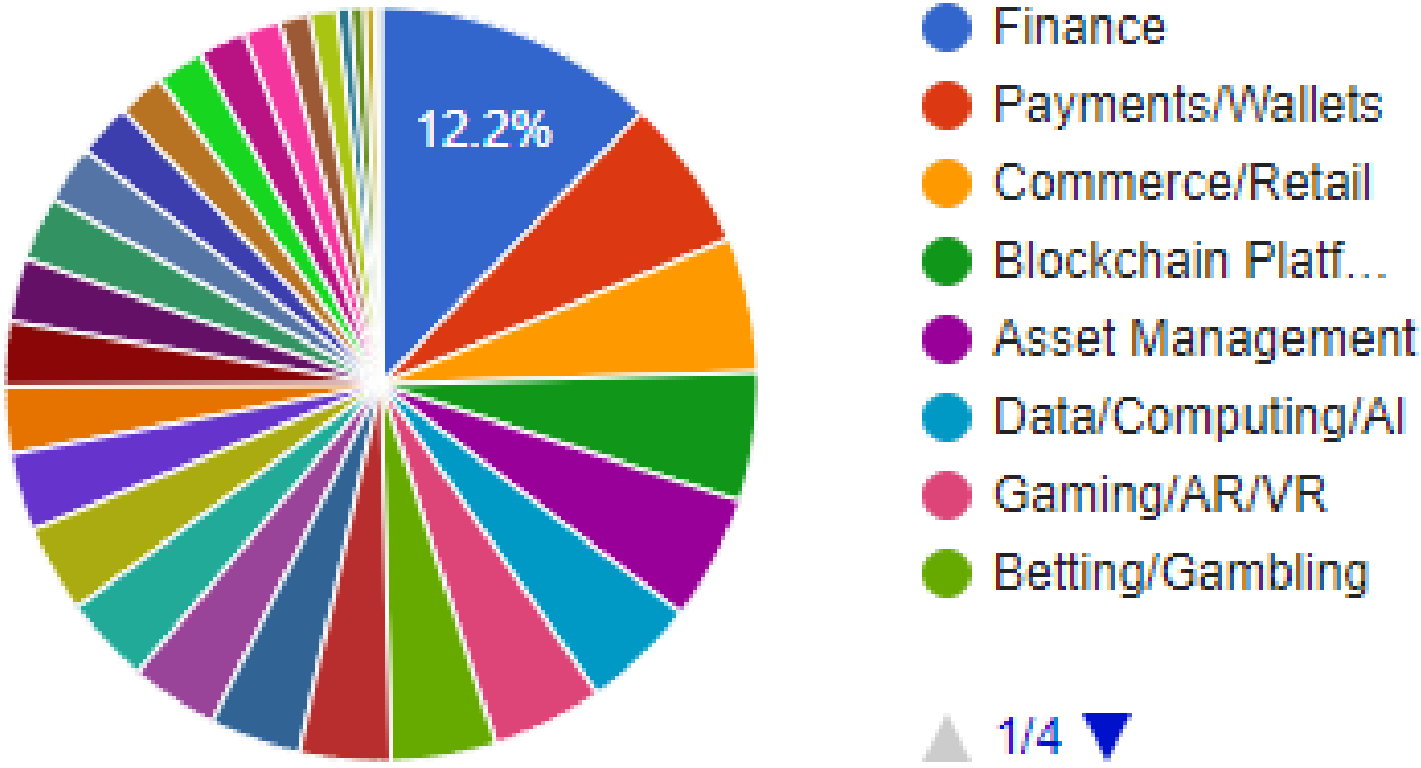
1) Calculations based on currency exchange rates on end date of ICO. As Ether and Bitcoin exchange rates are highly volatile, actual and current market capitalization of the companies today may differ significantly from figures shown in the table. ICO funding amount until 29.05.2018 considered.

Source: PwC Strategy& analysis

ICO by Industries

Source: ICO Watchlist

Projects Per Category in %



Source: ICO Watchlist

Top 10 ICOs

	Amount Raised	ICO Dates	Project
EOS	$4.1 billion	6/26/17 - 6/18/18	Smart Contracts
Telegram	$1.7 billion	01/18-02/18	Encrypted Messaging & Blockchain Ecosystem
Dragon	$320 million	02/15/18 - 03/15/2018	Decentralized Currency for Casinos
Huobi	$300 million	01/24/18 - 02/28/18	Cryptocurrency Exchange
Hdac	$258 million	11/27/17 - 12/22/17	IoT Contract & Payment Platform
Filecoin	$257 million	08/10/17 - 09/10/17	Decentralized Cloud Storage
Tezos	$232 million	07/01/17 - 07/14/17	Self-Amending Distributed Ledger
Sirin Labs	$158 million	12/16/17 - 12/26/17	Open-Source Blockchain Smartphone
Bancor	$153 million	December 6, 2017	Prediction Markets
The DAO	$152 million	05/01/17 - 05/28/17	Decentralized VC

ICO Examples

Voted top 10 global female fintech leader

WOMEN'S COIN® - BUILDING A BETTER WORLD

Women's Coin® pre-loaded top-up cards will be in local currancy. There is no interest to pay, very secure and a great alternative to a bank account or credit card. And you can even buy one as gift.

Women's Coin®

We want to create a marketplace based on Women's Values. The clothing and footwear market in the UK alone is worth 63.6 billion euros and globally $1.7 trillion, and children wear is showing a 7 % increase, and performance sportswear is valued at $78 billion. As women are the key decision makers in purchase of clothing for self, husband, and family then manufacturers and retailer alike will seek to promote the "Gold icon of value" as a form of payment. Fashion Houses will also adopt as a quality standard high-end goods eg $4,000 handbag. Women's Coin Foundation trading arm will itself move into merchandising products carrying . Suppliers of goods and services recognise the purchasing power of the and compete to display the logo as a means of payment. Women's coin will be the catalyst for a connected global market place of value. will become the trademark of value. Women's Coin users creating connecting fiscal power to deliver progress on humanitarian and green issues than any Government policy or regulation.

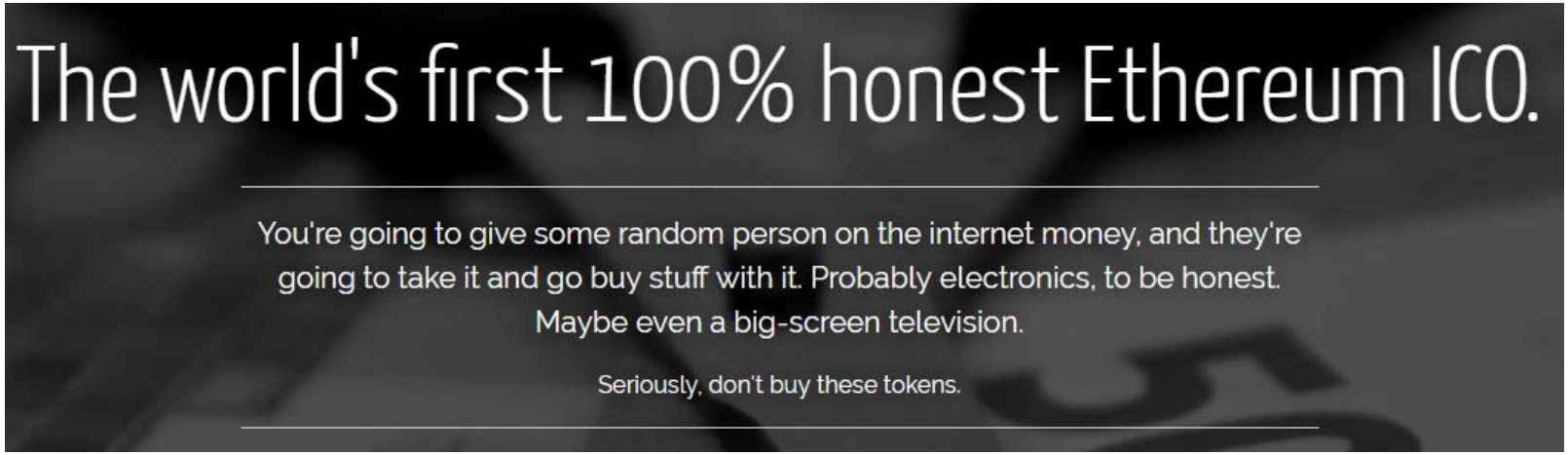
The Women's Market Place

IT'S TIME TO DECENTRALIZE JESUS

Using the cryptographic breakthrough of the blockchain ledger and anonymous cryptocurrencies, Jesus Coin has been developed as THE currency of God's Son. Christianity is the largest grouping in the world, with over 2 billion followers, and we deserve our own currency. As predicted by John (Lisa's dad, the one with the limp) 33:12:

"And there would be a cryptocurrency, and it would be wondrous, and the Lord would say unto thee followers 'buy thee Jesus Coin at the highest possible bonus structure".

ICO Examples



Crowdsale Statistics

Ether contributed

310.445

I had a feeling someone would waste their money.

Contributions in USD

$86303

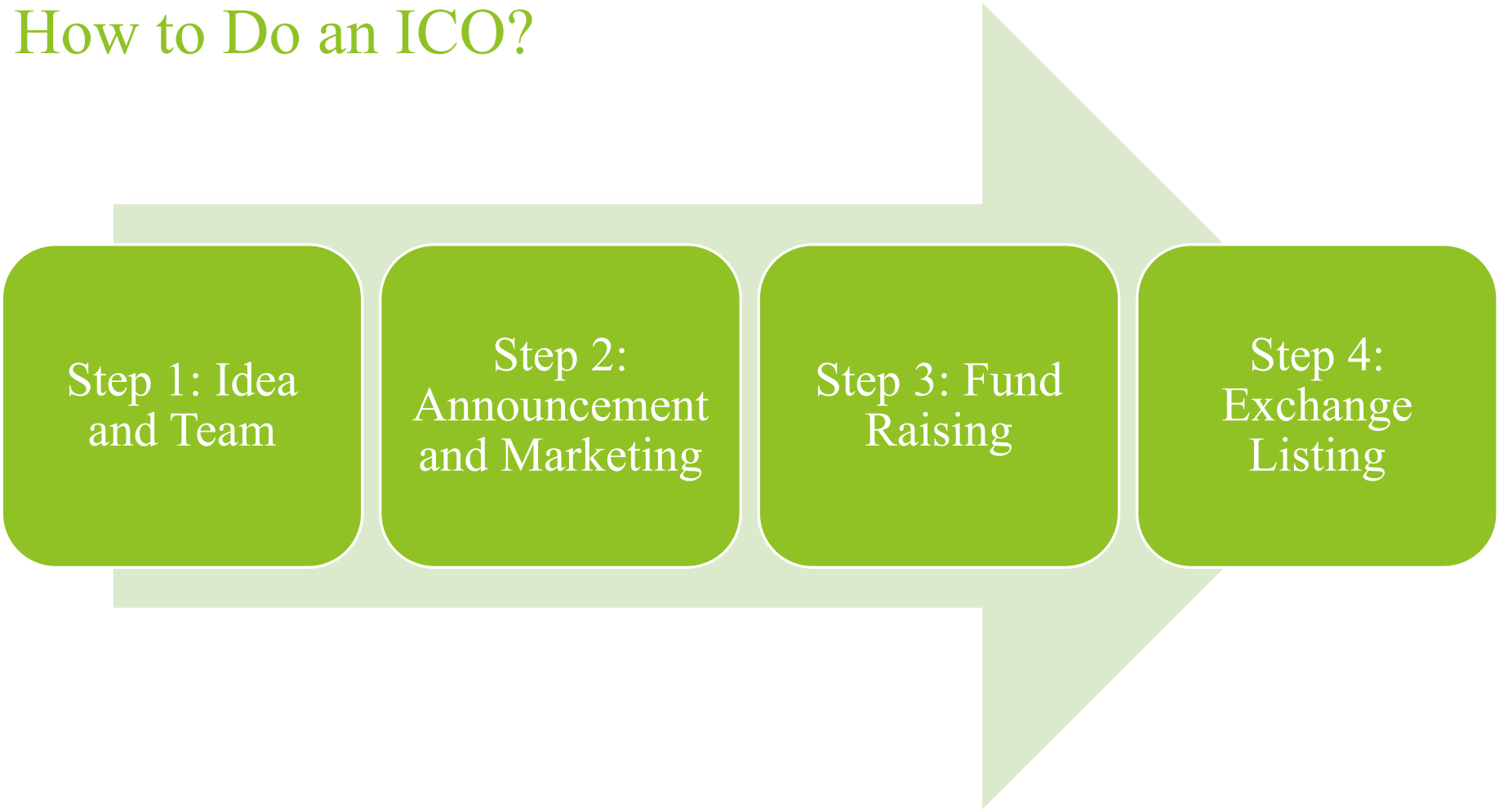
Enough to buy 71 televisions!

Tokens issued

3965716.097

Including 591.000 bonus tokens!

How to Do an ICO?



ICO Scams

- Centra Tech
  - “world’s first multi-blockchain debit card and smart and insured wallet”
  - spend these cryptocurrencies in real time using a Visa or MasterCard backed “Centra Card.”
  - “join our success and mission while generating a profit.”
  - False partnerships with Visa, Mastercard, The Bancorp
  - Fake cofounder “Michael Edwards”
  - “Centra Token Rewards Program”: 0.8% of total revenue

ICO Regulation

- Misconducts and scams are a major concern (SEC 2018)
  - Many projects only at idea stage
  - Unregulated for most part and severe information asymmetry between project team and investors
  - Most issue a whitepaper as a main information (disclosure) channel
- US: Tokens may or may not be securities (The DAO Report, SEC, July 25, 2017)
- Ban ICOs: China and South Korea
- Promote ICOs: Singapore, Switzerland, and Malta

Research Question

- Do ICO projects contain innovation in blockchain technology or they are just taking advantage of the lax regulatory environment?
  - Develop a rating system of blockchain innovation based on information disclosed in the whitepaper

- Do investors obtain information from voluntary disclosure in white paper, and do they value the innovation in blockchain technology being adapted or developed by ICO issuers?

  - Yes: use information in white paper and value blockchain innovation
  - No: either not value blockchain innovation, or information disclosed in whitepaper not credible

Initial Coin Offerings, Blockchain Technology and White Paper Disclosures

Chen Feng, University of British Columbia
Barry Lu, University of British Columbia
Nan Li, University of Toronto
Franco Wong, University of Toronto
Mingyue Zhang, University of Toronto

Why do we need a rating system?

- Nature of projects
  - Early stage projects
  - No products or service available
  - Traditional measure of technology quality does not apply
- Low entry barriers of issuing ICO
  - No regulation in place
  - Requirement for coding can be very low
  - Large information asymmetry between ICO issuers and investors

A Measure of Technical Level of ICO Projects

- Factor 1: Blockchain Platform
  - 1: if the project builds its own blockchain platform with new protocols/algorithms
  - 0: if the project uses an existing blockchain platform or doesn't mention any details about the platform it is going to use

- Example:
  - Dragon Coin: "Our ethereum/ERC20 based platform will host the native DRG; the eco-system will include DGC, a gaming transactional token system." (0)
  - Filecoin: "Filecoin is a protocol token whose blockchain runs on a novel proof, called Proof-of-Spacetime, where blocks are created by miners that are storing data." (1)

A Measure of Technical Level of ICO Projects

- Factor 2: Token Utility
  - 2: if a token is associated with some product/service provided by the company's blockchain platform
  - 1: if a token is associated with some product/service provided by the company but unrelated to the company's blockchain platform
  - 0: don't need a blockchain (e.g., it is unclear what a token can do or the tokens are sold in order to raise money which can be replaced by more conventional crowdfunding)

A Measure of Technical Level of ICO Projects

- Factor 2: Token Utility Example
  - Filecoin: “clients spend tokens for storing and retrieving data and miners earn tokens by storing and serving data.” (2)
  - Dragon Coin: “exchanged for non-negotiable physical gaming chips at the Dragon Junket or any Dragon affiliated gaming venue.” (1)
  - Mondo: tokens are exchangeable for fiat; (0)
  - Misscoin: users can “gain revenue from the token’s growing value.” (0)
  - Sand Coin: doesn’t mention the use of tokens (0)
  - Golem: “designed to ensure flexibility and control over the future evolution of the project”;

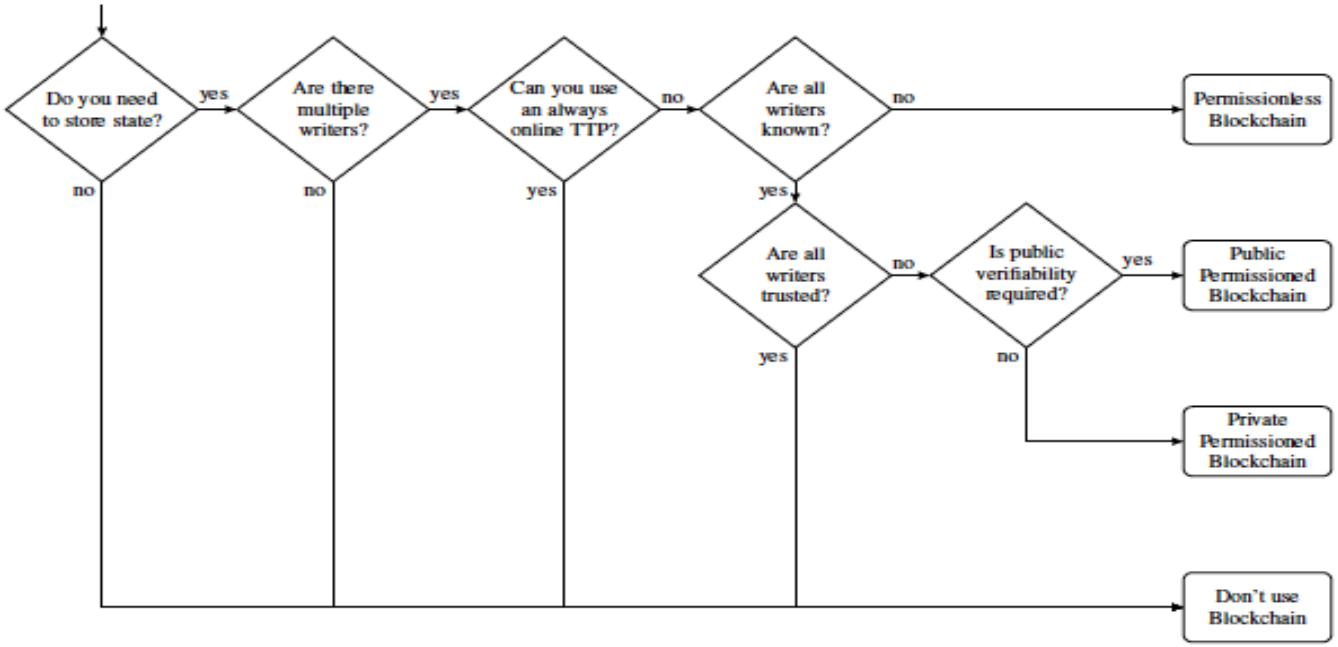


Figure 1. Do You Need a Blockchain?

Wust and Gervais (2017) provide the following flow chart and explanations to help determine whether a blockchain is the appropriate technical solution to solve a problem.

A Measure of Technical Level of ICO Projects

- Factor 3: Technical Writing
  - 2: if the white paper contains sufficient technical discussions in the style of an academic paper
  - 1: if the white paper contains limited technical discussions
  - 0: if the white paper contains essentially no technical discussions

- Example:
- Filecoin: style of an academic paper, precise definitions, system diagrams of its new protocol, descriptions of data structures and algorithms, as well as references (most of which are academic papers) (2)
- Dragon Coin: system diagram and some discussions on Ethereum and smart contracts; "Courtesy of the Ethereum Foundation" ; "Based on information from CoinDesk" (1)
- Bankera: no technical discussions; "Most of the technology required for successful operations for Bankera is already developed and will be ready for testing as a minimum viable product prior to the ICO. The core elements of Bankera's current technology include modules for SWIFT messaging, SEPA payments, payment cards integration, bank's ledger, Bitcoin, Ethereum, DASH, NEW modules, fraud analytics and more." (0)

Example: FileCoin

- Factor 1: Blockchain platform
  - FileCoin developes a new blockchain protocol to build its own platform
- Factor 2: Token Utility
  - Token of FileCoin can be used to store digital files on some participant's local storage (in an encrypted form)
- Factor 3: Technical Writing
  - Sufficient technical details: 26 pages protocol setup and proof (https://filecoin.io/filecoin.pdf)

- Rating=5

Example: HoweyCoin

- Factor 1: Blockchain platform
  - No description of blockchain platform used
- Factor 2: Token Utility
  - The product described does not need blockchain
- Factor 3: Technical Writing
  - No technical writing related to blockchain technology (https://www.howeycoins.com/files/howeycoin_white_paper.pdf)

- Rating=0

Data

Data source	Number of ICOs	
ICOBench.com	1,813	
CoinMarketCap.com	1,596	
Tokendata.io	1,314	
ICOMarks	1,129	
CryptoCompare.com	655	
ICODrops.com	370	
TokenMarket.net	585	
Total ICOs		7,462
Duplicated ICOs		(3,865)
Unique ICOs		3,597
Unique ICOs with a white paper		1,545

Availability of Key Variables

Panel C: Availability of key variables		
ICOs	Number of ICOs	Total number
With Amount Raised	224	369
Without Amount Raised	145	
With Soft Cap data	62	369
Without Soft Cap data	307	
With Token Price data	47	369
Without Token Price data	322	

Table 3 (A). Blockchain Platform

Panel A: ICO description based on Blockchain platform (factor 1)

Platform	1	0
N	51	318
Mean amount (all)	28,742,952	9,260,348
Median amount (all)	2,800,000	561,532
% with amount raised (non-zero)	63%	60%
Mean amount raised (non-zero)	45,809,080	15,337,452
Median amount raised (non-zero)	14,919,087	5,272,002
% with token trading data	73%	3%

Table 3 (B). Token Utility

Panel B: Token Utility (factor 2)

	2	1	0
N	52	211	106
% with amount raised (non-zero)	79%	62%	50%
Mean amount raised (non-zero)	35,174,152	18,517,764	10,589,279
Mean amount raised (all)	27,733,468	11,409,048	5,294,640
% with token trading data	31%	8%	13%

Table 3 (C). Technical Writing

Panel C: ICO description based on Technical writing (factor 3)

Technical writing	2	1	0
N	27	94	248
Mean amount (all)	25,020,202	24,614,092	5,731,497
Median amount (all)	6,500,000	6,024,811	15,419
% with amount raised (non-zero)	78%	77%	53%
Mean amount raised (non-zero)	32,168,832	32,135,064	10,850,467
Median amount raised (non-zero)	11,000,000	11,637,823	3,502,044
% with token trading data	33%	14%	10%

Business Related Disclosure

- Token Distribution
- Lock Up (+)
- Vesting Period
- Governance
- Use of Funds
- Risk Disclosure
- Team Members

Findings

- A significant amount of ICOs do not need blockchain technology.
- Blockchain technology is positively related with funding (investors care)
- Lock up period, Team member, Advisor Disclosure is positively related with funding in certain specifications
- Implication
  - ICO investors rely on the information disclosed in the whitepaper, and therefore regulation on the credibility of the information is important.

Thank You!

For details, please refer to "Initial Coin Offerings, Blockchain Technology, and White Paper Disclosures"
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3256289

Contacts:
Chen Feng, University of British Columbia, chen.feng@ubc.ca
Nan Li, University of Toronto, nanjulie.li@utoronto.ca
Franco Wong, University of Toronto, fwong@rotman.utoronto.ca