



# Smart Ledgers & World Trade – Revolutionary Or Mundane?

## World Traders' Lunchtime Lecture

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2 June 2021



 @mrmainelli

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# Outline

## Assess & appraise

- What are ledgers?
- History and applicability of ledgers
- What are blockchains?

## Lookaheads & likelihoods

- What are smart ledgers?
- What are smart contracts?
- The rise of the cryptocurrencies, mining, bitcoin, and altcoins

## Options & outcomes

- Myths & legends
- Blockchain, more than a data structure?

## Understanding & undertaking

- The central third-party problem
- Mutual distributed ledgers in action
- Governance of mutual distributed ledgers

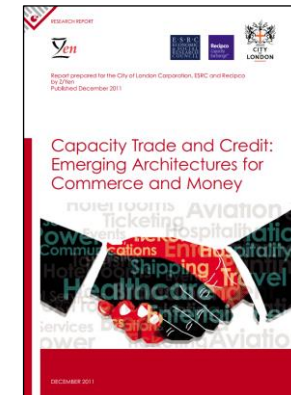
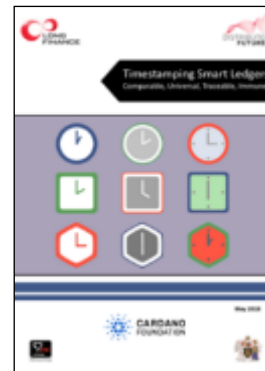
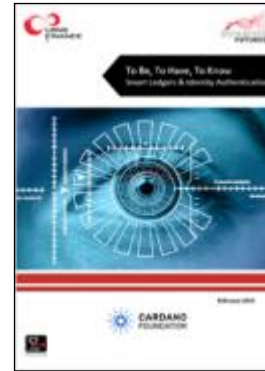
## Securing & scoring – trade

## Discussion



**"Get a detailed grip on the big picture."  
Chao Kli Ning**

# Research



# Allegory With Stone Soup?



# Assess & Appraise

## Basics Of Smart Ledgers



# ‘Internet-of-Record(s)’

“A ledger is a book, file, or other record of financial transactions.”



Christopher Watrous Ledger Book, Durham, 1817 (Vedder Library)

Accounts for Demo  
CASH ACCOUNT From 01/03/2003 to 29/03/2004

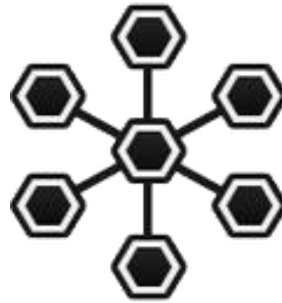
| Date      | Payee             | Reference     | Category       | Actual (gross) Amount | Recon Balance (gross) | Admin. fund split OST net | Non OST | Sink. fund split OST net | Non OST | Balance (net) |
|-----------|-------------------|---------------|----------------|-----------------------|-----------------------|---------------------------|---------|--------------------------|---------|---------------|
| 25 MAY 04 | Mr J Citizen      | Lot 1 levy pa | Deposit        | 500.00                | 500.00                | 0.00                      | 500.00  | 0.00                     | 0.00    | 500.00        |
| 26 MAY 04 | Local Insurance   | Insurance Ar  | Insurance Bu   | -269.00               | 231.00                | 0.00                      | -269.00 | 0.00                     | 0.00    | 231.00        |
| 31 MAY 04 | Netbank           | Govt Debit Tr | Govt Debit Tr  | -2.52                 | 228.48                | 0.00                      | -2.52   | 0.00                     | 0.00    | 228.48        |
| 31 MAY 04 | Netbank           | Account Ser   | Account Ser    | -5.00                 | 223.48                | 0.00                      | -5.00   | 0.00                     | 0.00    | 223.48        |
| 31 MAY 04 | Netbank           | Interest      | Bank Interest  | 0.52                  | 224.00                | 0.00                      | 0.52    | 0.00                     | 0.00    | 224.00        |
| 3 JUN 03  | Clarks Grounds    | Grounds Mai   | Grounds Mai    | -30.00                | 194.00                | 0.00                      | -30.00  | 0.00                     | 0.00    | 194.00        |
| 10 JUN 03 | Electrical Engine | Replace light | Building Maint | -22.60                | 171.40                | 0.00                      | -22.60  | 0.00                     | 0.00    | 171.40        |
| 11 JUL 03 | Levy credit trans | Lot 1 credit  | Levy credit tr | 0.00                  | 171.40                | 0.00                      | -250.00 | 0.00                     | 250.00  | 171.40        |
| 10 OCT 04 | Leahy             | Terror Payou  | Bank Transf    | 1000.00               | 1171.40               | 0.00                      | 909.09  | 0.00                     | 0.00    | 1080.49       |
| 10 OCT 04 | Fencers Upstand   | Broken Pain   | Fencing        | -120.00               | 1051.40               | 0.00                      | 0.00    | 0.00                     | -120.00 | 960.49        |
| 16 OCT 04 | Mr P D Jakeson    | Lot 1 levy pa | Deposit        | 400.00                | 1451.40               | 0.00                      | 0.00    | 363.64                   | 0.00    | 1324.13       |
| 6 NOV 04  | Mr P D Jakeson    | Lot 1 levy pa | Deposit        | 25.00                 | 1476.40               | 0.00                      | 0.00    | 22.73                    | 0.00    | 1346.86       |
| 11 NOV 04 | Mr P D Jakeson    | Lot 1 levy pa | Deposit        | 5.00                  | 1481.40               | 0.00                      | 0.00    | 4.55                     | 0.00    | 1351.41       |

[SOURCE: [https://en.wikipedia.org/wiki/Tally\\_stick](https://en.wikipedia.org/wiki/Tally_stick)]

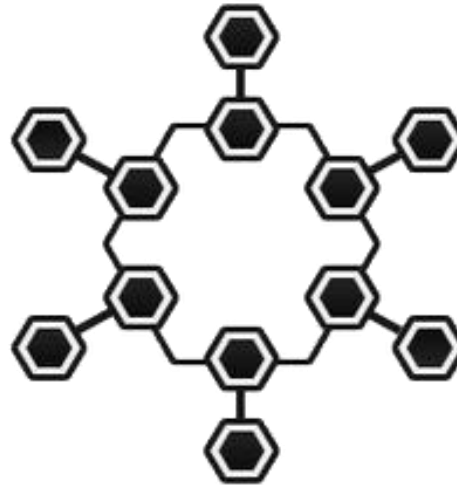
[SOURCE: <http://www.rootsweb.ancestry.com/~nygreen2/wpeF7.jpg>]

[SOURCE: <https://en.wikipedia.org/wiki/Ledger>]

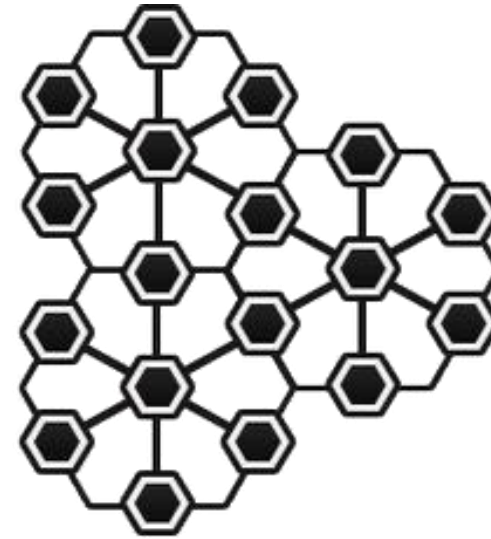
# Using Peer To Peer (P2P) Networks



Centralised



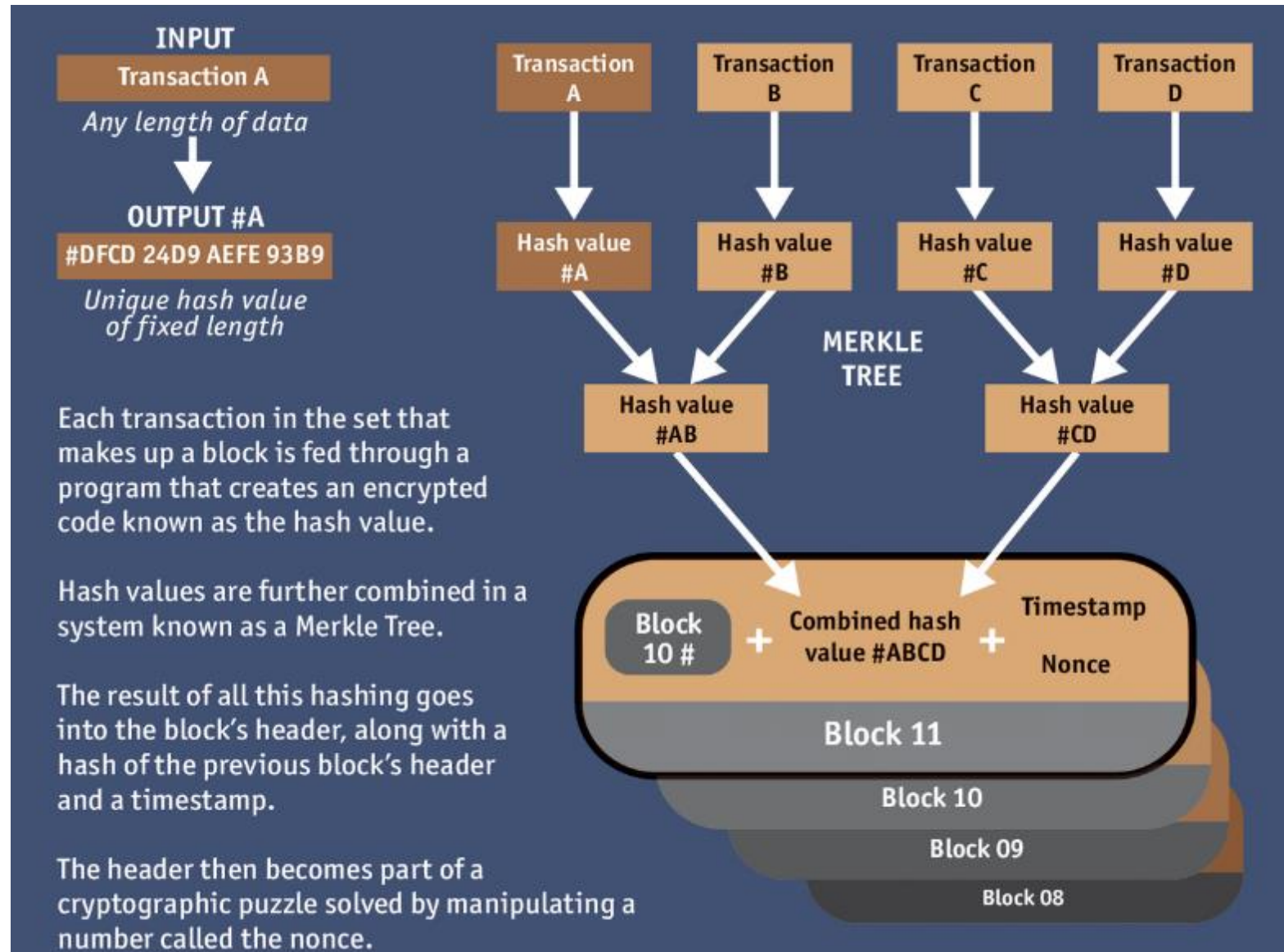
Decentralised



Distributed



# Overview Of 'Chains'

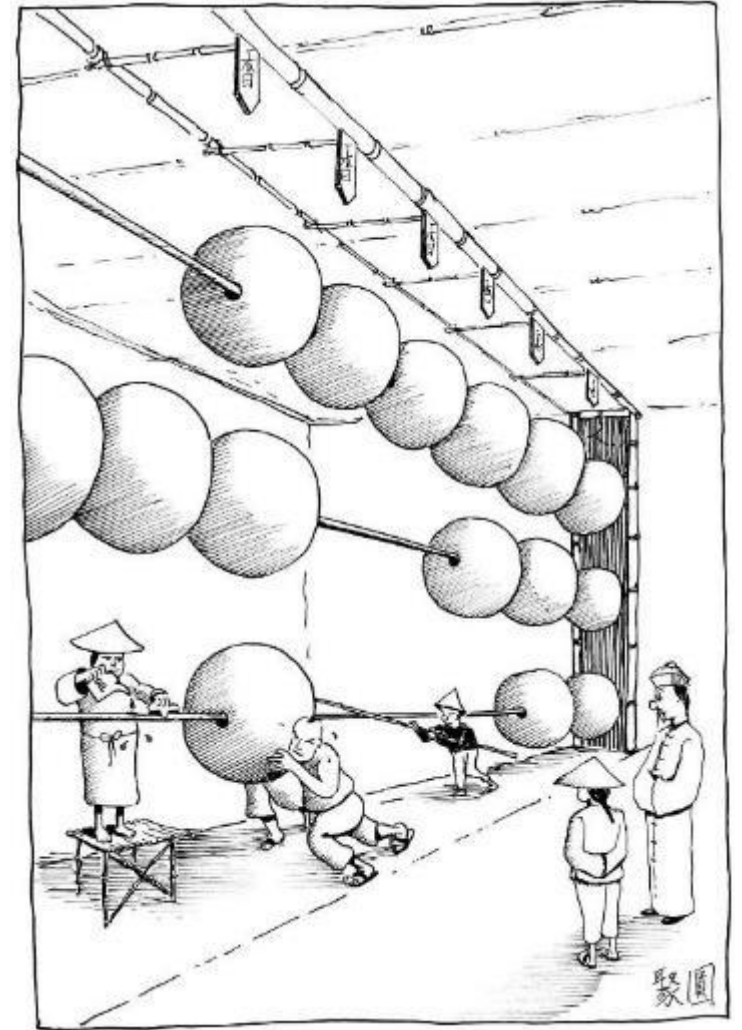




# Possibly Distributively Ledgerable

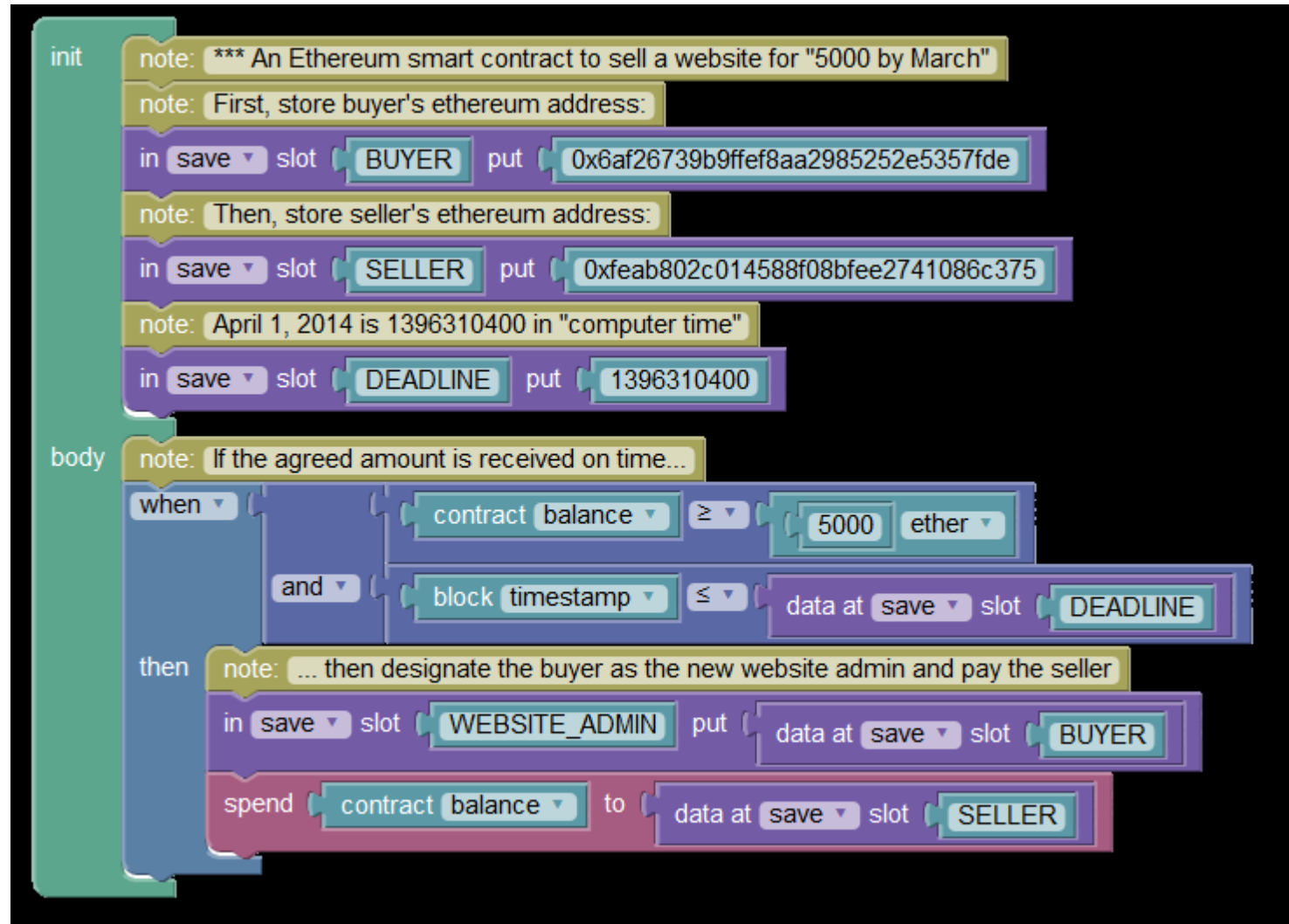
| Financial Instruments, Records, Models |                             | Public Records                      |                            | Private, Semi-Private/Semi-Public Records |                                  | Physical Keys, Intellectual Property, Other Records |                                    |
|--|-----------------------------|-------------------------------------|----------------------------|---|----------------------------------|---|------------------------------------|
| Currencies                             | Derivatives                 | Land & Property Titles              | Vehicle Registries         | Contracts                                 | ID                               | Home Key  | Hotel Key                          |
| Commodities                            | Insurance Policies          | Shipping Registries                 | Satellite Registries       | Signature                                 | Will                             | Office Key  | Car Key                            |
| Trading Records                        | Private and Public Equities | Business License                    | Business Ownership Records | Trust                                     | Escrow                           | Deposit Box Key                                     | Mail Box Key                       |
| Certificates of Deposit                | Bonds                       | Incorporation / Dissolution Records | Regulatory Records         | Other Classifiable Data                   | High School / University Degrees | Internet Of Things                                  | Copyrights & Patents               |
| Voting Rights (Financial Services)     | Credit Data                 | Criminal Records                    | Passport                   | Professional Qualifications               | Certifications                   | Licenses  | Digital Rights Management          |
| Collateral Management                  | Client Monies Segregation   | Birth / Death Certificates          | Voting ID                  | Human Resources Records                   | Medical Records                  | Trademarks  | Proof Of Authenticity / Authorship |
| Mortgage / Loan Records                | Crowd-Funding               | Health & Safety Inspections         | Tax Returns                | Accounting Records                        | Business Transaction Records     | Cultural Events                                     | Historical Events                  |
| P2P Lending                            | Microfinance                | Building & Other Types Of Permits   | Court Records              | Locational Data                           | Genome & DNA                     | Documentaries                                       | Big Data                           |
| Account Portability                    | Airmiles / Corporate Tokens | Government / Listed Companies       | Accounts & Annual Reports  | Arbitration                               | Genealogy Trees                  | SIM Cards   | Archives                           |

## What Are Smart Ledgers?

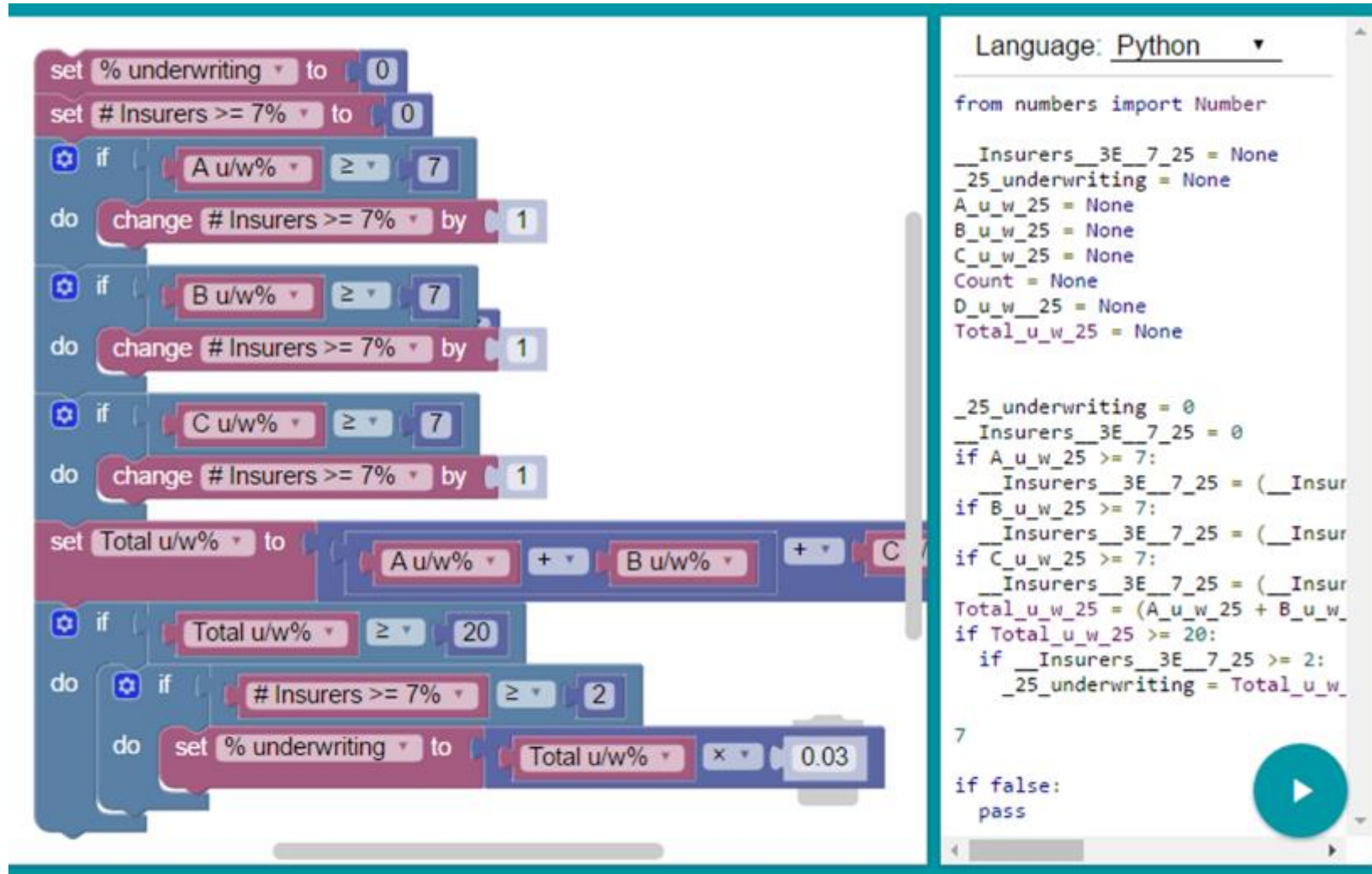


**“Get a big picture grip on the details.”**  
***Chao Kli Ning***

# Smart Contract



# Smart? Follower Syndicate In Code



The image displays a side-by-side comparison of code. On the left is a Scratch script, and on the right is a Python script. Both scripts implement a logic for determining underwriting based on the number of insurers and the percentage of underwriting.

**Scratch Script:**

- set % underwriting to 0
- set # Insurers >= 7% to 0
- if A u/w% ≥ 7 do change # Insurers >= 7% by 1
- if B u/w% ≥ 7 do change # Insurers >= 7% by 1
- if C u/w% ≥ 7 do change # Insurers >= 7% by 1
- set Total u/w% to A u/w% + B u/w% + C
- if Total u/w% ≥ 20 do if # Insurers >= 7% ≥ 2 do set % underwriting to Total u/w% × 0.03

**Python Script:**

```
Language: Python
from numbers import Number

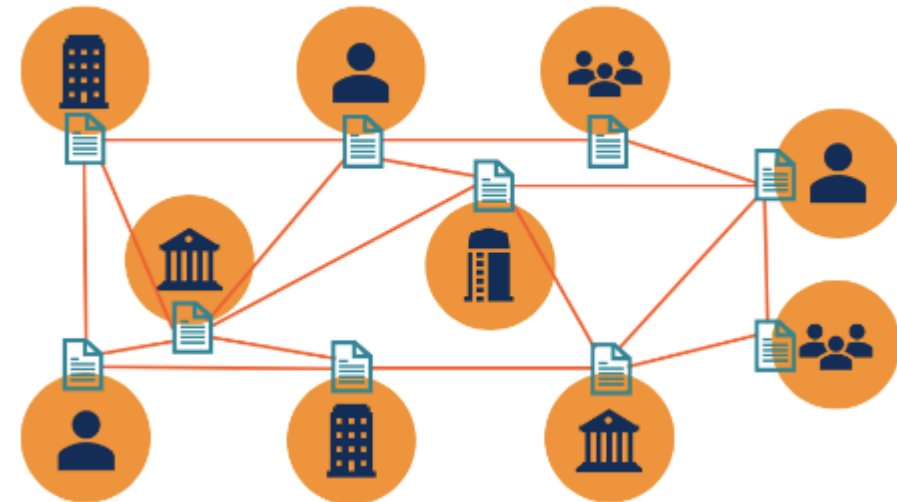
__Insurers_3E_7_25 = None
_25_underwriting = None
A_u_w_25 = None
B_u_w_25 = None
C_u_w_25 = None
Count = None
D_u_w_25 = None
Total_u_w_25 = None

_25_underwriting = 0
__Insurers_3E_7_25 = 0
if A_u_w_25 >= 7:
    __Insurers_3E_7_25 = (__Insur
if B_u_w_25 >= 7:
    __Insurers_3E_7_25 = (__Insur
if C_u_w_25 >= 7:
    __Insurers_3E_7_25 = (__Insur
Total_u_w_25 = (A_u_w_25 + B_u_w_
if Total_u_w_25 >= 20:
    if __Insurers_3E_7_25 >= 2:
        _25_underwriting = Total_u_w_
7
if false:
    pass
```

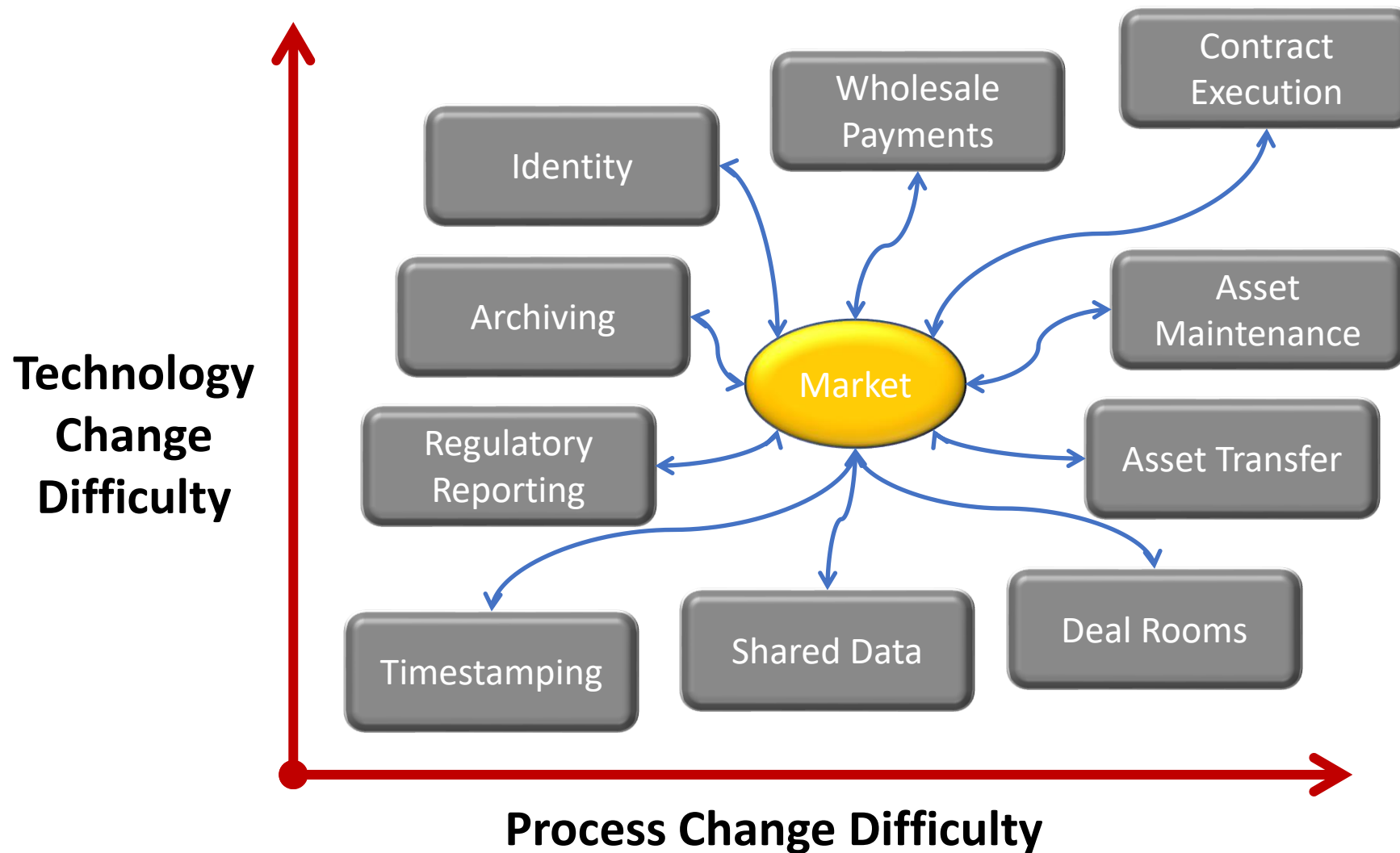


## Terminology Evolving

- **ledger** – a record of transactions
- **distributed** – divided among several or many, in multiple locations
- **distributed ledger (DL)** - a record of transactions shared in common and stored in multiple locations
- **mutual distributed ledger technology (DLT)** – a technology that provides an immutable record of transactions shared in common and stored in multiple locations
- **blockchain** - “a transaction database shared by all nodes participating in a system based on the Bitcoin protocol”
- **smart ledger** – DLT with embedded, executable code



# Generic 'Anti-Cheating' Devices - Performing with Integrity



# Central Registry As Trusted Third Party?

**Validates** – entries  
**Safeguards** – transactions  
**Preserves** – historic record



# What Money Consumes Is Obvious, It Consumes Attention...

Global wealth circa US\$ 360 tn, cryptocurrencies 0.6%, Bitcoin 0.3%

All gold ever mined, 197,576 tonnes @ US\$ 60 M/tonne = US\$ 11,854,560,000,000, cryptocurrencies 17%, Bitcoin 8.5%



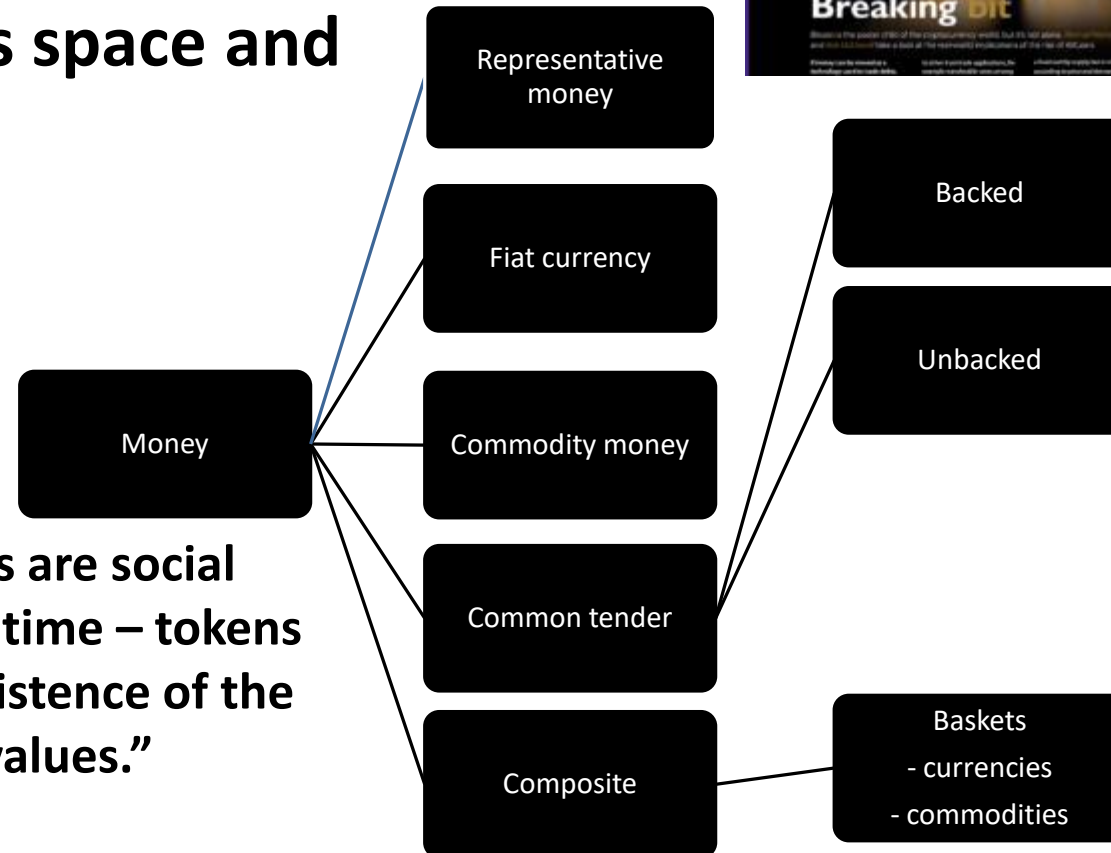


# Money As Technology

**“Money is a technology  
communities use  
to trade debts across space and  
time.”**



**“Tokens of indebtedness are social  
desires frozen at a point in time – tokens  
depend on the future persistence of the  
community and its values.”**



# Bitcoin Primer

## How a Bitcoin transaction works

Bob, an online merchant, decides to begin accepting bitcoins as payment. Alice, a buyer, has bitcoins and wants to purchase merchandise from Bob.

**WALLETS AND ADDRESSES**

Bob and Alice both have Bitcoin "wallets" on their computers.

Wallets are files that provide access to multiple Bitcoin addresses.

An address is a string of letters and numbers, such as 1HULMvZ3PjKFFaCj438KkLytLCW7DdH

**CREATING A NEW ADDRESS**

Bob creates a new Bitcoin address for Alice to send the payment to.

Each address has its own balance of bitcoins.

**SUBMITTING A PAYMENT**

Alice tells her Bitcoin client that she'd like to transfer the purchase amount to Bob's address.

**Public Key Cryptography 101**  
When Bob creates a new address, what he's really doing is generating a "cryptographic key pair," composed of a private key and a public key. If you sign a message with a private key (which only you know), it can be verified by using the matching public key (which is known to anyone). Bob's new Bitcoin address represents a unique public key, and the corresponding private key is stored in his wallet. The public key allows anyone to verify that a message signed with the private key is valid.

**VERIFYING THE TRANSACTION**

Alice's wallet holds the private key for each of her addresses. The Bitcoin client signs her transaction request with the private key of the address she's transferring bitcoins from.

Anyone on the network can now use the public key to verify that the transaction request is actually coming from the legitimate account owner.

It's tempting to think of addresses as bank accounts, but they work a bit differently. Bitcoin users can create as many addresses as they wish and in fact are encouraged to create a new one for every new transaction to increase privacy. So long as no one knows which addresses are Alice's, her anonymity is protected.

Gary, Gertrude, and Glenn are Bitcoin miners.

The miners' computers are set up to calculate cryptographic hash functions.

These computers bundle the transactions of the past 10 minutes into a new "transaction block."

**Cryptographic Hashes**  
Cryptographic hash functions transform a collection of data into an alphanumeric string with a fixed length, called a hash value. Even tiny changes in the original data drastically change the resulting hash value. And it's essentially impossible to predict which initial data set will create a specific hash value.

The root of all evil  
The root of all evil  
The root of all evil

0000 0000 0000 ...  
6d0a 1899 086a... (50 more characters)  
480c 6be4 6d0e...  
1ab0 b7e9 8302...

**Nonces**  
To create different hash values from the same data, Bitcoin uses "nonces." A nonce is just a random number that's added to data prior to hashing. Changing the nonce results in a wildly different hash value.

The mining computers calculate new hash values based on a combination of the previous hash value, the new transaction block, and a nonce.

Creating hashes is computationally trivial, but the Bitcoin system requires that the new hash value have a particular form—specifically, it must start with a certain number of zeros.

The miners have no way to predict which nonce will produce a hash value with the required number of leading zeros. So they're forced to generate many hashes with different nonces until they happen upon one that works.

Each block includes a "coinbase" transaction that pays out 50 bitcoins to the winning miner—in the case, Gary. A new address is created in Gary's wallet with a balance of newly-mined bitcoins.

**TRANSACTION VERIFIED**  
As time goes on, Alice's transfer to Bob gets buried beneath other more recent transactions. For anyone to modify the details, he would have to redo the work that Gary did—because any changes require a completely different winning nonce—and then redo the work of all the subsequent miners. Such a feat is nearly impossible.

## Options & Outcomes

### Myths & legends

- Brand new technology?
- Economics doesn't matter?
- Speed doesn't matter?
- Payments?



# Myth - New

**United States Patent** [19] **4,074,066**  
**Ehrsam et al.** [45] **Feb. 14, 1978**

[54] **MESSAGE VERIFICATION AND TRANSMISSION ERROR DETECTION BY BLOCK CHAINING**

[75] Inventors: **William Friedrich Ehrsam, Hurley; Carl H. W. Meyer, Kingston; John Lynn Smith; Walter Leonard Tuchman**, both of Woodstock, all of N.Y.

[73] Assignee: **International Business Machines Corporation**, Armonk, N.Y.

[21] Appl. No.: **680,404**

[22] Filed: **Apr. 26, 1976**

[51] Int. Cl.<sup>2</sup> ..... **H04L 9/02**

[52] U.S. Cl. .... **178/22**

[58] Field of Search ..... 178/22; 35/4; 340/146.1 AL

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

3,657,699 4/1972 Rocher et al. .... 178/22

3,725,579 4/1973 Sturzinger ..... 178/22

*Primary Examiner*—Samuel W. Engle  
*Assistant Examiner*—S. A. Cangialosi  
*Attorney, Agent, or Firm*—Edwin Lester

[57] **ABSTRACT**

A message transmission system for the secure transmission of multi-block data messages from a sending station to a receiving station.

The sending station contains cryptographic apparatus operative in successive cycles of operation during each of which an input block of clear data bits is ciphered under control of an input set of cipher key bits to generate an output block of ciphered data bits for transmission to the receiving station. Included in the cryptographic apparatus of the sending station is means providing one of the inputs for each succeeding ciphering cycle of operation as a function of each preceding ciphering cycle of operation. As a result, each succeeding output block of ciphered data bits is effectively chained to all preceding cycles of operation of the cryptographic apparatus of the sending station and is a function of the corresponding input block of clear data bits, all preceding input blocks of clear data bits and the initial input set of cipher key bits.

## FINANCIAL TIMES

December 14, 2015 1:58 pm

### Blockchain believers seek to shake up financial services

Jane Wild

Share Author alerts Print Clip

Comments

Meet one of the innovators looking at mainstream applications for the infrastructure behind bitcoin



"Included in the cryptographic apparatus of the sending station is means providing one of the inputs for each succeeding ciphering cycle of operation as a function of each preceding ciphering cycle of operation. As a result, each succeeding output block of ciphered data bits is effectively chained to all preceding cycles of operation..."



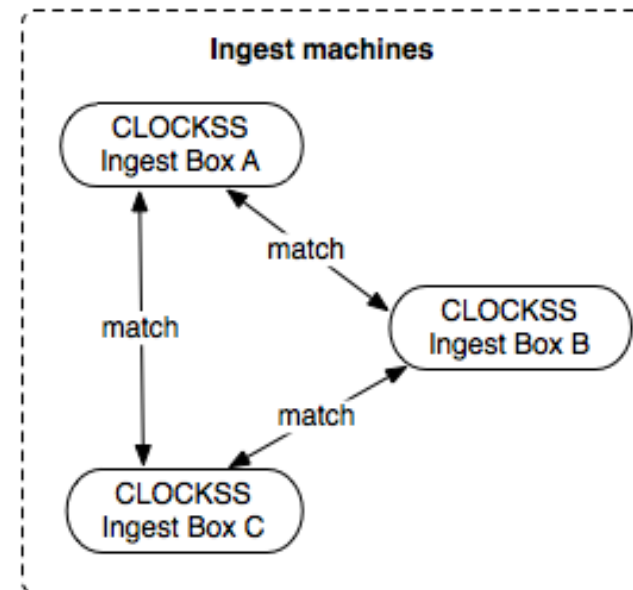
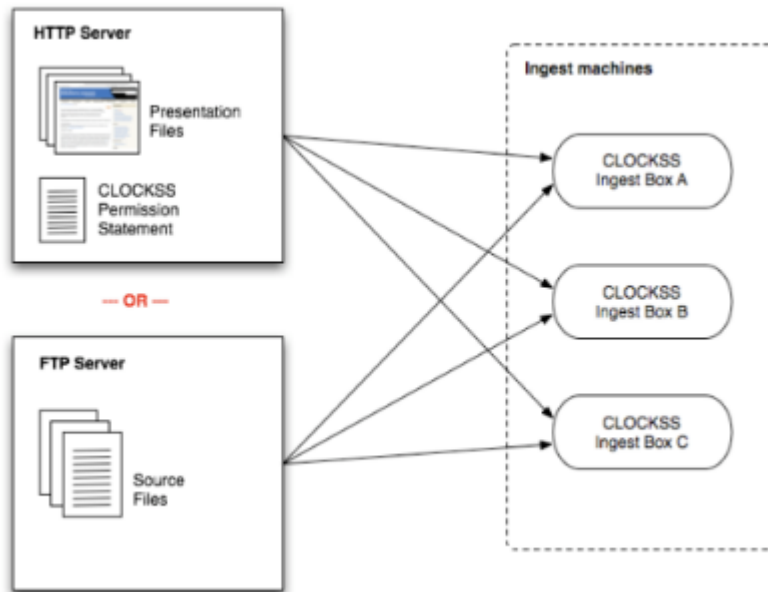
# Myth - New



## Example

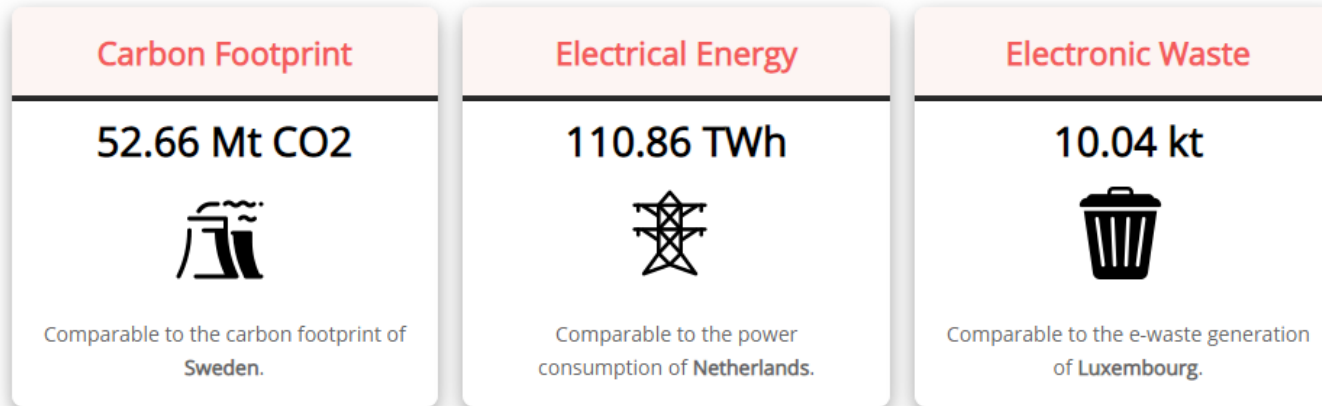


### Lots of copies keep stuff safe!

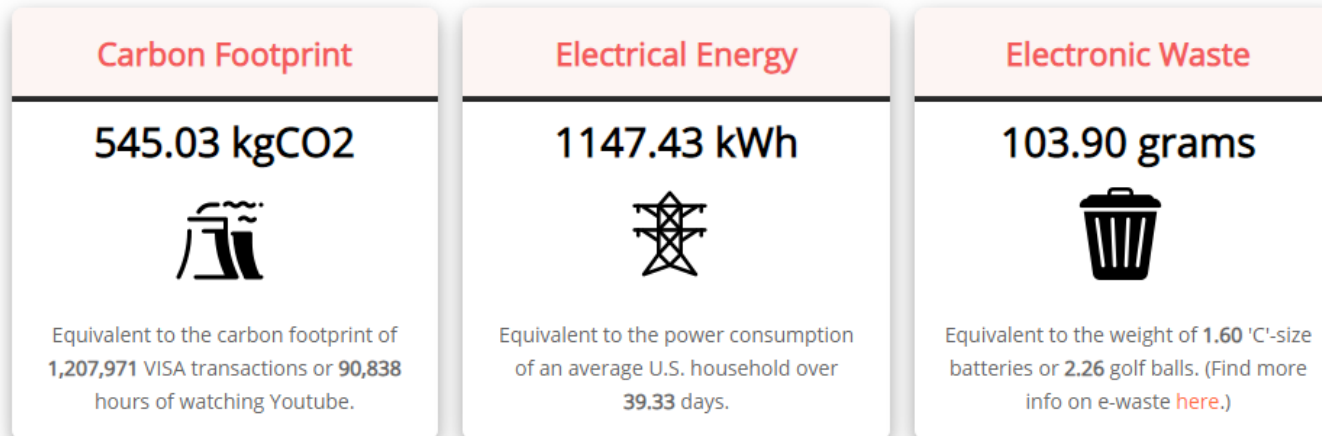


# Myth – Economics Doesn't Matter

## Annualized Total Bitcoin Footprints



## Single Bitcoin Transaction Footprints



## Myth – Economics & Speed Don't Matter

| Factor                          | Bitcoin    | Ethereum   | ChainZy              |
|---------------------------------|------------|------------|----------------------|
| Speed – transactions per second | 7 tps      | 30 tps     | 2,000 to 100,000 tps |
| \$/transaction                  | \$20       | \$12.50    | <\$0.000001          |
| Validation time                 | 10 minutes | 15 seconds | 0.0001 second        |

|                 |                 |
|-----------------|-----------------|
| Google search   | 40,000 a second |
| Visa payments   | 65,000 a second |
| Twitter         | 600 a second    |
| Facebook        | 700 a second    |
| Bombay Exchange | 4,600 a second  |



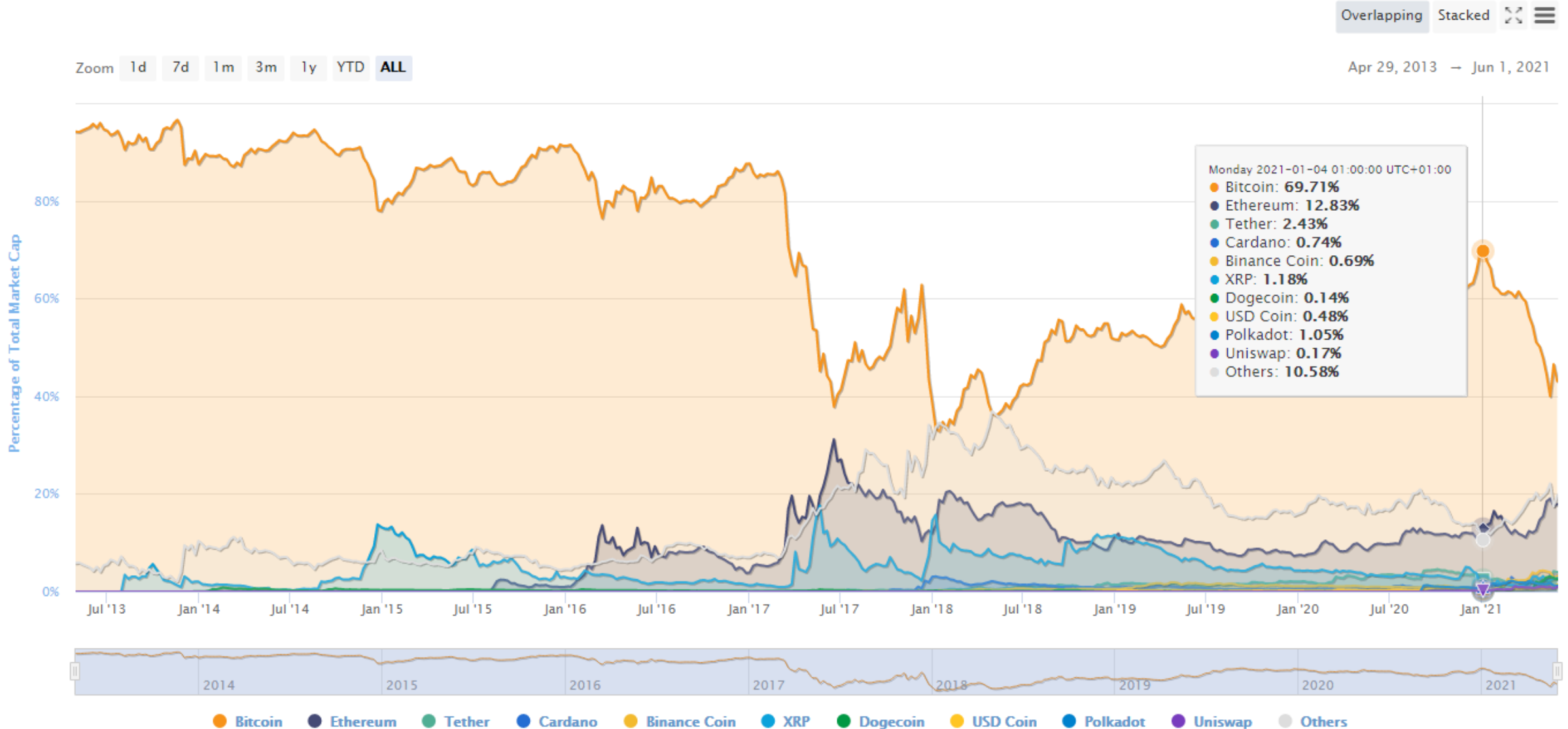
# Myth - Payments





# Crypto Cockroaches?

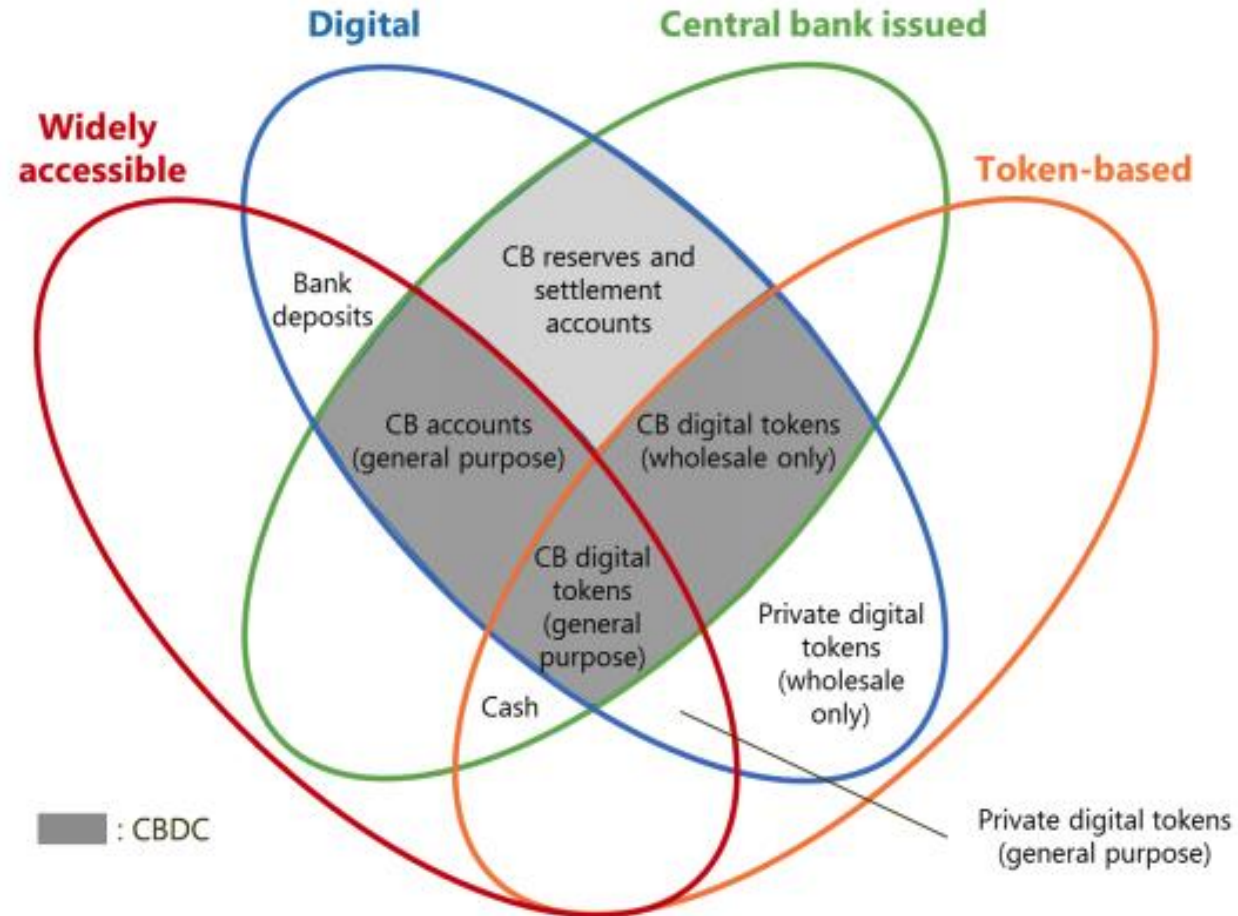
## Percentage of Total Market Capitalization (Dominance)



# Central Bank Digital Currencies Are Not Cryptocurrencies

The money flower: a taxonomy of money

Graph 1



Notes: The Venn-diagram illustrates the four key properties of money: *issuer* (central bank or not); *form* (digital or physical); *accessibility* (widely or restricted) and *technology* (account-based or token-based). *CB* = central bank, *CBDC* = central bank digital currency (excluding digital central bank money already available to monetary counterparties and some non-monetary counterparties). *Private digital tokens (general purpose)* include crypto-assets and currencies, such as bitcoin and ethereum. *Bank deposits* are not widely accessible in all jurisdictions. For examples of how other forms of money may fit in the diagram, please refer to the source.

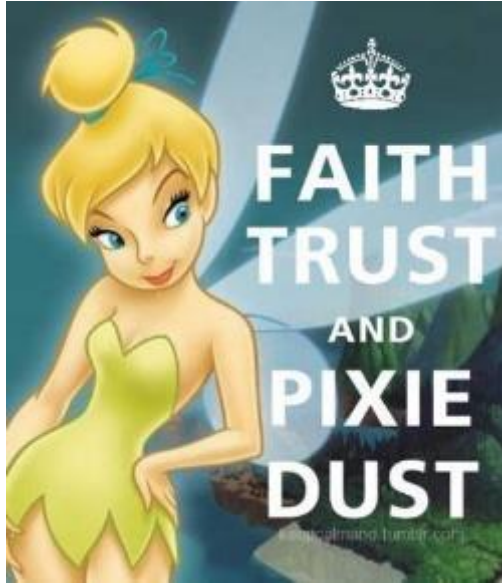
Source: Based on Bech and Garratt (2017).

[https://www.bis.org/publ/qtrpdf/r\\_qt1709f.pdf](https://www.bis.org/publ/qtrpdf/r_qt1709f.pdf)

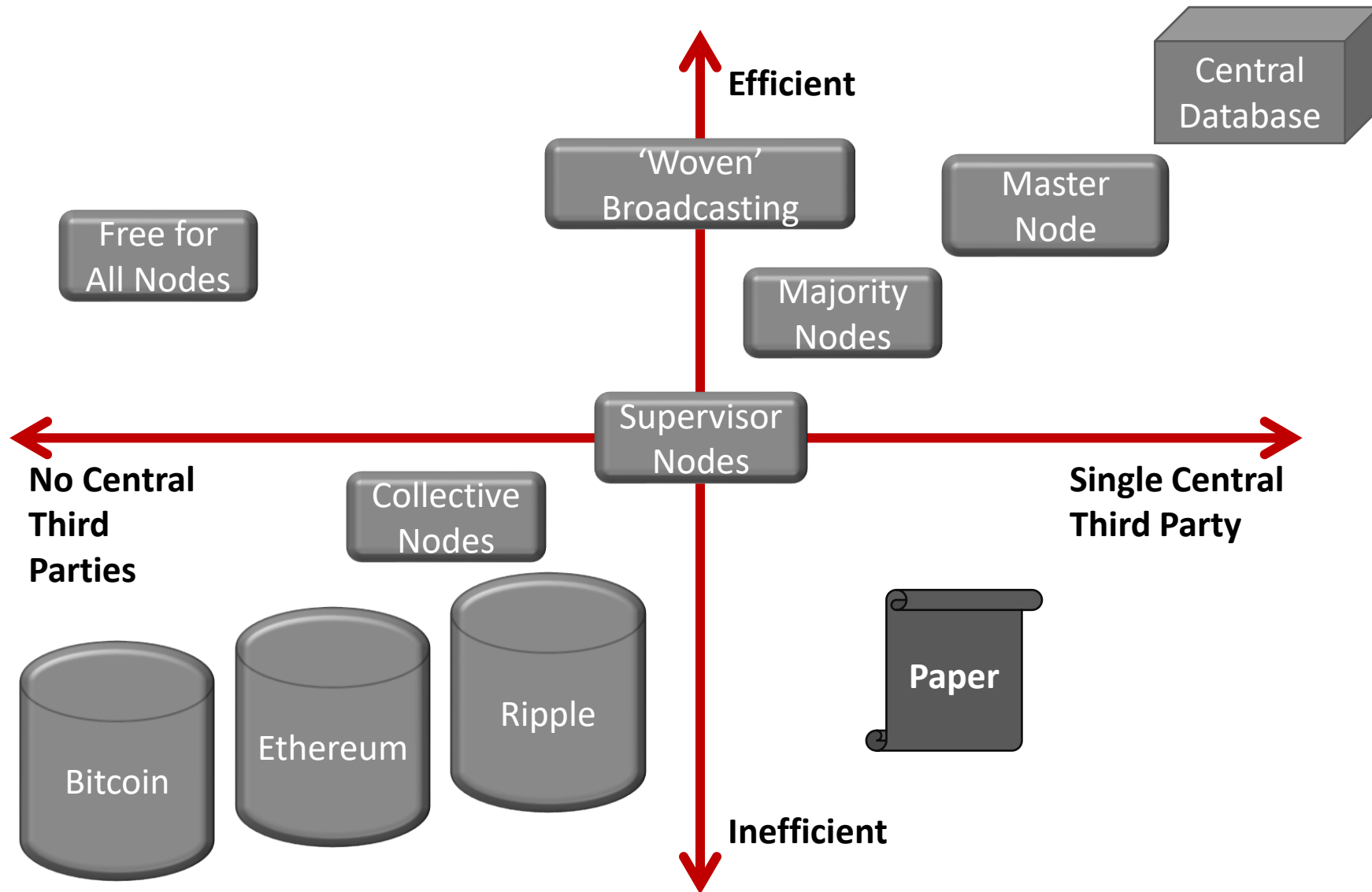
## When The Pixie Dust Settles

"You'll see her after the third glass"

- not necessarily blockchain
- privacy?
- fractional reserve banking works how ?&\*!
- Mainelli's economic corollary to Godwin's law of Nazi analogies - taxation Nazis?



# Cryptocurrency ≠ DLT, Mistrust Costs Coins



# Understanding & Undertaking

**Apps Exist, But They're Boring**



## Case Studies

ChainZy is a set of [working products](#) handling tens of millions of transactions per year. The ledgers are sometimes viewable, and the clients below give some idea of the breadth of applications or demonstrations already complete (\* = viewable ledger, L = live application, D = demonstration/pilot).

[TimeChainZ - Clinical Assessments \\*L](#)

[TimeChainZ - MovieSweep \\*L](#)

[TimeChainZ - States of Alderney \\*L](#)

[TimeChainZ - Youthinmind L](#)

[TimeChainZ - Regulatory Reporting For High-Frequency Trading D](#)

[TimeChainZ - Book Publishing Download Authentication L](#)

[IDChainZ - Mobile Application D](#)

[SmartChainZ - FastTrackTrade \\*L](#)

[SmartChainZ - Fishface L](#)

[SmartChainZ - IoT Refrigerator Timestamping D](#)

[SmartChainZ - Cyber-Catastrophe Insurance-Linked-Security Index \\*L](#)

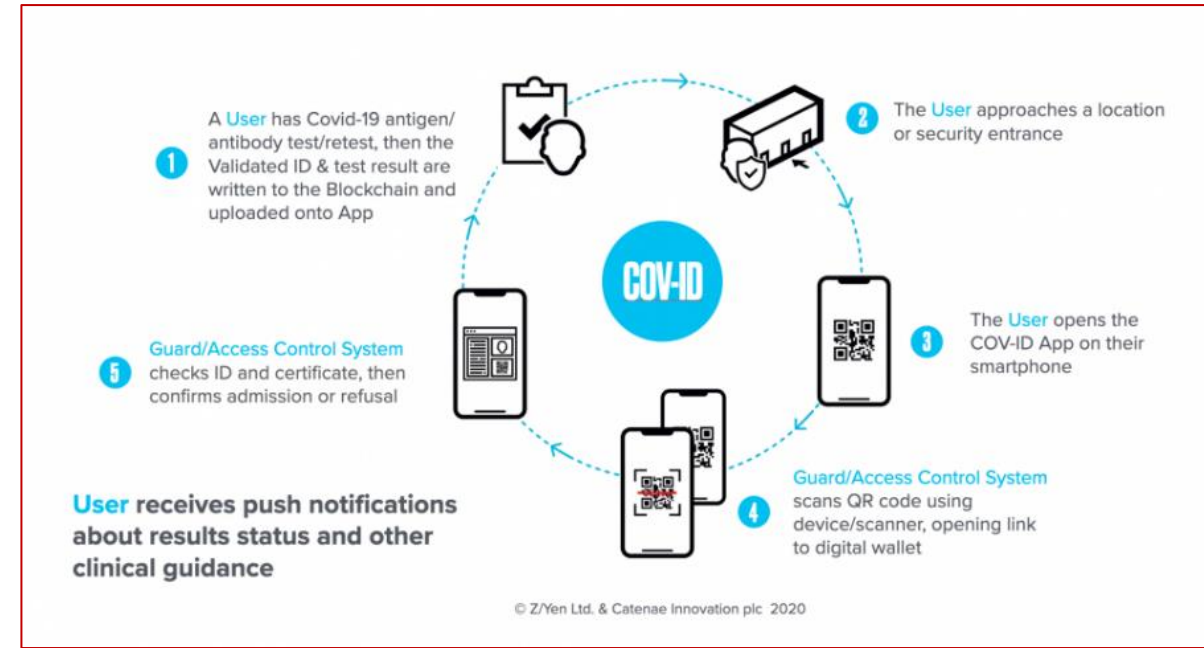
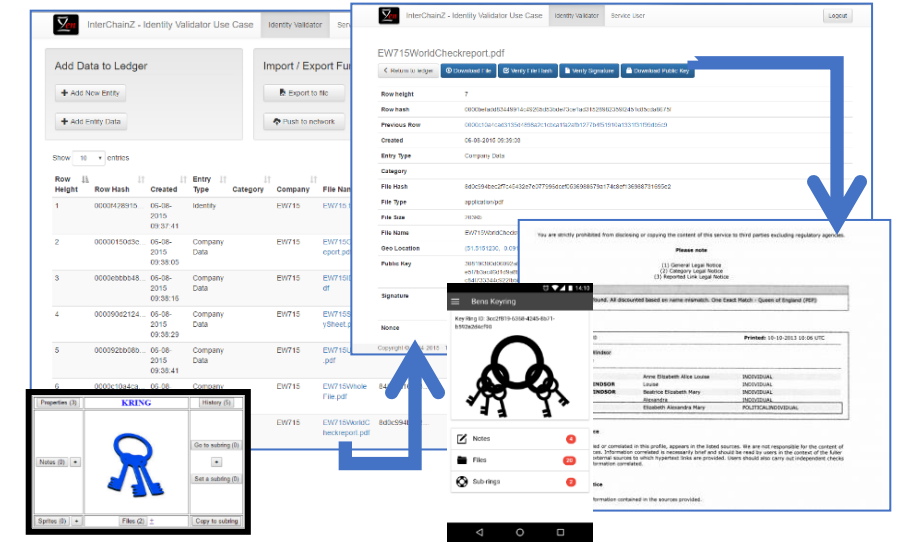
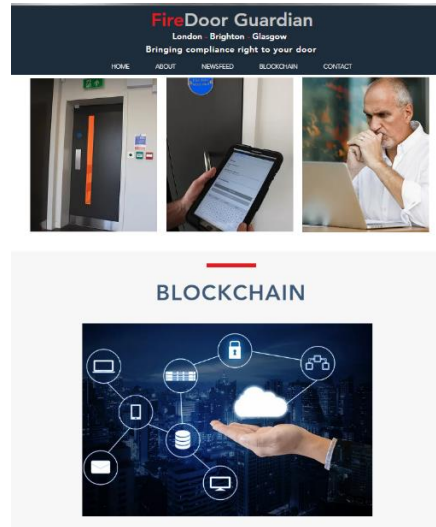
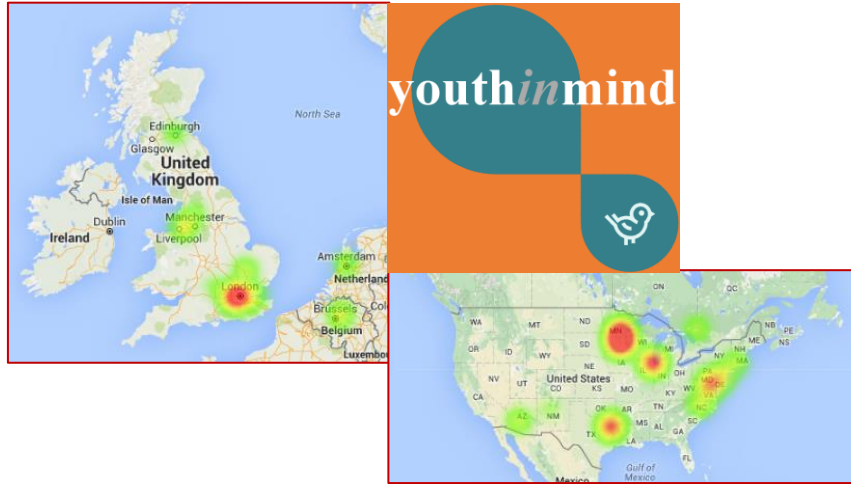
[TimeChainZ - Catenae Uses ChainZy For Firedoor Inspections L](#)

[TimeChainZ - SafeShare Insurance L, now D](#)

[GeoChainZ - GeoGnomo D](#)

[GeoChainZ - GeoTono D](#)

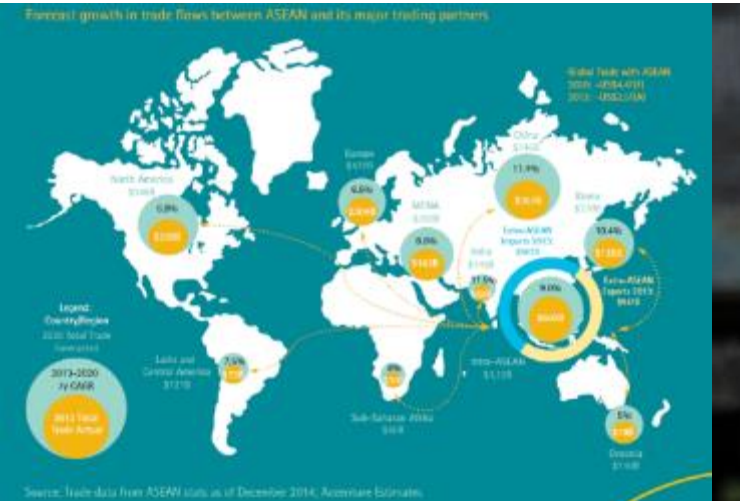
# Firedoor, YouthInMind, Metrognomo, IDchainZ, Cov-ID.io



# Securing & Scoring

**Trade?**

# CHOGM - Data Sharing



[Log In](#) [Sign Up](#)

User Name

Password

LOG IN

“I want a very easy tool to sell my production abroad.”

- Thuy, Siem Reap green house

| Current Time           | Last MetroTime             | Last Timestamp | Average Duration |
|------------------------|----------------------------|----------------|------------------|
| 2016-03-14 10:19:38 AM | 2016-03-14 11:19:29.784199 | 7s ago         | 22s              |

| Timestamp Time (s) | Average Timestamp Duration (s) |
|--------------------|--------------------------------|
| 0                  | 0                              |
| 50                 | 10                             |
| 100                | 20                             |
| 150                | 30                             |
| 200                | 40                             |

| show 10 entries   | Search:                    |  |   |  |     |                                     |                            |  |  |   |                                   |                            |   |  |   |                                 |                            |   |   |  |                                  |                            |   |   |  |  |
|---|----------------------------|--|---|--|-----|-------------------------------------|----------------------------|--|--|---|-----------------------------------|----------------------------|---|--|---|---------------------------------|----------------------------|---|---|--|----------------------------------|----------------------------|---|---|--|--|
| <table border="1"> <thead> <tr> <th>UUID</th> <th>MetroTime</th> <th>RowHash</th> <th>TableHash</th> <th>Tag</th> </tr> </thead> <tbody> <tr> <td>c3099219-0ad44827-89e9-ce8c923e95bc</td> <td>2016-03-14 11:19:29.784199</td> <td>ce9979f0d1ce9a30e40f3cd307344164e7932ce65996382bca86e6a09a90566e</td> <td>23e304e88e00c71f58a421ad316967e805c0d33ed9e9af1694635130d92f96</td> <td>SafeShare: File Hash: c1c1e5d6897ead6e21803e02b012880c80c1a946f26a8990c8794a00817</td> </tr> <tr> <td>08087208-c10d428f8880&gt;1866184882d</td> <td>2016-03-14 11:19:09.434936</td> <td>9986e380440b7ec1cc0d18434cad9c99044eab08498620c2e4798c74fa8609e</td> <td>02092e03107f6830e7fa3e929500Ee4See1cf35010f5606834d99f9e9108</td> <td>SafeShare: File Hash: 21164e0cc8ae0101270d10949b13017c0f0f1937ad0e190d2e7037ee050f1</td> </tr> <tr> <td>546809e7-d96f42080ac4e720e4230d</td> <td>2016-03-14 11:18:59.218019</td> <td>e7e3c7348edc8a456320369120e7ate41ea192268f32978090ec42280c8e0</td> <td>00a250e6330c59c09f45a77f9ba300e0d2c1ef8e0d2170789d1483fc918c93c</td> <td>SafeShare: File Hash: c091223a20d9d79f5a3998e0d50f2070682146e638872303022840ce822f97</td> </tr> <tr> <td>1ce10487-85444c8-820e993c4d0c7e7</td> <td>2016-03-14 11:18:51.468876</td> <td>8d0830e208e88616e80046847781566c9994822e8cfc008029ef31ee560cc11</td> <td>00777643a08020e930d3392a28113372680a801070822c8789ac9a87076</td> <td>SafeShare: File Hash: c0f1c638910c2904621c8e318008e13c84930e0919f52eeef480629780</td> </tr> </tbody> </table> | UUID                       | MetroTime  | RowHash   | TableHash  | Tag | c3099219-0ad44827-89e9-ce8c923e95bc | 2016-03-14 11:19:29.784199 | ce9979f0d1ce9a30e40f3cd307344164e7932ce65996382bca86e6a09a90566e | 23e304e88e00c71f58a421ad316967e805c0d33ed9e9af1694635130d92f96 | SafeShare: File Hash: c1c1e5d6897ead6e21803e02b012880c80c1a946f26a8990c8794a00817 | 08087208-c10d428f8880>1866184882d | 2016-03-14 11:19:09.434936 | 9986e380440b7ec1cc0d18434cad9c99044eab08498620c2e4798c74fa8609e | 02092e03107f6830e7fa3e929500Ee4See1cf35010f5606834d99f9e9108 | SafeShare: File Hash: 21164e0cc8ae0101270d10949b13017c0f0f1937ad0e190d2e7037ee050f1 | 546809e7-d96f42080ac4e720e4230d | 2016-03-14 11:18:59.218019 | e7e3c7348edc8a456320369120e7ate41ea192268f32978090ec42280c8e0 | 00a250e6330c59c09f45a77f9ba300e0d2c1ef8e0d2170789d1483fc918c93c | SafeShare: File Hash: c091223a20d9d79f5a3998e0d50f2070682146e638872303022840ce822f97 | 1ce10487-85444c8-820e993c4d0c7e7 | 2016-03-14 11:18:51.468876 | 8d0830e208e88616e80046847781566c9994822e8cfc008029ef31ee560cc11 | 00777643a08020e930d3392a28113372680a801070822c8789ac9a87076 | SafeShare: File Hash: c0f1c638910c2904621c8e318008e13c84930e0919f52eeef480629780 |  |
| UUID  | MetroTime                  | RowHash  | TableHash   | Tag  |     |                                     |                            |  |  |   |                                   |                            |   |  |   |                                 |                            |   |   |  |                                  |                            |   |   |  |  |
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| 08087208-c10d428f8880>1866184882d   | 2016-03-14 11:19:09.434936 | 9986e380440b7ec1cc0d18434cad9c99044eab08498620c2e4798c74fa8609e  | 02092e03107f6830e7fa3e929500Ee4See1cf35010f5606834d99f9e9108    | SafeShare: File Hash: 21164e0cc8ae0101270d10949b13017c0f0f1937ad0e190d2e7037ee050f1  |     |                                     |                            |  |  |   |                                   |                            |   |  |   |                                 |                            |   |   |  |                                  |                            |   |   |  |  |
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# GeoGnomo – Geostamping

**Latitude (Decimal Degrees)**  
51.5126737

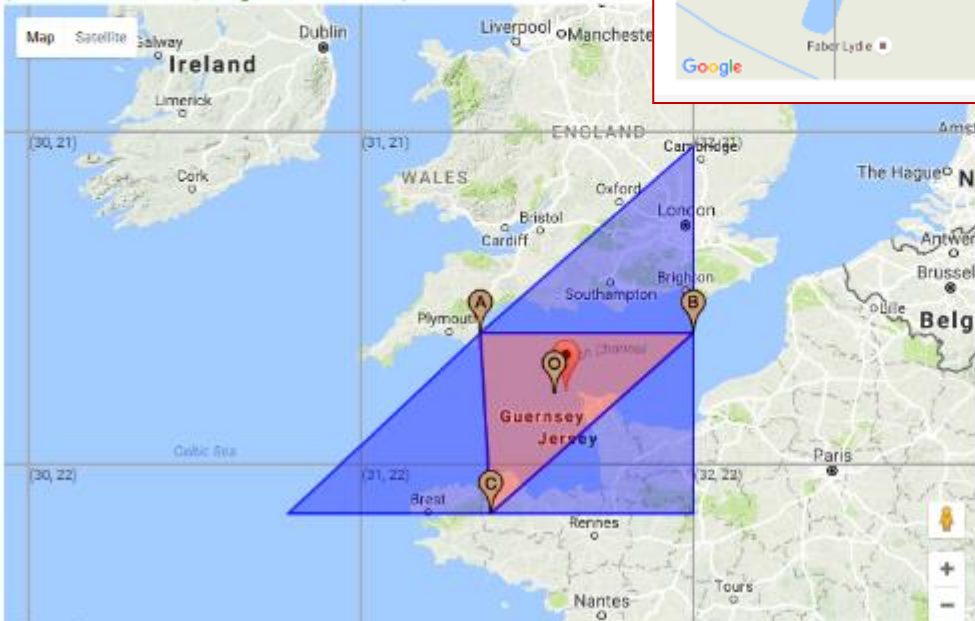
**Longitude (Decimal Degrees)**  
-0.0898846

**Altitude/Depth(optional)**  
Please use minus sign for Depth  meters

**Level: 5**

[Use my current location](#) [Get GeoGnomo Code](#)

Click any location on the map or enter the latitude & longitude  
(Latitude: 53.696706, Longitude: -9.744873)



**GeoGnomo Code**  
1,India,Quebec,Julie,G,India,Mike,Kilo,Quebec,

**Latitude**  
47.2639950349

**Longitude**  
0.000039739

**Level**  
20

[Get Latitude and Longitude](#)

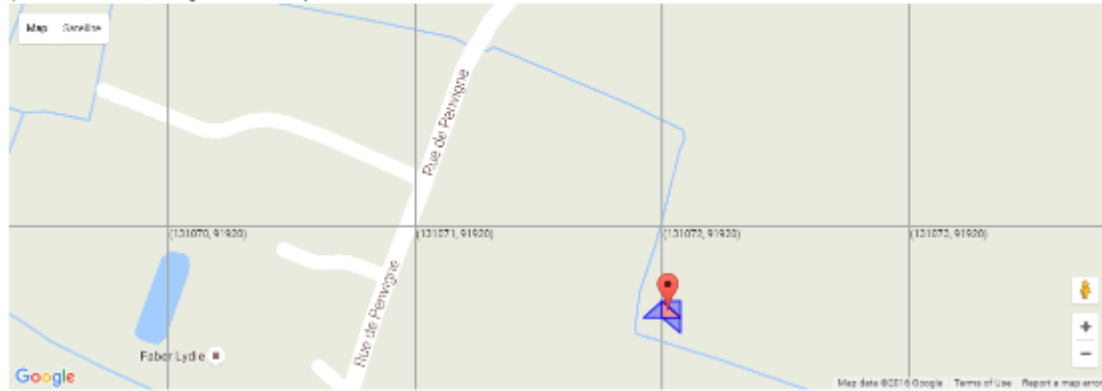
**Top Neighbor Code**  
N/A

**Bottom Neighbor Code**  
1,Julie,G,India,Mike,Kilo,Quebec,Julie,Alpha

**Left Neighbor Code**  
5,Romeo,November,Quebec,November,Uniform,Victor,Romeo,Victor

**Right Neighbor Code**  
1,Julie,G,India,Mike,Kilo,Quebec,Juliet,8

(Latitude: 47.2647, Longitude: -0.0009)



**Bottom Neighbor Code:**  
N/A

**Left Neighbor Code:**  
Foxtrot,4, Mike

**Right Neighbor Code:**  
Foxtrot,5, Victor

---

**Triangle Details**

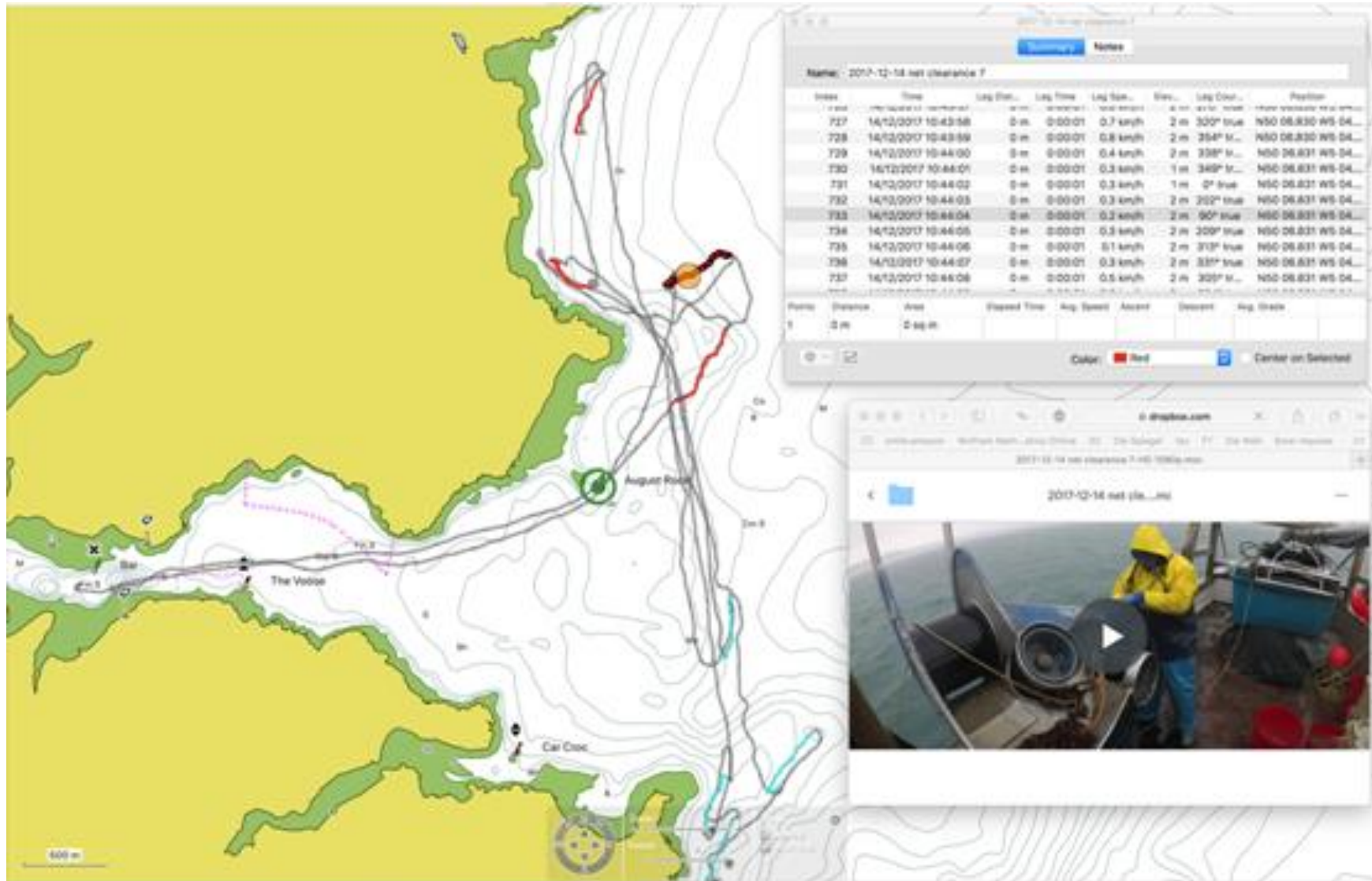
**Point A (Latitude, Longitude):**  
(50.353157, -3.6)

**Point B (Latitude, Longitude):**  
(50.353157, 0.0)

**Point C (Latitude, Longitude):**  
(48.370915, -2.429571)



# Fishface



# House of Commons Terrace Pavilion - 17 April 2018



LONG FINANCE

DISTRIBUTED FUTURES

The Economic Impact Of Smart Ledgers On World Trade



April 2018

CARDANO FOUNDATION

IACCM

CITY OF LONDON

Celris

The Z/en Group

World Trade

The poster features a central graphic of a laptop screen. On the screen, two black hands are shaking, with a globe of various national flags in the center. The background of the screen is red. Above the screen, the title 'The Economic Impact Of Smart Ledgers On World Trade' is written in white on a black arrow-shaped background. Logos for Long Finance, Distributed Futures, Cardano Foundation, IACCM, City of London, and Celris are at the bottom. The date 'April 2018' is in the top right corner.

# World Traders' Contribution To Debate



**LONG FINANCE**

**DISTRIBUTED FUTURES**

**The Economic Impact Of Smart Ledgers On World Trade**

April 2018

**CARDANO FOUNDATION**

**IACCM**

**CITY OF LONDON**

**Cebs**

## World Trade

International trade creates and channels wealth and prosperity throughout the world. An efficient and effective global trading system allows goods and services to flow to where they are needed most, through price signalling. In turn, trade generates value through economies of scale and specialisation.

International trade allows countries to exploit economies of scale by producing for a bigger mass market than would be achievable domestically. The efficiency gains are then transferred to consumers through lower prices. Other economic benefits are channelled to workers through higher salaries.

## Barriers

### ◆ Direct Barriers

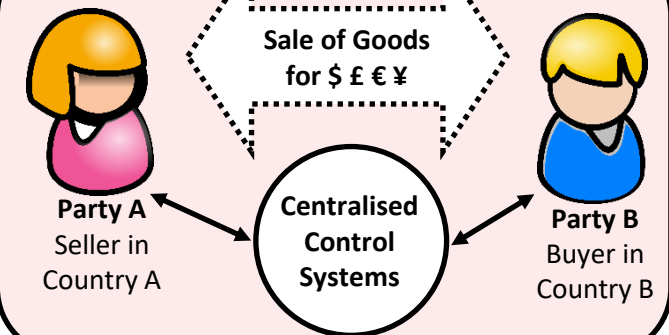
- \* Tariffs
- \* Embargos

### ◆ Indirect (Non-Tariff) Barriers

- \* Quotas
- \* Domestic subsidies
- \* Customs delays
- \* Varying degrees of development
- \* Cultural & linguistic differences

## Potential Problems

- ◆ Data flows liable to leaks & breaches
- ◆ Lack of control
- ◆ Need for data repositories
- ◆ Centralised checking/verification services
- ◆ Agent action/adaptation constraints



The cost of importing a single container could be reduced by around \$46.



# Revolutionary – Stone Soup Database Projects?

COR



Contour

HLF



EC3 Platform [Skuchain]

HLF



eTradeConnect [Hong Kong Trade Finance Platform Company Limited (HKTFPCL)]

PT



India Trade Connect

QRM



komgo

COR



Marco Polo [TradelX]

HLF



Minehub

PT



People's Bank of China Blockchain Trade Finance Platform/ Bay Area Trade Finance Blockchain Platform

PT



TradeFinex

HLF



TradeWaltz [NTT Data]

HLF

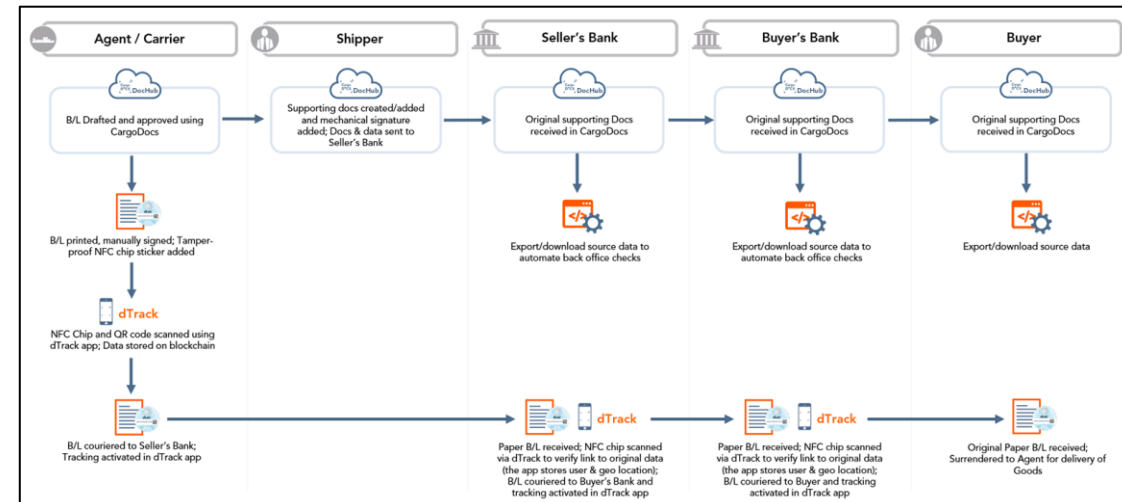
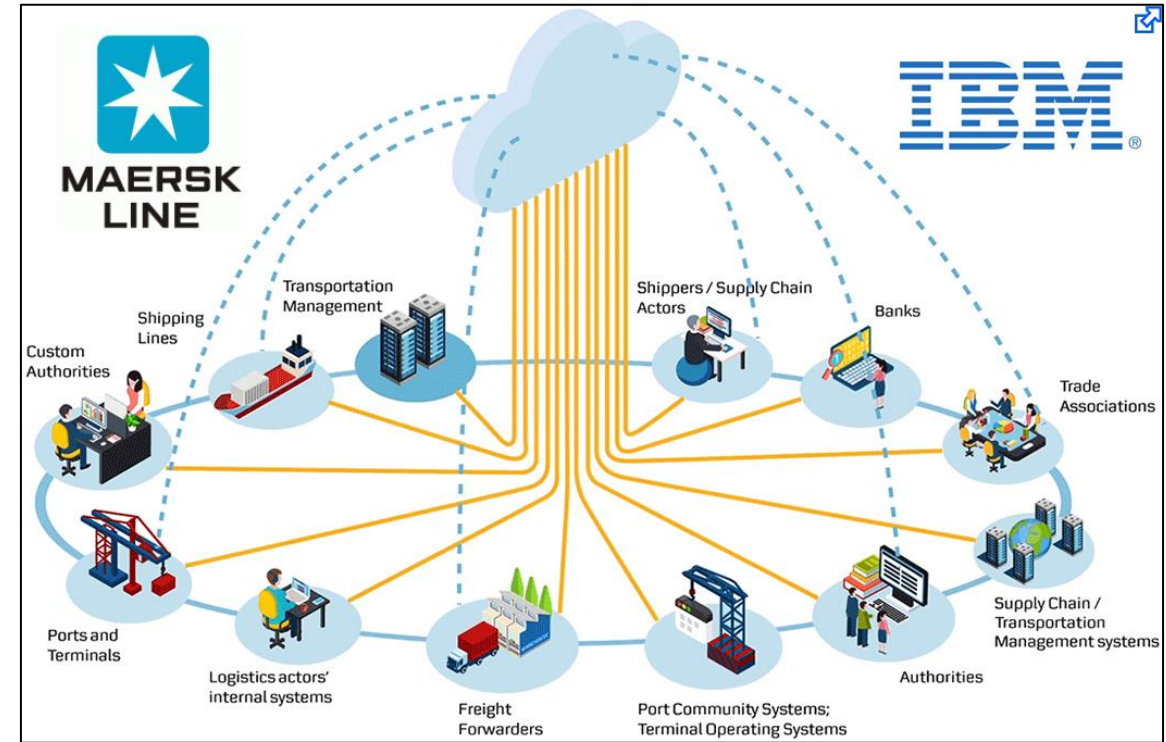


UAE Trade Connect [Etislat]

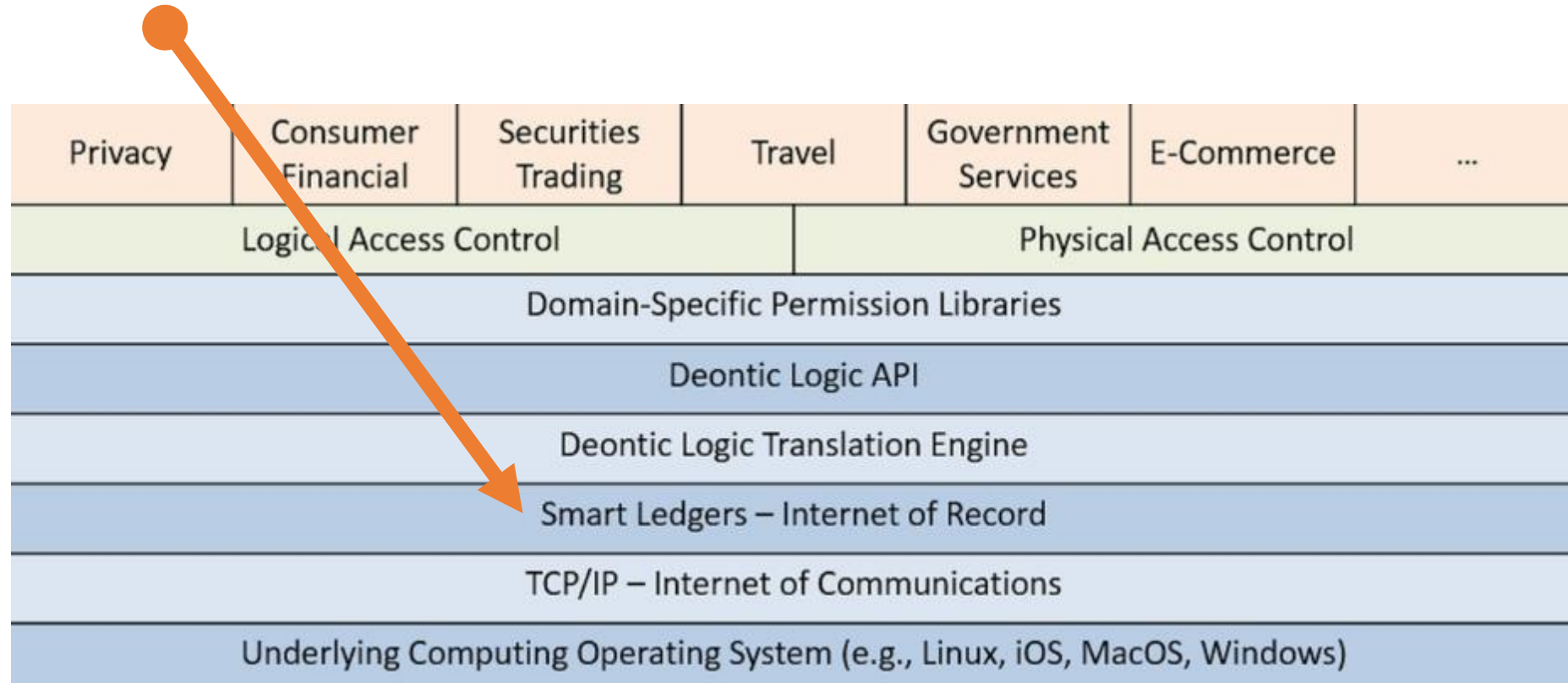
HLF



we.trade



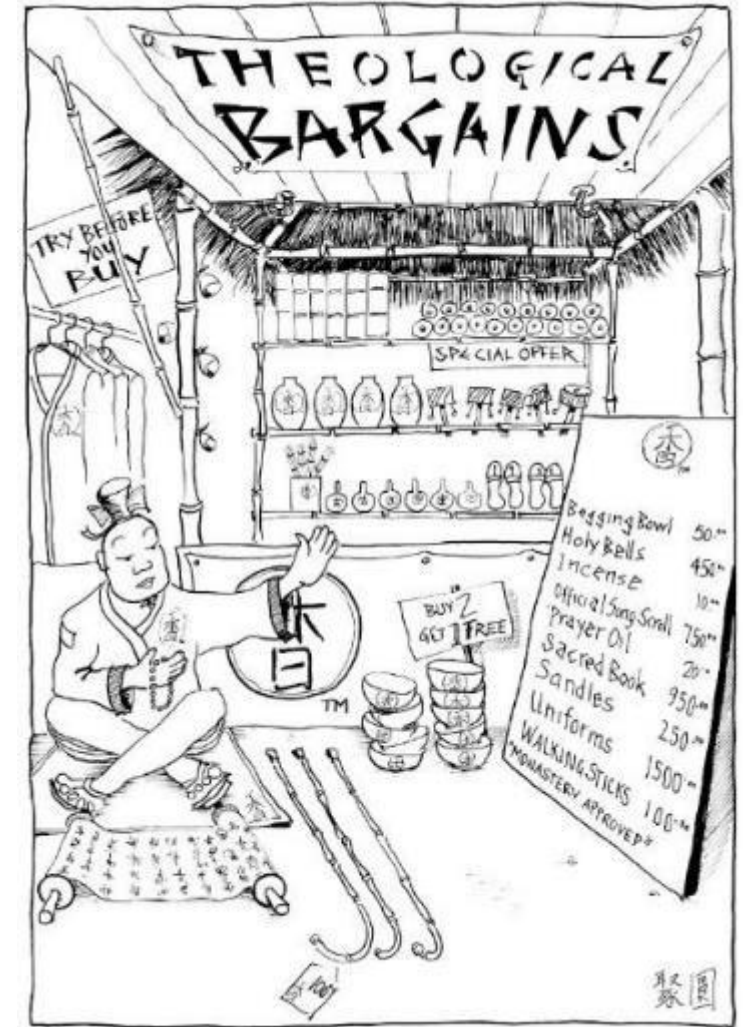
# 'Internet of Record' – Just Independent Timestamping





# Mundane - Identity, Document, & Agreement Exchange?

| Theme     | Service           | Question       |
|-----------|-------------------|----------------|
| Trust     | Identities/Assets | Authentication |
| Space     | Transactions      | Services       |
| Time      | Debts             | Value-added    |
| Mutuality | Contracts         | Common-wealth  |



**"Get a detailed grip on the big picture."  
Chao Kli Ning**

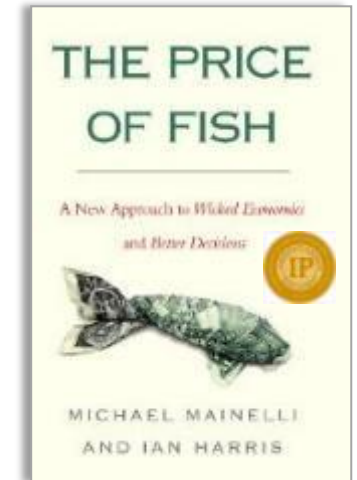
# Questions, Comments, Answers (?)



# When Would We Know Our Commerce Is Working?



**“Get a big picture grip on the details.”**  
*Chao Kli Ning*



**Thank you!**

**“If you have trust I shall give you trust; if you have no trust I shall take it away.”**

