An Introduction to Blockchain and Cryptocurrency and the impact on Insurance

Insurance Institute of Sussex
8th February 2024

***** Session is being recorded *****
***** Please ask questions using the Chat facility *****

Gary Nuttall

Distlytics
Distributed Ledger Analytics
Consultancy & Insight

Agenda

- Introductions
- Blockchain(s)
- Cryptoassets
- Insurance
- Wrapup / Q&A

Agenda

- **Introductions**
- Blockchain(s)
- Cryptoassets
- Insurance
- Wrapup / Q&A

Introduction – Session

Learning objectives

By the end of this event, delegates will:

- Understand what a Distributed Ledger is
- Be aware of examples of how blockchain is being used across a range of industries
- Know how blockchain is being used in Insurance
- Be aware of the main insurable risks
- Understand what cryptoassets, cryptotokens and cryptocurrencies are

Out of scope

- Coding
- Trading

Introduction – Session

Intended audience

1. Assumption is that you have little or no prior knowledge
2. That your interest is from an insurance / finance perspective and not about the technology behind cryptocurrencies
3. That you are not part of a criminal enterprise looking to use crypto to money launder or fund criminal activities

Introduction – Session

Intended audience

https://www.cnbc.com/2021/06/07/us-recovers-some-of-the-money-paid-in-the-colonial-pipeline-ransom-officials-say.html

Introduction – Session

PLEASE READ THE SMALLPRINT

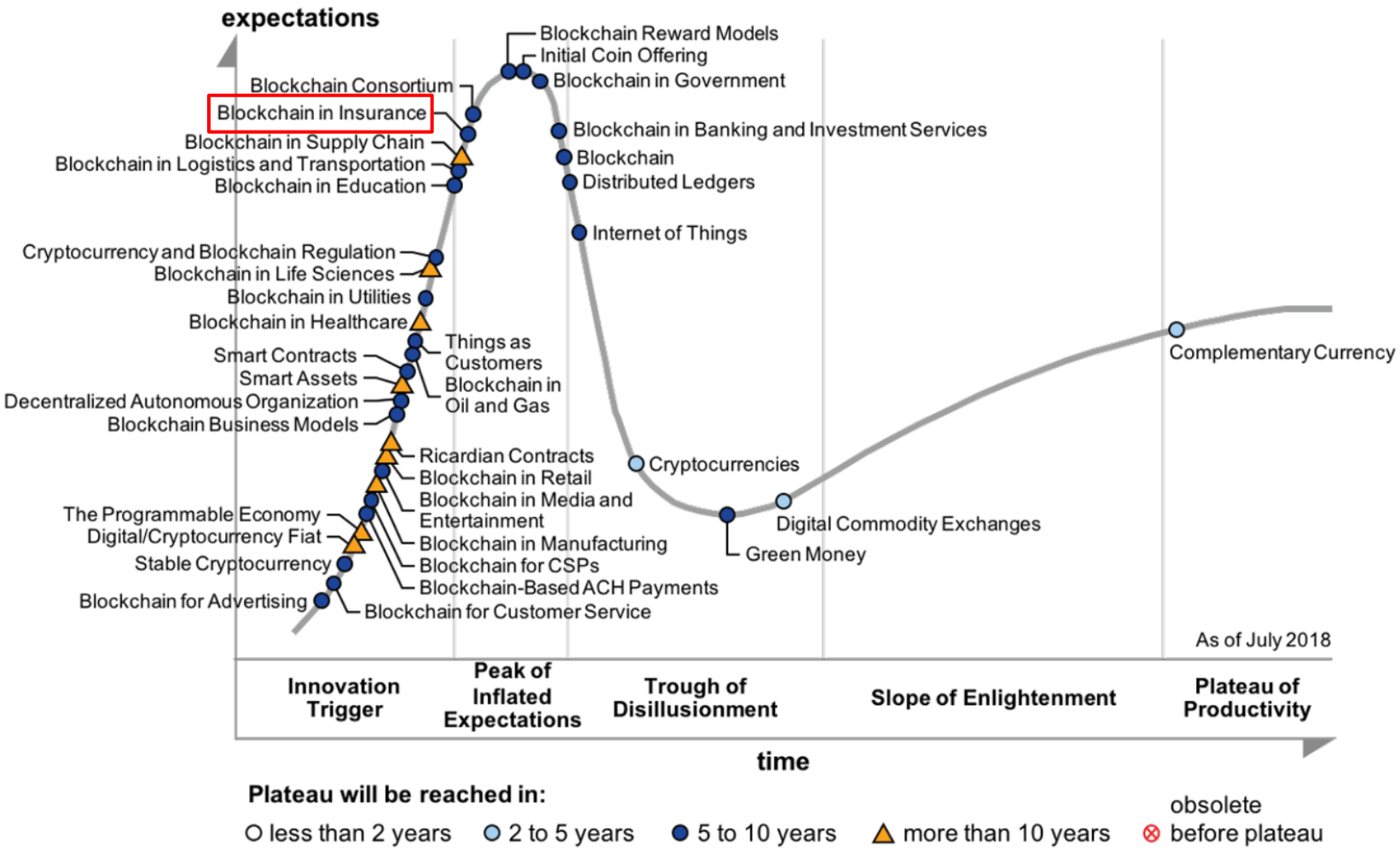
- This presentation reflects my personal views and not those of past, current and prospective employers, clients or other agents.
- Any mention of products or services is not an endorsement, recommendation or criticism
- **This is not intended to be taken as financial, taxation or legal advice**

Introduction: Me (#GPN01)

= Insurance

Introduction

Hype Cycle for Blockchain Business, 2018



gartner.com/SmarterWithGartner

Agenda

- Introductions
- **Blockchain(s)**
- Cryptoassets
- Insurance
- Wrapup / Q&A

Blockchain & Distributed Ledger Technology

DEFINITION - What is "A Blockchain"

A **software protocol**, running on a network of computers, using an **append only database** that everyone has an agreed, secured, **identical copy** of

Blockchain & Distributed Ledger Technology

PROTOCOL

LEDGER

INTEGRITY

BLOCK 0					PREVIOUS HASH =	
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE	
1	01/01/2018 10:23	GARY	JANE	100	GBP	
2	04/01/2018 14:22	JOHN	PAUL	7	USD	
3	04/01/2018 15:36	CLARE	ALAN	125	GBP	
4	05/01/2018 10:16	GARY	PAUL	9	BTC	
5	06/01/2018 18:18	PETER	CLARE	83	USD	
					CALCULATED HASH =	00bf124aa001

BLOCK 1					PREVIOUS HASH =	00bf124aa001
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE	
1	01/01/2018 10:23	GARY	JANE	100	GBP	
2	04/01/2018 14:22	JOHN	PAUL	7	USD	
3	04/01/2018 15:36	CLARE	ALAN	125	GBP	
4	05/01/2018 10:16	GARY	PAUL	9	BTC	
5	06/01/2018 18:18	PETER	CLARE	83	USD	
					CALCULATED HASH =	00dea123123

BLOCK 2					PREVIOUS HASH =	00dea123123
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE	
1	01/01/2018 10:23	GARY	JANE	100	GBP	
2	04/01/2018 14:22	JOHN	PAUL	7	USD	
3	04/01/2018 15:36	CLARE	ALAN	125	GBP	
4	05/01/2018 10:16	GARY	PAUL	9	BTC	
5	06/01/2018 18:18	PETER	CLARE	83	USD	
					CALCULATED HASH =	009a1aa1121

Blockchain & Distributed Ledger Technology

What is a protocol ?

Business, Socio/Cultural and Technical

Protocol is a set of rules describing how people and systems interact with each other

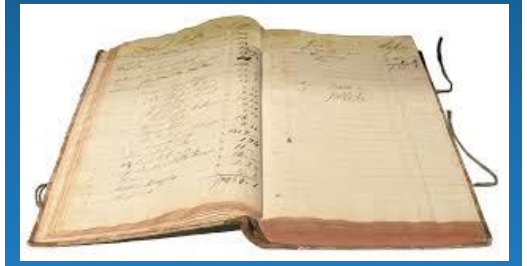
Blockchain & Distributed Ledger Technology

Protocol	Commonly used for	Enables
TCP/IP (1980's)	Internet	Data sharing
HTTP (1990's)	World Wide Web	Displaying information
Blockchain (2008)	Distributed Ledger	Transfer of value

Protocol is coded within software – sets the rules
Software can be copied and modified (Forked) to create new blockchains
Each computer on the network runs the same copy of the software

Blockchain & Distributed Ledger Technology

LEDGER



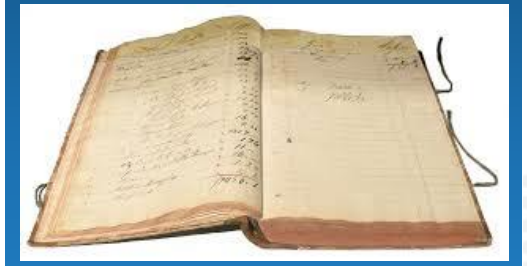
A ledger is a record of activities

Two main types:

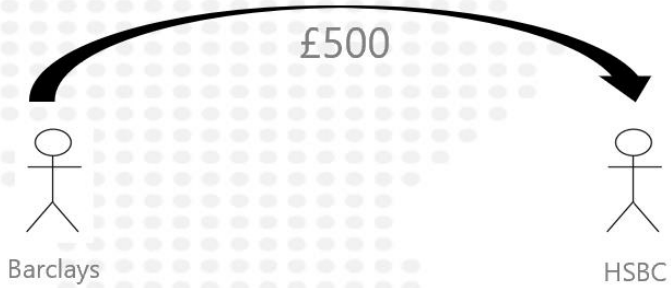
- Transaction ledger – who paid whom, what and when
- Account balances ledger – how much is allocated to an account

Blockchain & Distributed Ledger Technology

LEDGER

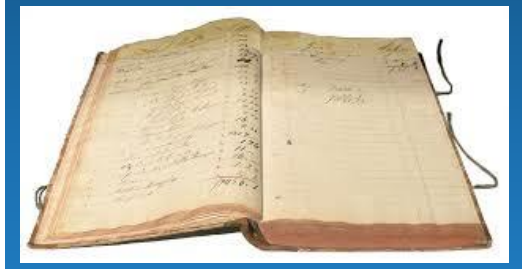


JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT
1	01/01/2016 08:35	BARCLAYS	HSBC	GBP	500.00

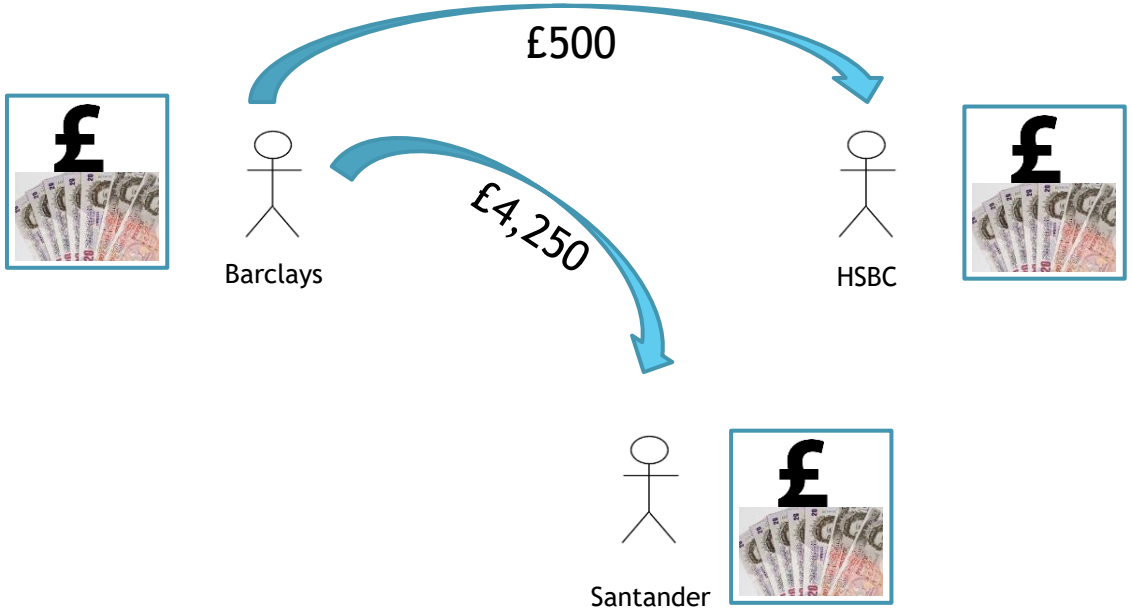


Blockchain & Distributed Ledger Technology

LEDGER

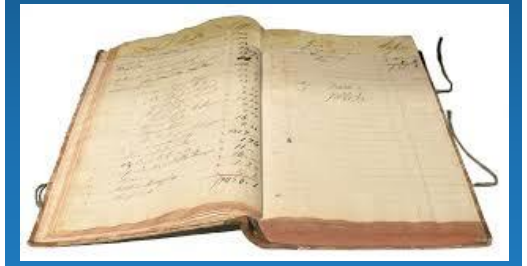


BARCLAYS JOURNAL					
JOURNAL-ID	**DATESTAMP**	**FROM**	**TO**	**CURRENCY**	**AMOUNT**
1	01/01/2016 08:35	BARCLAYS	HSBC	GBP	500.00
2	01/01/2016 09:45	BARCLAYS	SANTANDER	GBP	4,250.00
3	01/01/2016 11:35	SANTANDER	BARCLAYS	GBP	2,215.00



Blockchain & Distributed Ledger Technology

LEDGER



BARCLAYS JOURNAL

JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT
1	01/01/2016 08:35	BARCLAYS	HSBC	GBP	500.00
2	01/01/2016 09:45	BARCLAYS	SANTANDER	GBP	4,250.00
3	01/01/2016 11:35	SANTANDER	BARCLAYS	GBP	2,215.00

HSBC JOURNAL

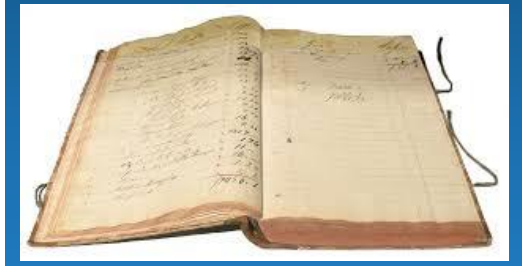
JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT
1	01/01/2016 08:35	BARCLAYS	HSBC	GBP	500.00
4	01/01/2016 13:35	HSBC	SANTANDER	GBP	105.00

SANTANDER JOURNAL

JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT
2	01/01/2016 09:45	BARCLAYS	SANTANDER	GBP	4,250.00
3	01/01/2016 11:35	SANTANDER	BARCLAYS	GBP	2,215.00

Blockchain & Distributed Ledger Technology

LEDGER



INEFFICIENT

- RECONCILIATION – Need to check that every record of every transaction has been copied to each other's systems correctly
- AUDIT – Need to prove that the system works consistently

EXPENSIVE

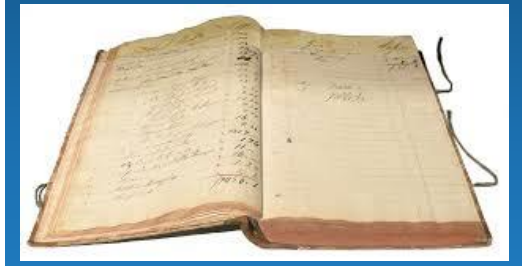
- Processing overhead (needs computing power)
- Reconciliation systems need to be designed, developed, tested & supported
- Excel addicts writing macros, functions & stuff that goes wrong
- Auditing overhead – cost of auditors, audits, etc.
- Data Quality issues – End up "working around" problems

SLOW

- Need to wait for reconciliations to be executed and verified
- Audits are after the event and aren't preventative

Blockchain & Distributed Ledger Technology

LEDGER



SOLUTION - Merge all the Ledgers into one…

BARCLAYS JOURNAL					
JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT
1	01/01/2016 08:35	BARCLAYS	HSBC	GBP	500.00
2	01/01/2016 09:45	BARCLAYS	SANTANDER	GBP	4,250.00
3	01/01/2016 11:35	SANTANDER	BARCLAYS	GBP	2,215.00

HSBC JOURNAL					
JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT
1	01/01/2016 08:35	BARCLAYS	HSBC	GBP	500.00
4	01/01/2016 13:35	HSBC	SANTANDER	GBP	105.00

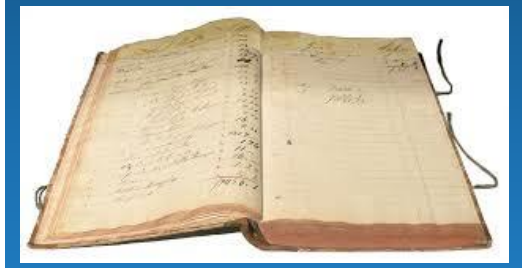
SANTANDER JOURNAL					
JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT
2	01/01/2016 09:45	BARCLAYS	SANTANDER	GBP	4,250.00
3	01/01/2016 11:35	SANTANDER	BARCLAYS	GBP	2,215.00

MUTUAL LEDGER

JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT
1	01/01/2016 08:35	BARCLAYS	HSBC	GBP	500.00
2	01/01/2016 09:45	BARCLAYS	SANTANDER	GBP	4,250.00
3	01/01/2016 11:35	SANTANDER	BARCLAYS	GBP	2,215.00
4	01/01/2016 13:35	HSBC	SANTANDER	GBP	105.00

Blockchain & Distributed Ledger Technology

LEDGER



SOLUTION – Distribute an IDENTICAL copy to everyone

MUTUAL DISTRIBUTED LEDGER

Barclays

Block 1 → Block 2 → Block 3

First Direct

Block 1 → Block 2 → Block 3

HSBC

Block 1 → Block 2 → Block 3

Co-Op

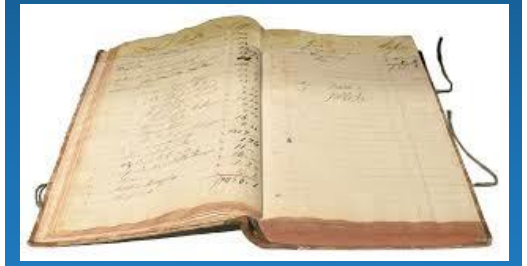
Block 1 → Block 2 → Block 3

Santander

Block 1 → Block 2 → Block 3

Blockchain & Distributed Ledger Technology

LEDGER



Cryptography

Cryptography or cryptology is the practice and study of techniques for secure communication in the presence of third parties called adversaries. More generally, cryptography is about constructing and analyzing protocols that prevent third parties or the public from reading private messages; various aspects in information security such as data confidentiality, data integrity, authentication, and non-repudiation are central to modern cryptography. Modern cryptography exists at the intersection of the disciplines of mathematics, computer science, and electrical engineering. Applications of cryptography include ATM cards, computer passwords, and electronic commerce.

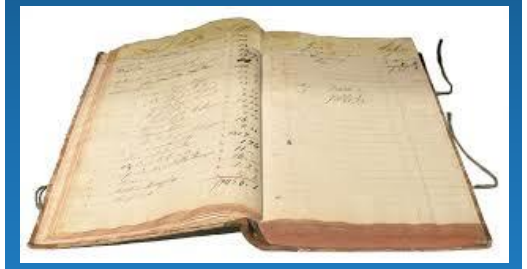
Cryptography - Wikipedia
https://**en.wikipedia.org**/wiki/**Cryptography**

See more about Cryptography

Blockchain & Distributed Ledger Technology

Put crypto-security onto the Ledger

LEDGER



JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT	HASH	BLOCK	BLOCK HASH	START BLOCK	START HASH
1	01/01/2016 08:35	BARCLAYS	HSBC	GBP	500.00	1111			0	110111
2	01/01/2016 09:45	BARCLAYS	SANTANDER	GBP	4,250.00	101				
3	01/01/2016 11:35	SANTANDER	BARCLAYS	GBP	2,215.00	100011				
4	01/01/2016 13:35	HSBC	SANTANDER	GBP	105.00	101101	1	1111000		

```
IF FROM = %USER%
OR TO = %USER%
THEN DISPLAY LINE
```

Barclays

HSBC

JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT
1	01/01/2016 08:35	BARCLAYS	HSBC	GBP	500.00
2	01/01/2016 09:45	BARCLAYS	SANTANDER	GBP	4,250.00
3	01/01/2016 11:35	SANTANDER	BARCLAYS	GBP	2,215.00

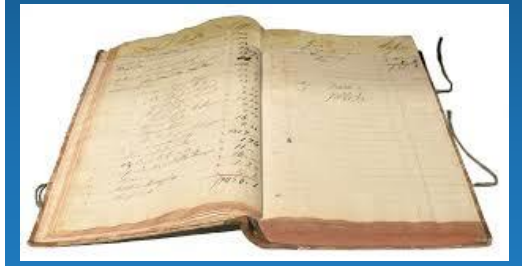
JOURNAL-ID	DATESTAMP	FROM	TO	CURRENCY	AMOUNT
1	01/01/2016 08:35	BARCLAYS	HSBC	GBP	500.00
4	01/01/2016 13:35	HSBC	SANTANDER	GBP	105.00

…now users can only access their own data

Which decreases Security Auditing overhead

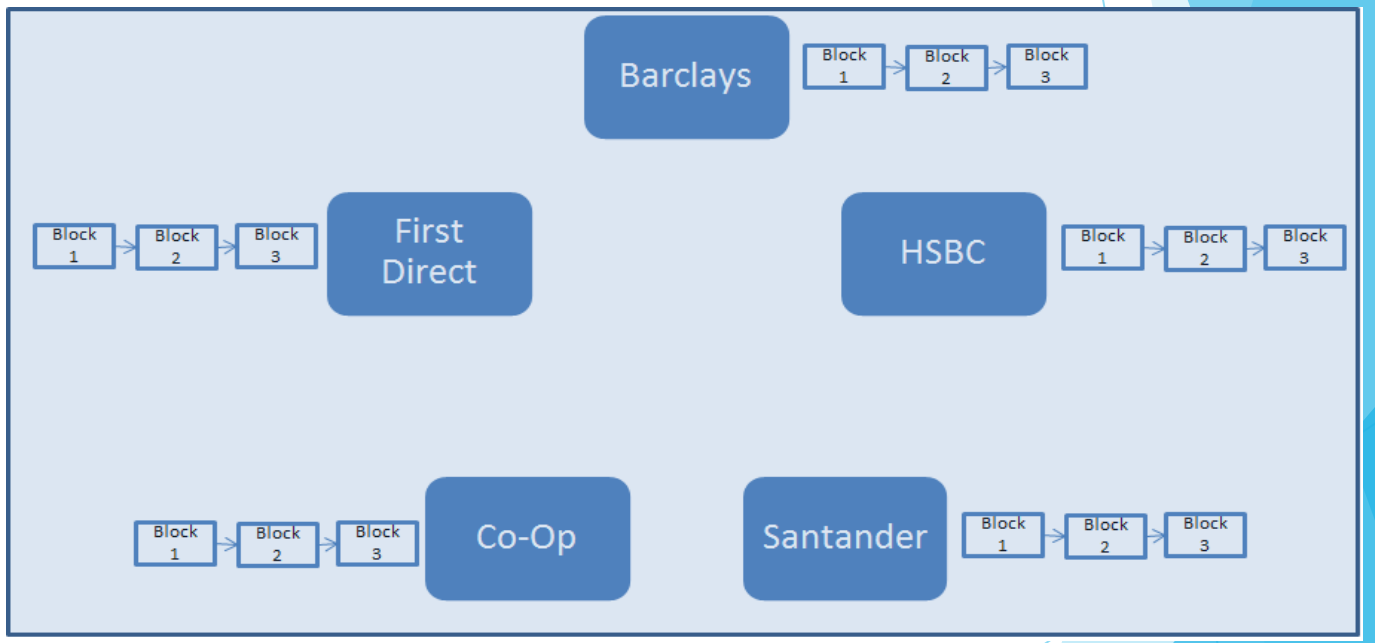
Blockchain & Distributed Ledger Technology

LEDGER



SOLUTION – Restrict access to specified users

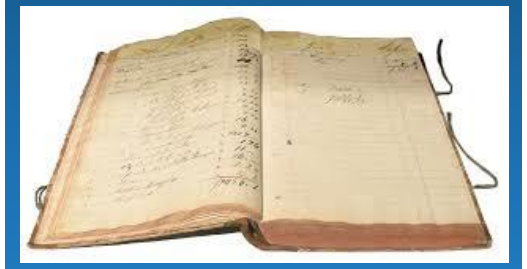
Metro Bank



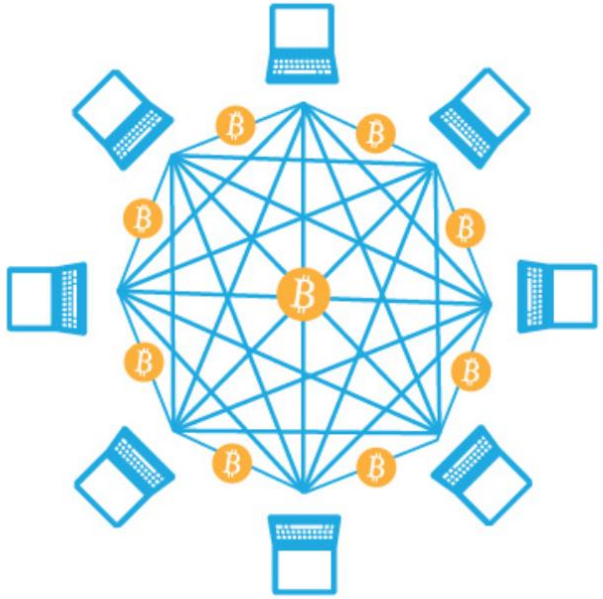
PRIVATE, PERMISSIONED LEDGER

Blockchain & Distributed Ledger Technology

LEDGER



SOLUTION – Give everyone unrestricted access

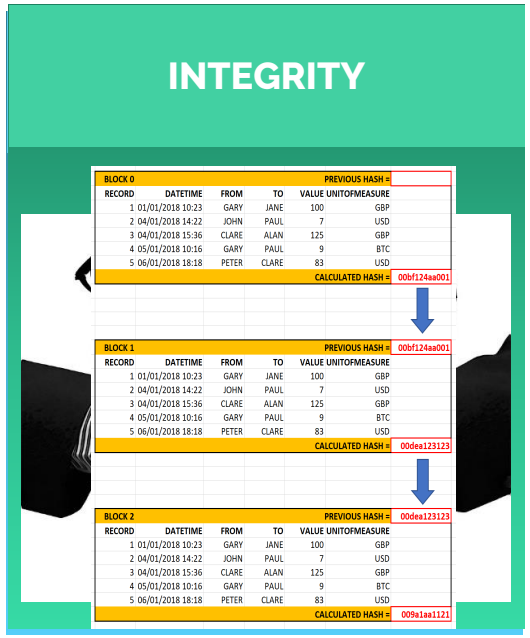


... but machine-to-machine payment using the Bitcoin protocol could allow for direct payment between individuals, as well as support micropayments.

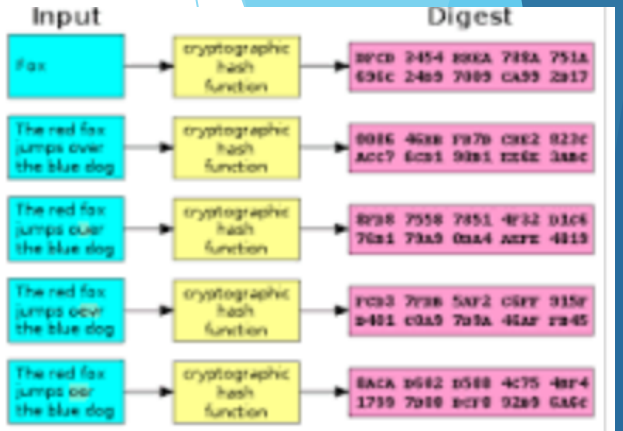
Graphic: Deloitte University Press | DUPress.com

PUBLIC, UNPERMISSIONED LEDGER

Blockchain & Distributed Ledger Technology



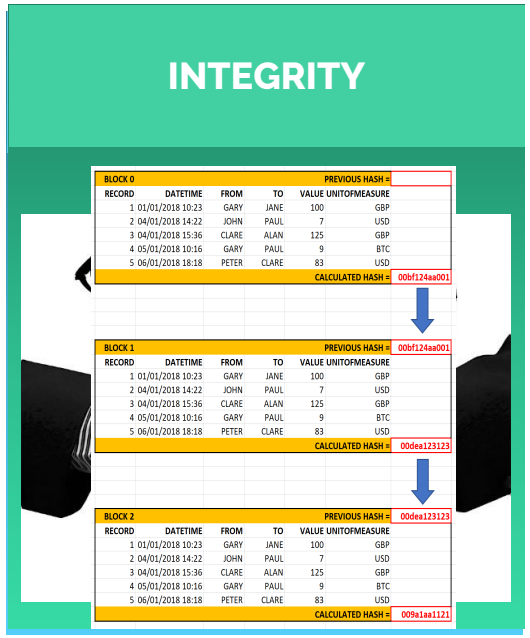
A **cryptographic hash** function is a **hash** function which takes an input (or 'message') and returns a fixed-size alphanumeric string. The string is called the '**hash** value', 'message digest', 'digital fingerprint', 'digest' or 'checksum'.



Cryptographic hash function - Simple English Wikipedia, the free ...

https://simple.wikipedia.org/wiki/Cryptographic_hash_function

Blockchain & Distributed Ledger Technology



Imagine a physical ledger, with pages in it

At the bottom of the page you enter the hash for that page

At the top of the next page, you start with the hash from the previous page

So, the data is held in BLOCKS which are CHAINed together

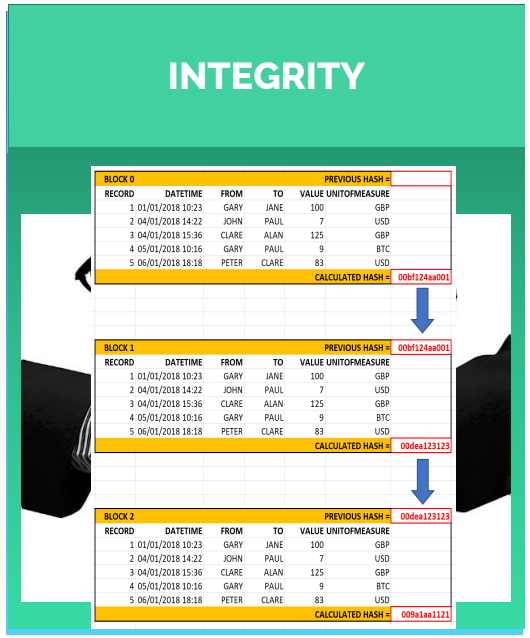
Now VERY difficult to change an earlier entry as all of the hashes on all pages would need to be recalculated

BLOCK 0					PREVIOUS HASH =	
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE	
1	01/01/2018 10:23	GARY	JANE	100	GBP	
2	04/01/2018 14:22	JOHN	PAUL	7	USD	
3	04/01/2018 15:36	CLARE	ALAN	125	GBP	
4	05/01/2018 10:16	GARY	PAUL	9	BTC	
5	06/01/2018 18:18	PETER	CLARE	83	USD	
					CALCULATED HASH =	00bf124aa001

BLOCK 1					PREVIOUS HASH =	00bf124aa001
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE	
1	01/01/2018 10:23	GARY	JANE	100	GBP	
2	04/01/2018 14:22	JOHN	PAUL	7	USD	
3	04/01/2018 15:36	CLARE	ALAN	125	GBP	
4	05/01/2018 10:16	GARY	PAUL	9	BTC	
5	06/01/2018 18:18	PETER	CLARE	83	USD	
					CALCULATED HASH =	00dea123123

BLOCK 2					PREVIOUS HASH =	00dea123123
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE	
1	01/01/2018 10:23	GARY	JANE	100	GBP	
2	04/01/2018 14:22	JOHN	PAUL	7	USD	
3	04/01/2018 15:36	CLARE	ALAN	125	GBP	
4	05/01/2018 10:16	GARY	PAUL	9	BTC	
5	06/01/2018 18:18	PETER	CLARE	83	USD	
					CALCULATED HASH =	009a1aa1121

Blockchain & Distributed Ledger Technology



Miners compete to solve a cryptographic hash for the block (every 10 minutes)

A miner is awarded 6.25 BTC for winning the race to find the answer.

This is how a cryptocurrency is created

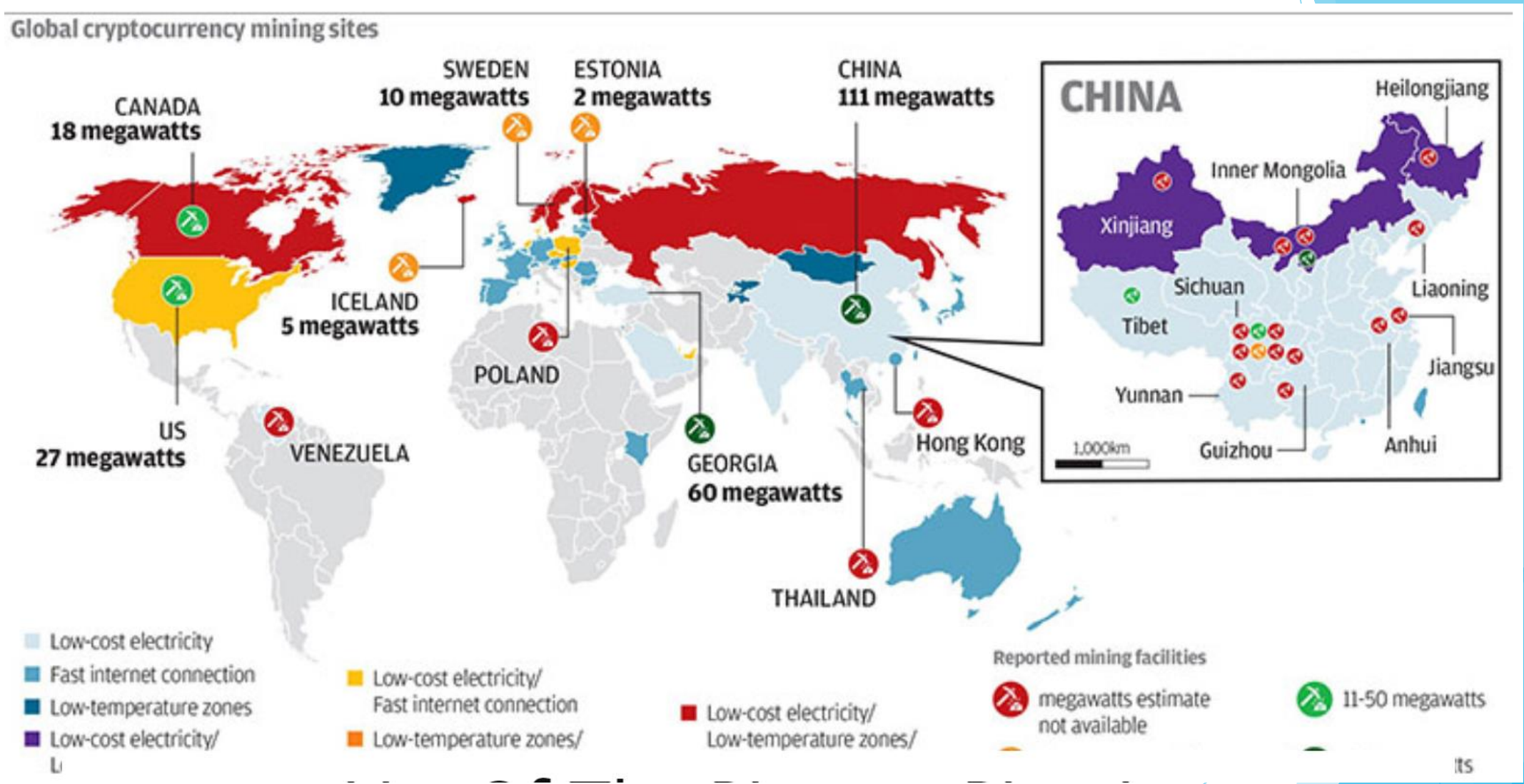
Every four years the reward is halved (BTC decreased to 6.25BTC in May 2020).

BLOCK 0					PREVIOUS HASH =	
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE	
1	01/01/2018 10:23	GARY	JANE	100	GBP	
2	04/01/2018 14:22	JOHN	PAUL	7	USD	
3	04/01/2018 15:36	CLARE	ALAN	125	GBP	
4	05/01/2018 10:16	GARY	PAUL	9	BTC	
5	06/01/2018 18:18	PETER	CLARE	83	USD	
					CALCULATED HASH =	00bf124aa001

BLOCK 1					PREVIOUS HASH =	00bf124aa001
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE	
1	01/01/2018 10:23	GARY	JANE	100	GBP	
2	04/01/2018 14:22	JOHN	PAUL	7	USD	
3	04/01/2018 15:36	CLARE	ALAN	125	GBP	
4	05/01/2018 10:16	GARY	PAUL	9	BTC	
5	06/01/2018 18:18	PETER	CLARE	83	USD	
					CALCULATED HASH =	00dea123123

BLOCK 2					PREVIOUS HASH =	00dea123123
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE	
1	01/01/2018 10:23	GARY	JANE	100	GBP	
2	04/01/2018 14:22	JOHN	PAUL	7	USD	
3	04/01/2018 15:36	CLARE	ALAN	125	GBP	
4	05/01/2018 10:16	GARY	PAUL	9	BTC	
5	06/01/2018 18:18	PETER	CLARE	83	USD	
					CALCULATED HASH =	009a1aa1121

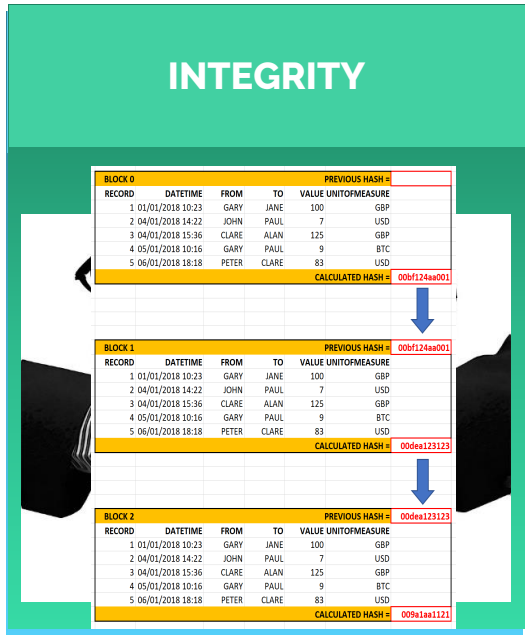
Blockchain Primer: Blockchain



https://bitcoinexchangeguide.com/list-of-the-biggest-bitcoin-cryptocurrency-mining-areas-in-the-world/

Blockchain Primer: Blockchain

Blockchain & Distributed Ledger Technology



A Ledger can be a record of ownership:

- Money
- Valuables (Gold, Silver, etc)
- Vehicle
- Property
- Land

Or link to documents:

- Certificate of marriage
- Bill of Lading
- Identity
- Certificate of Testing

Some blockchains can execute code:

- Smart Contracts

BLOCK 0					PREVIOUS HASH =
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE
1	01/01/2018 10:23	GARY	JANE	100	GBP
2	04/01/2018 14:22	JOHN	PAUL	7	USD
3	04/01/2018 15:36	CLARE	ALAN	125	GBP
4	05/01/2018 10:16	GARY	PAUL	9	BTC
5	06/01/2018 18:18	PETER	CLARE	83	USD
				CALCULATED HASH =	00bf124aa001

BLOCK 1					PREVIOUS HASH = 00bf124aa001
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE
1	01/01/2018 10:23	GARY	JANE	100	GBP
2	04/01/2018 14:22	JOHN	PAUL	7	USD
3	04/01/2018 15:36	CLARE	ALAN	125	GBP
4	05/01/2018 10:16	GARY	PAUL	9	BTC
5	06/01/2018 18:18	PETER	CLARE	83	USD
				CALCULATED HASH =	00dea123123

BLOCK 2					PREVIOUS HASH = 00dea123123
RECORD	DATETIME	FROM	TO	VALUE	UNITOFMEASURE
1	01/01/2018 10:23	GARY	JANE	100	GBP
2	04/01/2018 14:22	JOHN	PAUL	7	USD
3	04/01/2018 15:36	CLARE	ALAN	125	GBP
4	05/01/2018 10:16	GARY	PAUL	9	BTC
5	06/01/2018 18:18	PETER	CLARE	83	USD
				CALCULATED HASH =	009a1aa1121

Blockchain & Distributed Ledger Technology

Smart Contracts

Computer program of business logic. Often linked with data sources ("ORACLES"), providing evidence of trigger events…

Weather conditions (Temperature, precipitation), Flight Delays, location (via IoT)

WARNING: Smart Contracts are neither Smart nor Contracts!

Journal ID	Datestamp	FROM	TO	UNIT	IDENTIFIER
1	01/01/2016 11:45:00	ATRIUM	LUFTHANSA	EUR	POLICY123
2	01/01/2016 11:45:01	BEAZLEY	FARMER MCGREGOR	GBP	POLICY234

POLICY123	IF (POLICY_IS_ACTIVE AND PREMIUM_PAID AND CLAIM_CONDITION_MET THEN PAY_CLAIM

POLICY234	IF (POLICY_IS_ACTIVE AND PREMIUM_PAID AND CLAIM_CONDITION_MET THEN PAY_CLAIM

Blockchain & Distributed Ledger Technology

Smart Contracts

```
contract GavCoin
{
  mapping(address=>uint) balances;
  uint constant totalCoins = 100000000000;

  /// Endows creator of contract with 1m GAV.
  function GavCoin(){
      balances[msg.sender] = totalCoins;
  }

  /// Send $((valueInmGAV / 1000).fixed(0,3)) GAV from the account of
$(message.caller.address()), to an account accessible only by $(to.address()).
  function send(address to, uint256 valueInmGAV) {
    if (balances[msg.sender] >= valueInmGAV) {
      balances[to] += valueInmGAV;
      balances[msg.sender] -= valueInmGAV;
    }
  }

  /// getter function for the balance
  function balance(address who) constant returns (uint256 balanceInmGAV) {
    balanceInmGAV = balances[who];
  }

};
```

Regulatory considerations:

- Jurisdiction
- Legal recognition
- Remediation
- Testing
- Irrevocability (can't be reversed)
- Immutability (can't be deleted)
- No buffer

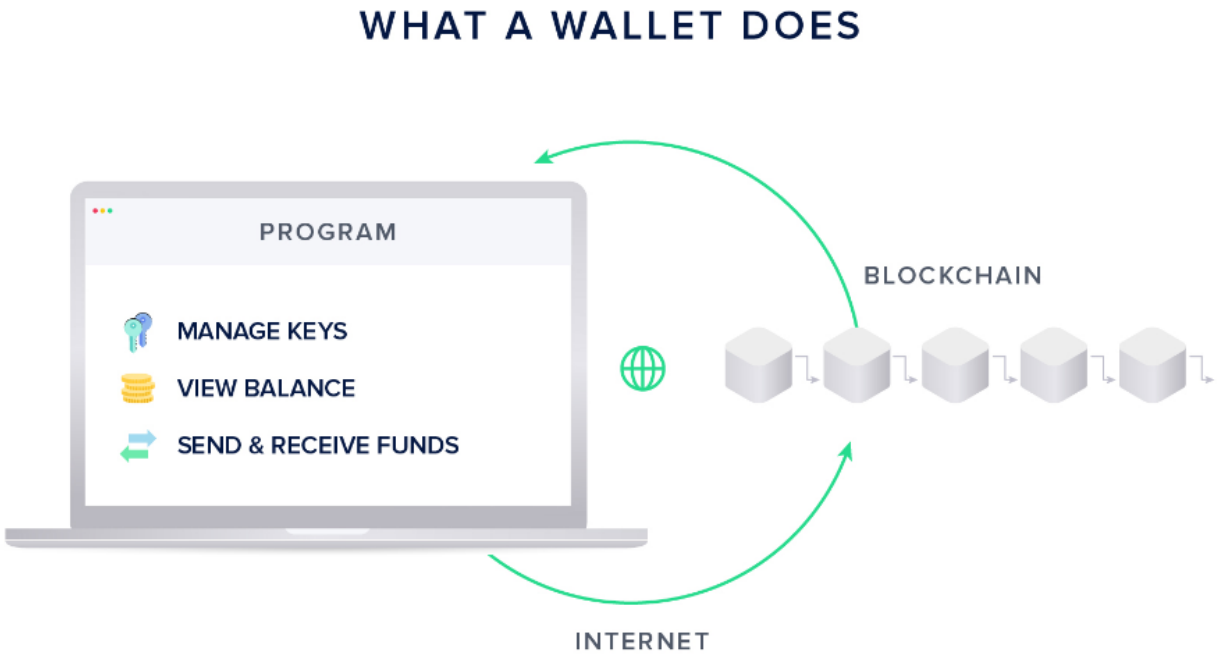
May not exactly replicate original contract

Not all contracts can be converted into programmable form

Codified market manipulation

Blockchain & Distributed Ledger Technology

Crypto Wallets



Piece of software that helps you with interacting with Blockchain

https://www.horizen.io/blockchain-academy/technology/advanced/types-of-wallets/

https://www.cada.news/best-ha

Blockchain

So, back to the definition….

It's a **software protocol** (an agreed set of rules)

Running on a **network** of computers that have an incentive mechanism to avoid abuse

With an append-only **database**

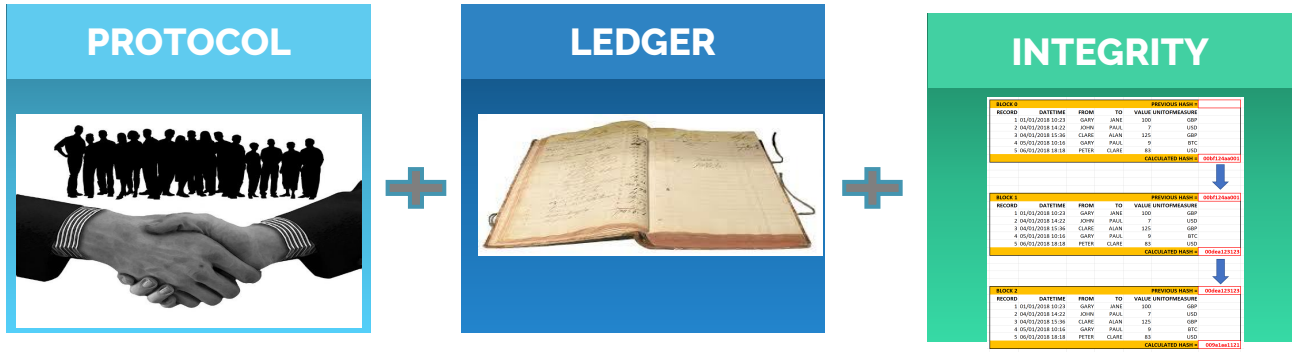
That everyone has an identical copy of

With all entries timestamped

The data is cryptographically secured

And it provides a trusted, programmable, system

Blockchain & Distributed Ledger Technology



Features

- Immutable – complete, timestamped, audit trail
- Distributed - Cyber resilient – still functional if nodes removed
- Crypto secured – can't be easily hacked or ransomed
- Programmable - Smart Contracts can be created
- (Pseudo)anonymous

Benefits

- Reconciliation significantly reduced as now single source
- Removal of need for trusted third party
- Decentralised – doesn't need to be owned by anyone (!)

Blockchain **MEGA** Cases

1. As an Immutable **Ledger**
2. As a **Cryptocurrency** platform
3. To provide Digital **Identity**
4. Trusted **Programmability**
5. **Tokenization** of assets

Blockchain Mega Cases

- As an Immutable Ledger

DIAMONDS

Driving greater transparency and next generation standards for Diamonds

We are pioneers in protecting the value of diamonds through provenance tracking

Diamond supply chains are often complex, unconnected as well as fragmented by their own nature resulting in a lack of transparency and trust amongst stakeholders.

EVERLEDGER diamonds

https://www.everledger.io/industry-applications

FAIRFOOD

Proof of fair payment on the blockchain

Provenance technology supports fair trading in the digital age. Working in an international coconut supply chain, our software was extended to create a system that proves the exact living wage payment for product batches.

Blockchain Mega Cases

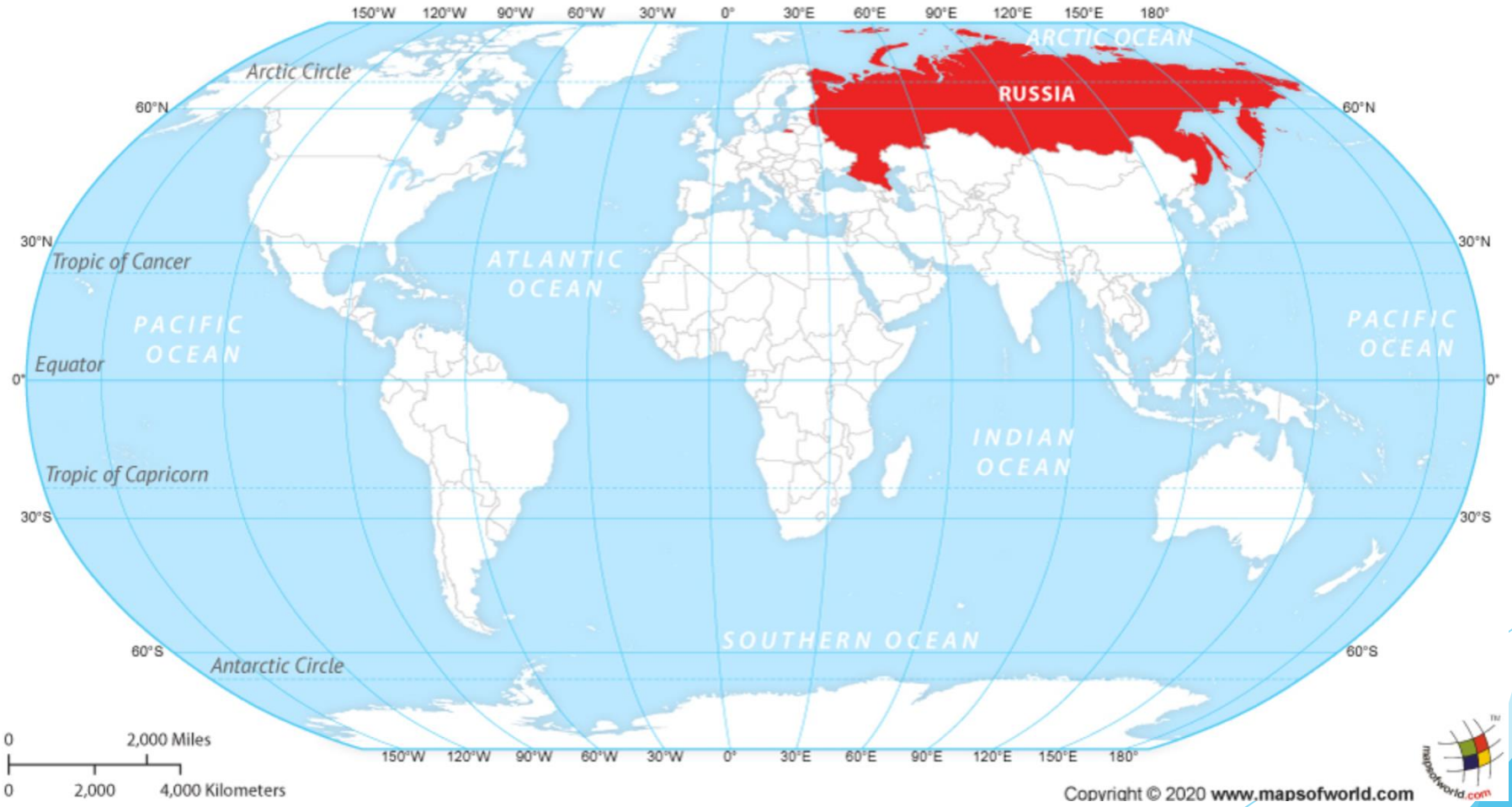
Cryptos: 2.2M+ Exchanges: 709 Market Cap: $1.63T ▼0.51% 24h Vol: $44.72B ▲51.69% Dominance: BTC: 51.1% ETH: 16.9%

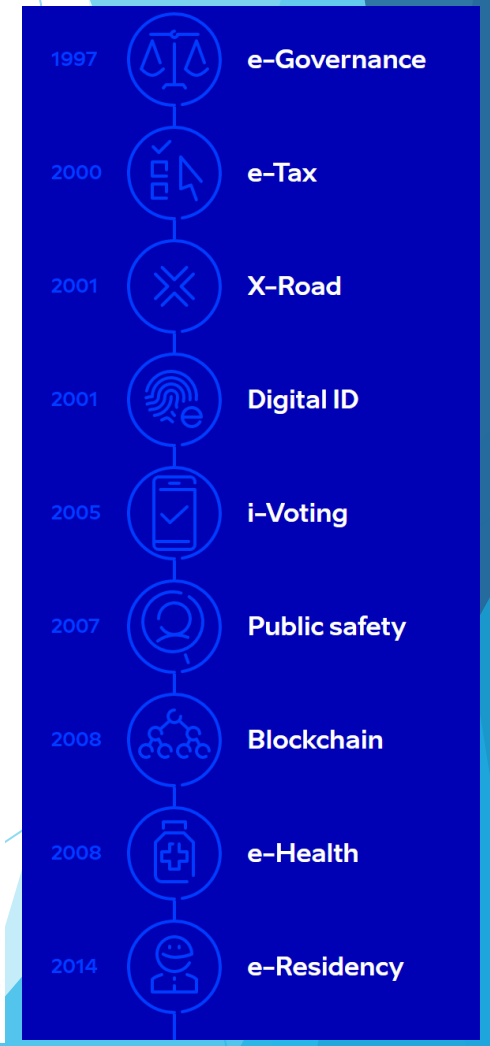
- As a Cryptocurrency platform

#	Name	Price	1h %	24h %	7d %	Market Cap	Volume(24h)	Circulating Supply	Last 7 Days
1	Bitcoin BTC	$42,586.54	▼0.44%	▼0.47%	▼0.85%	$835,514,326,478	$18,824,321,151 442,191 BTC	19,619,212 BTC	
2	Ethereum ETH	$2,295.25	▼0.36%	▼0.14%	▼0.19%	$275,850,885,414	$7,788,377,750 3,394,212 ETH	120,183,226 ETH	
3	Tether USDt USDT	$0.9989	▲0.02%	▼0.07%	▼0.11%	$96,125,384,858	$31,175,367,671 31,204,431,166 USDT	96,231,343,353 USDT	
4	BNB BNB	$300.77	▼0.10%	▼1.66%	▼2.86%	$44,979,521,202	$861,850,878 2,864,862 BNB	149,546,249 BNB	
5	Solana SOL	$95.57	▼0.69%	▼1.23%	▼4.36%	$41,686,713,068	$1,707,258,341 17,872,892 SOL	436,209,423 SOL	
6	XRP XRP	$0.5074	▼0.97%	▼0.45%	▼5.03%	$27,621,040,276	$828,629,775 1,633,209,189 XRP	54,436,190,886 XRP	
7	USDC USDC	$1.00	▲0.01%	▼0.00%	▼0.00%	$27,038,477,343	$4,517,743,551 4,517,013,313 USDC	27,033,960,001 USDC	
8	Cardano ADA	$0.4933	▼0.47%	▼1.77%	▼4.51%	$17,480,672,024	$281,939,821 572,227,731 ADA	35,432,688,535 ADA	

Blockchain Mega Cases

- To provide Digital Identity





Blockchain Mega Cases

- Trusted Programmability

Flight Delay Insurance

First decentralized insurance. Payouts are automatic and almost instant. Now fully licensed.

Demo video

Licensed

Hurricane Protection

Designed for low-income individuals and small business owners. Instant payouts are triggered by wind speed registered by weather-stations within 30 mile radius from insured's permanent location.

Designed

Crypto Wallet Insurance

Protection against risk of theft and attacks of hackers on wallet smart contracts. Target coverage - up to $1M.

Designed

https://etherisc.com/#products

Blockchain Mega Cases

- Tokenization of assets

https://www.theverge.com/2021/3/11/22325054/beeple-christies-nft-sale-cost-everydays-69-million

Agenda

- Introductions
- Blockchain(s)
- **Cryptoassets**
- Insurance
- Wrapup / Q&A

Cryptoassets

What gives money its “value” ?

AUDIENCE

Cryptoassets

The value of a cryptoasset is determined purely by open market pricing of the crypto or what it represents

DEFINITIONS

- Are fluid
- Are ambiguous
- Vary from jurisdiction to jurisdiction and different regulators have different definitions

Regulators tend to define Cryptocurrencies, Cryptotokens and Cryptoassets differently

CRYPTOCURRENCIES

BITCOIN

https://coinmarketcap.com/currencies/bitcoin/

CRYPTOCURRENCIES

“The Rest” (aka “Altcoins”)

#	Name	Price	1h %	24h %	7d %	Market Cap	Volume(24h)	Circulating Supply	Last 7 Days
1	Bitcoin BTC	$41,645.12	0.11%	0.17%	3.11%	$816,428,630,295	$9,810,405,719 235,551 BTC	19,604,425 BTC	
2	Ethereum ETH	$2,472.83	0.10%	0.54%	2.48%	$297,177,378,730	$4,654,651,523 1,881,322 ETH	120,176,936 ETH	
3	Tether USDt USDT	$0.9997	0.01%	0.08%	0.00%	$94,901,041,088	$22,952,675,747 22,964,851,445 USDT	94,929,347,997 USDT	
4	BNB BNB	$319.09	0.09%	1.43%	4.21%	$47,719,312,940	$706,168,478 2,213,841 BNB	149,548,690 BNB	
5	Solana SOL	$92.40	0.47%	1.10%	8.38%	$40,012,382,657	$958,186,476 10,355,813 SOL	433,029,001 SOL	
6	XRP XRP	$0.5517	0.27%	0.71%	4.96%	$29,977,725,185	$557,412,567 1,010,052,615 XRP	54,339,837,528 XRP	
7	USDC USDC	$1.00	0.00%	0.09%	0.02%	$25,783,431,178	$2,294,111,543 2,293,861,671 USDC	25,774,762,661 USDC	
8	Cardano ADA	$0.514	0.44%	1.02%	6.12%	$18,199,750,477	$246,234,439 479,127,788 ADA	35,404,640,175 ADA	
9	Dogecoin DOGE	$0.08676	0.82%	8.94%	5.78%	$12,385,344,527	$1,351,535,538 15,572,590,223 DOGE	142,745,886,384 DOGE	
10	Avalanche AVAX	$33.16	1.36%	2.35%	11.27%	$12,162,299,944	$327,561,386 9,859,021 AVAX	366,796,636 AVAX	

https://coinmarketcap.com/charts/

CRYPTOTOKENS

- “Programmable Money”
- Execute on top of a blockchain platform (e.g. Ethereum, NEO,EOS)
- Non-Fungible Tokens (NFT’s) – Digital ownership
- Used for fundraising projects (ICOs)

CRYPTOASSETS

- Digital shares
- Property Investments
- Gold / commodities / currencies
- Fractional ownership schemes

CURRENCIES, TOKENS & ASSETS

WHAT'S THE DIFFERENCE ?

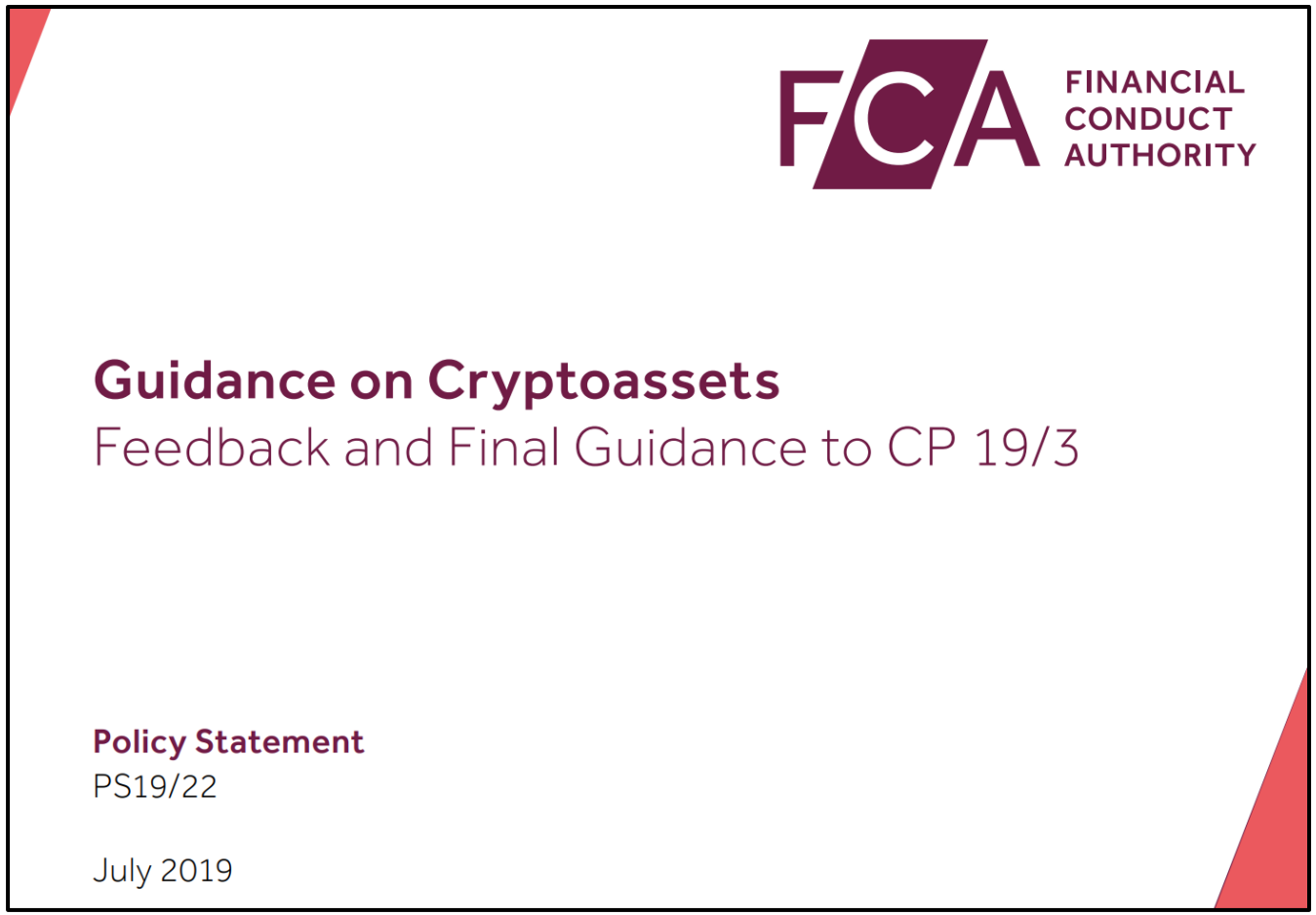
- Cryptocurrency = Decentralised digital money
- Cryptotoken = Programmable digital money
- Cryptoasset = Digital share / title of fractional ownership

Often all traded on the same crypto exchange!

Cryptoassets

- Money
- Cryptocurrencies, assets and tokens
- **Regulation**
- Risks and Opportunities

REGULATION



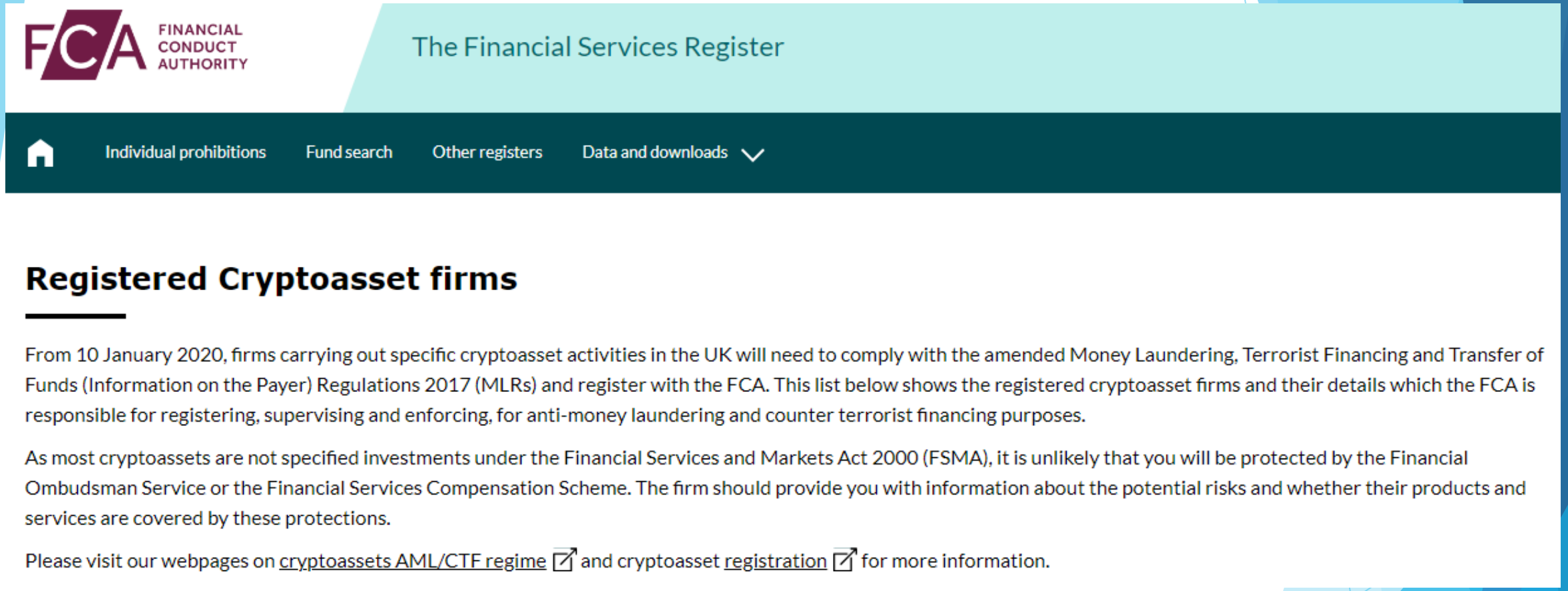
https://www.fca.org.uk/publication/policy/ps19-22.pdf

FCA CP19 Interim guidance issued:

E-Money
Security Tokens
Utility tokens

Anti-Money Laundering (AML/CTF)
Know Your Customer (KYC)
Market Abuse Directive (MAR)

REGULATION



https://register.fca.org.uk/s/search?predefined=CA

REGULATION

HM Revenue
& Customs

Policy paper

Cryptoassets: tax for individuals

Updated 20 December 2019

https://www.gov.uk/government/publications/tax-on-cryptoassets/cryptoassets-for-individuals

HMRC Guidance issued December 2018 & 2019 for individuals on:

- What cryptoassets are
- Income Tax
- Capital Gains Tax
- Earnings
- Record keeping

REGULATION

HM Revenue
& Customs

Policy paper

Cryptoassets: tax for businesses

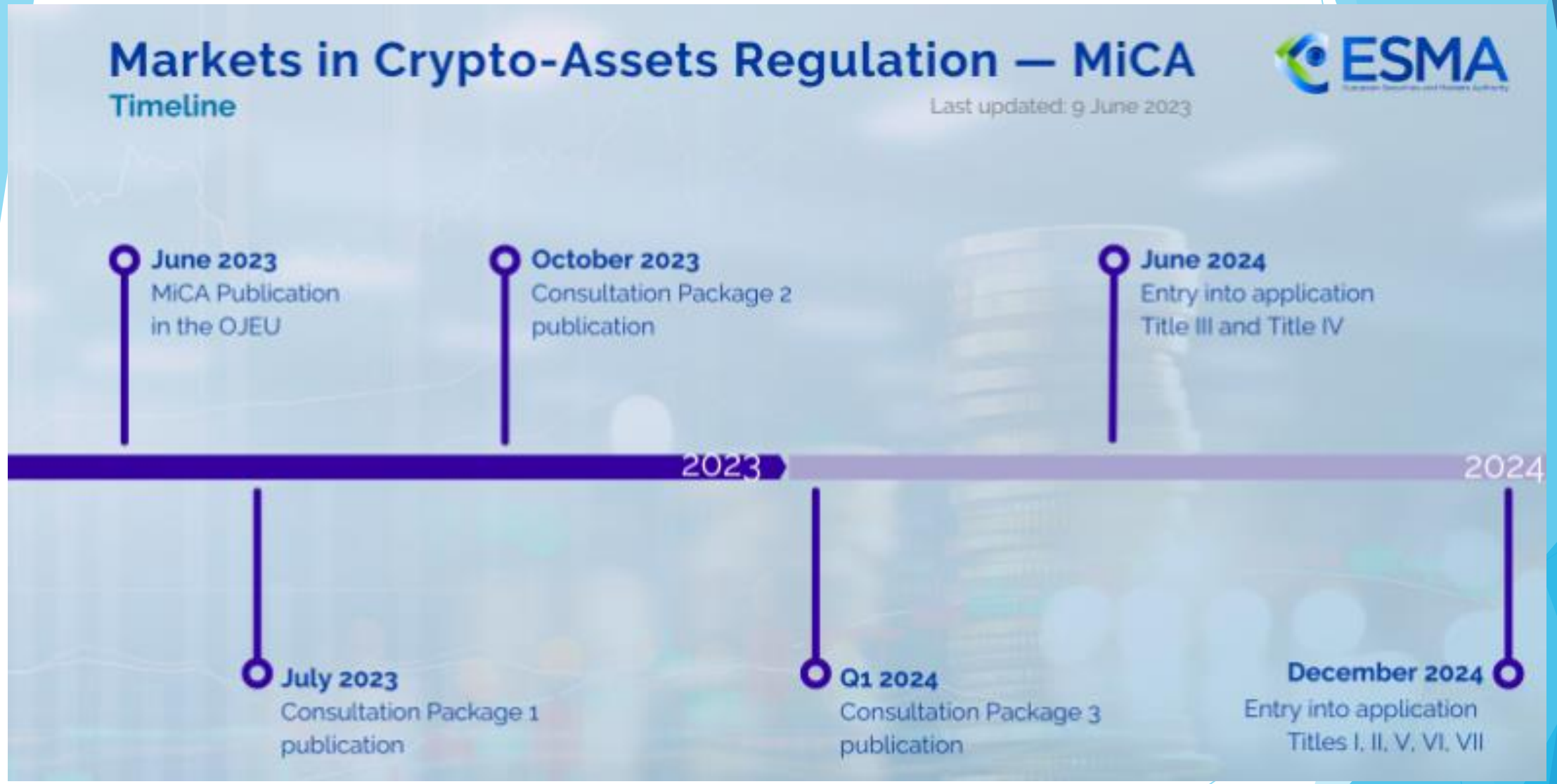
Updated 1 November 2019

https://www.gov.uk/government/publications/tax-on-cryptoassets/cryptoassets-tax-for-businesses#contents

HMRC Guidance issued November for 2019 Business on:

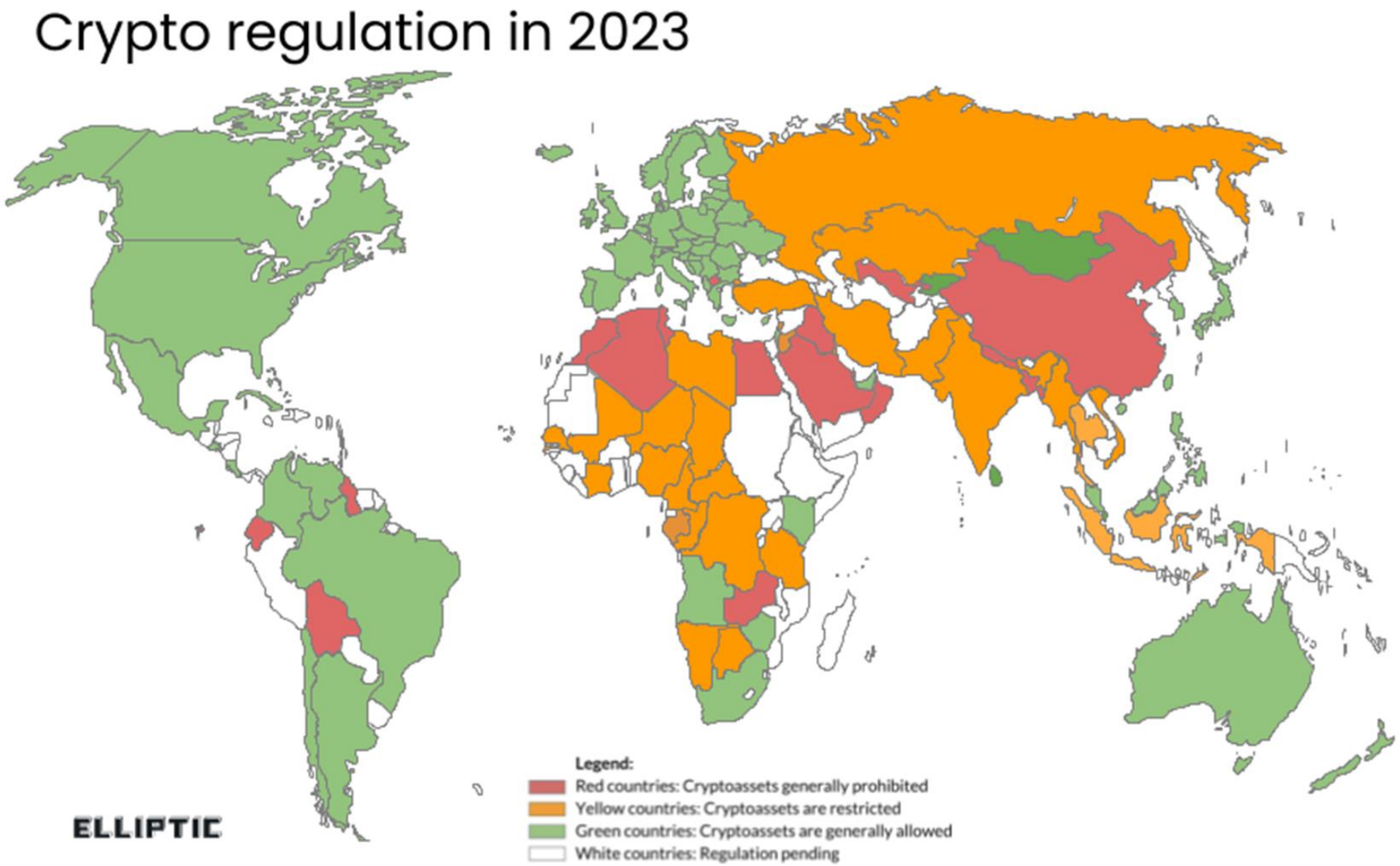
- Corporation Tax
- Investments (chargeable gains)
- VAT
- Venture Capital Schemes and capital relief
- Paying employees in cryptoassets
- Stamp Duty

REGULATION



https://www.esma.europa.eu/esmas-activities/digital-finance-and-innovation/markets-crypto-assets-regulation-mica

REGULATION



https://www.elliptic.co/blog/a-world-of-crypto-regulation-at-a-glance

Cryptoassets

- Money
- Cryptocurrencies, assets and tokens
- Regulation
- **Risks**

RISKS

Some are market risks and some are insurable:

- Liquidity
- Volatility

- Scams
- Loss & Theft
- Mistakes

Risks - Scams

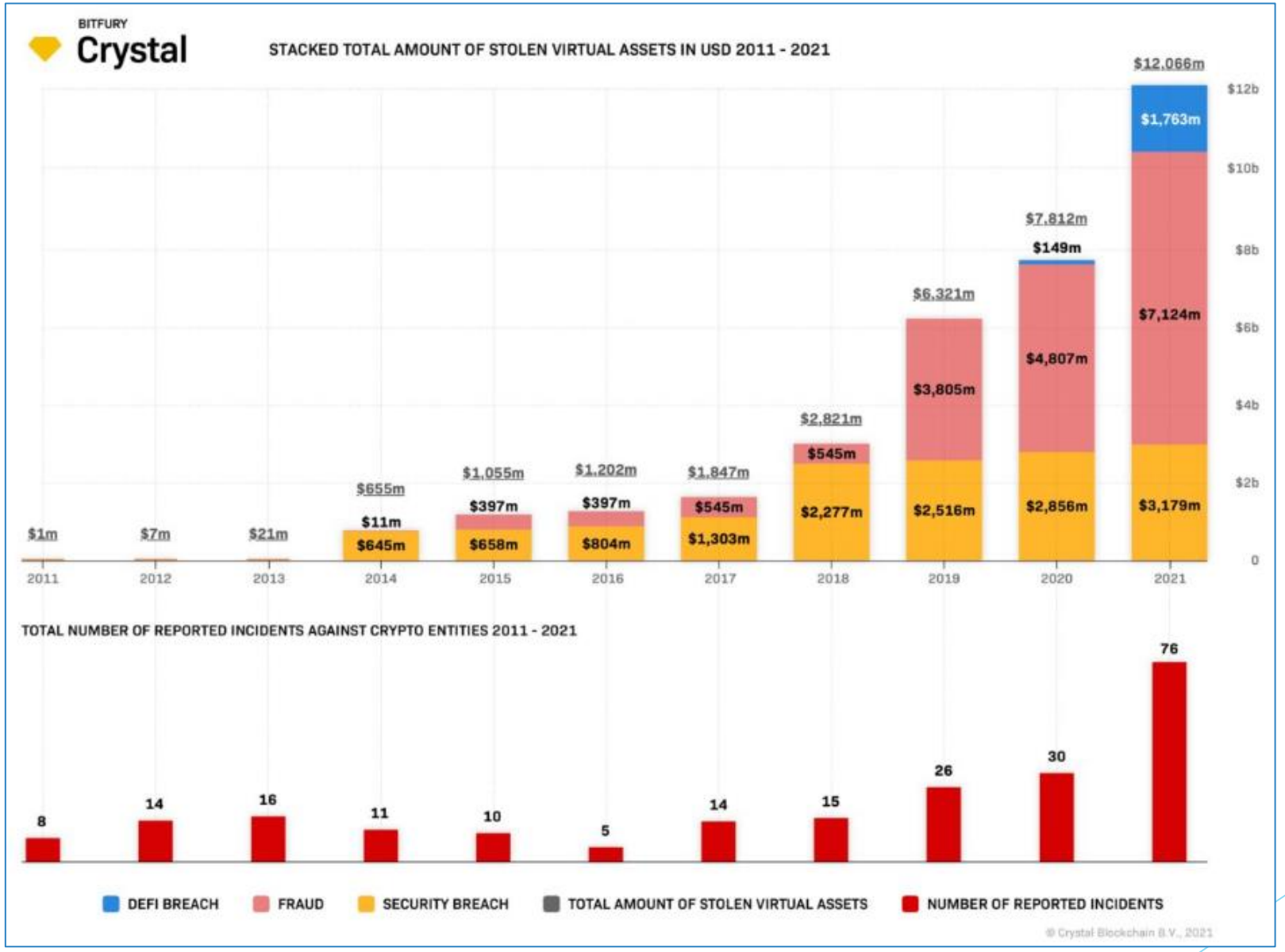
We hope everyone had a good laugh :) But we have to shut down. This was a parody art performance/joke. I did not "run off" with the money, I never sold any of my PonziCoins, and the contract was drained from other users withdrawing. Please be careful when investing in shady cryptocurrencies, especially ones that look like pyramid schemes - it's a zero sum game and money doesn't appear out of thin air.<

Risks - Scams

More than €4bn was invested in dozens of countries

https://www.bbc.co.uk/news/stories-50435014

Risks – Loss & Theft



https://thefintechtimes.com/12-1billion-in-crypto-assets-have-been-stolen-over-ten-years-crystal-blockchain-analysis-finds/

Risks - Mistakes

Fat Finger Sheds Light on Crypto Concerns

On Saturday, the sudden flood of stablecoin into the market spooked investors. The trading error reportedly happened when the crypto firm was helping exchange Polonix conduct a chain swap, in which it was moving tethers from the Omni to the Tron blockchains, per CoinDesk. Tether CTO Paolo Ardoino explained the error as an "issue with the token decimals," when preparing the issuance for the swap.

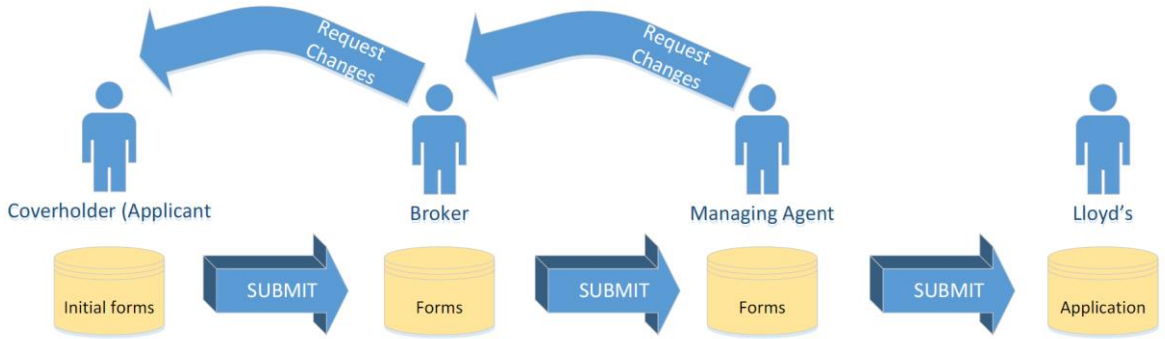
https://www.investopedia.com/how-a-usd5-billion-fat-finger-trade-is-rattling-the-crypto-world-4693287

Agenda

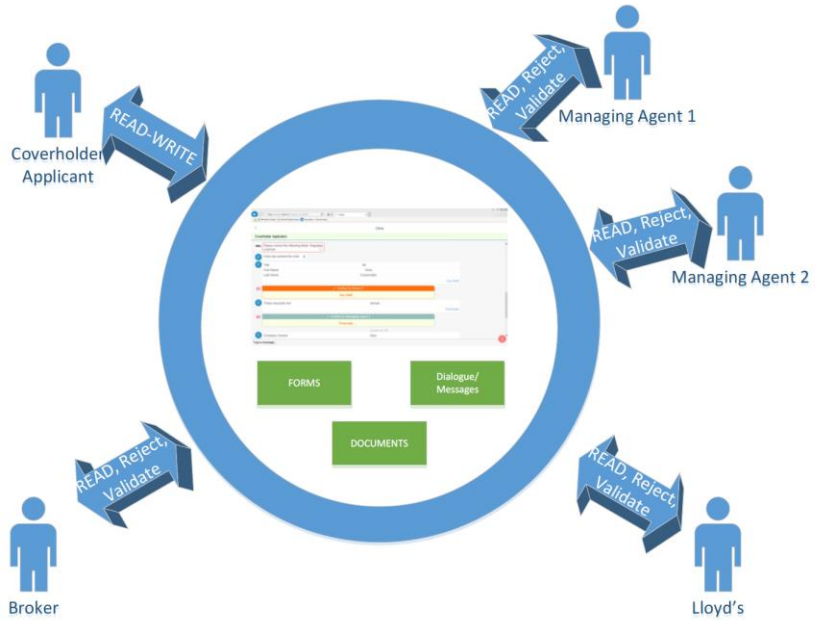
- Introductions
- Blockchain(s)
- Cryptoassets
- **Insurance**
- Wrapup / Q&A

Blockchain Use Cases – INSURANCE

As-Is



To-Be



Blockchain Use Cases – INSURANCE

- Policy Administration
- Accounting & Settlement
- Parametric Insurance
- Coverholder Management (including KYC)
- Motor Fleet Management
- Expense Management
- Claims
- Subrogation
- Peer 2 Peer Insurance / Mutualisation v2.0

Current State: Use Cases - INSURANCE

Category	Line of Business	Example
Policy Admin +	**End to End Insurance**	Blocksure* (due disclosure), Chain-B, Zhong An (Non-Life P&C)
Operations	**Accounting & Settlement**	ChainThat, R3, Surematics, Consensys/I-Chassis
Marketplace	**P2p + matching Insurance**	Fidentiax, Wekeep, TeamBrella, LenderBot, Nexus Mutual, Akinova, Ixledger (GenRe), Shanghai Insurance Exchange
Alternate risk	**Prediction Market**	Gnosis, Augur
IoT	**Trade Finance**	EY/Maersk/IBM (MS-Amlin, XL-Catlin, Willis), Bancassurance (AIA), AIGang
Smart Contract	**Flight Delay**	InsurEth, Etherisc/Atlas Insurance (Malta), ~~Fizzy (Axa)~~ – no longer available
	Crop Protection	Achmea, AoN/Etherisc/Oxfam
Reinsurance	**Retrocession**	~~B3i Property Cat XOL~~ (consortia insolvent), XLRAS
Parametric	**Cat Bond, Weather**	Allianz, Rainvow
Captive	**Prof Indemnity & property**	Allianz
General	**Motor**	Travel Ezee (Allianz), USAA/State Farm (Subrogation(
	Unemployment	DynamisApp
	Marine	Microsoft/R3/Maersk Insurwave
	P&C	Riskblock Alliance
	Life	LIMRA/BAC
	Surety Bond	Zurich/Accenture
	Industry Loss Warranty	Cognizant/CordaInsur

Insurance Opportunities

Insurance and virtual money

It is only recently that virtual money or cryptocurrencies have emerged in the financial landscape. Are these new monetary values covered by standard home insurance policies?

National Bank Insurance Auto | Home
27 April 2017

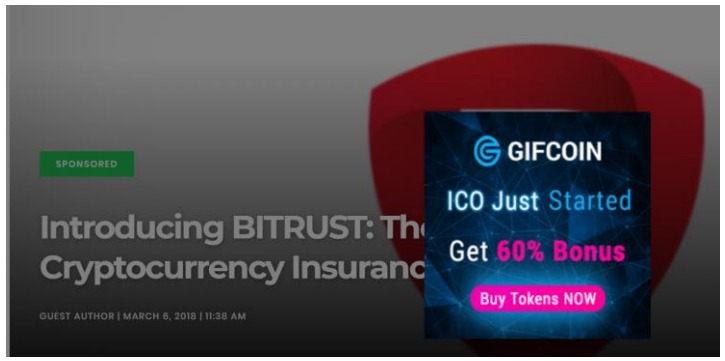
BITCOIN SERVICES FEBRUARY 19, 2018 10:51

Cryptocurrency Insurance: More Companies Join The Bandwagon

BIT PARK

Crypto-Currencies will open new horizons in the world of insurance.

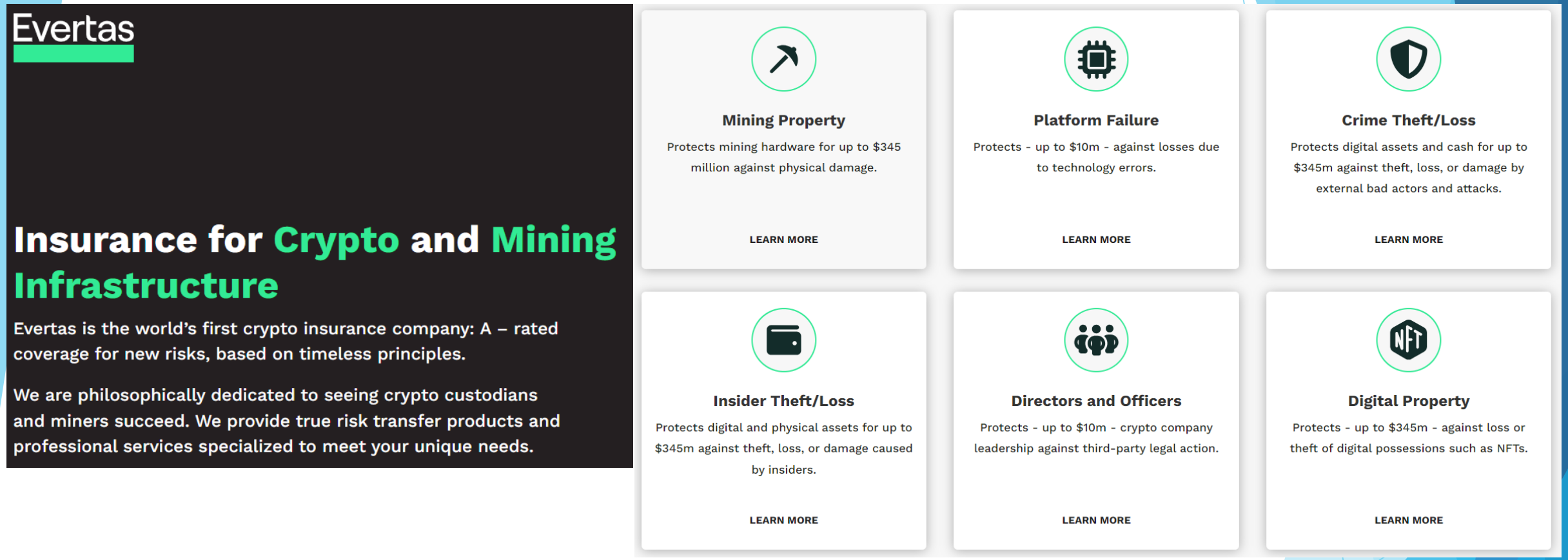
We see mutual-help systems functioning on a variety of scales and levels, whether it be through insurance, mutual aid organizations, or through like-minded individuals pooling and purchasing items together. In utilizing cryptocurrency and Blockchain technology, we believe can make the process of mutual aid much more efficient and simple. By utilizing these technologies, we believe that the insurance world will expand as a whole.



What needs insuring ?

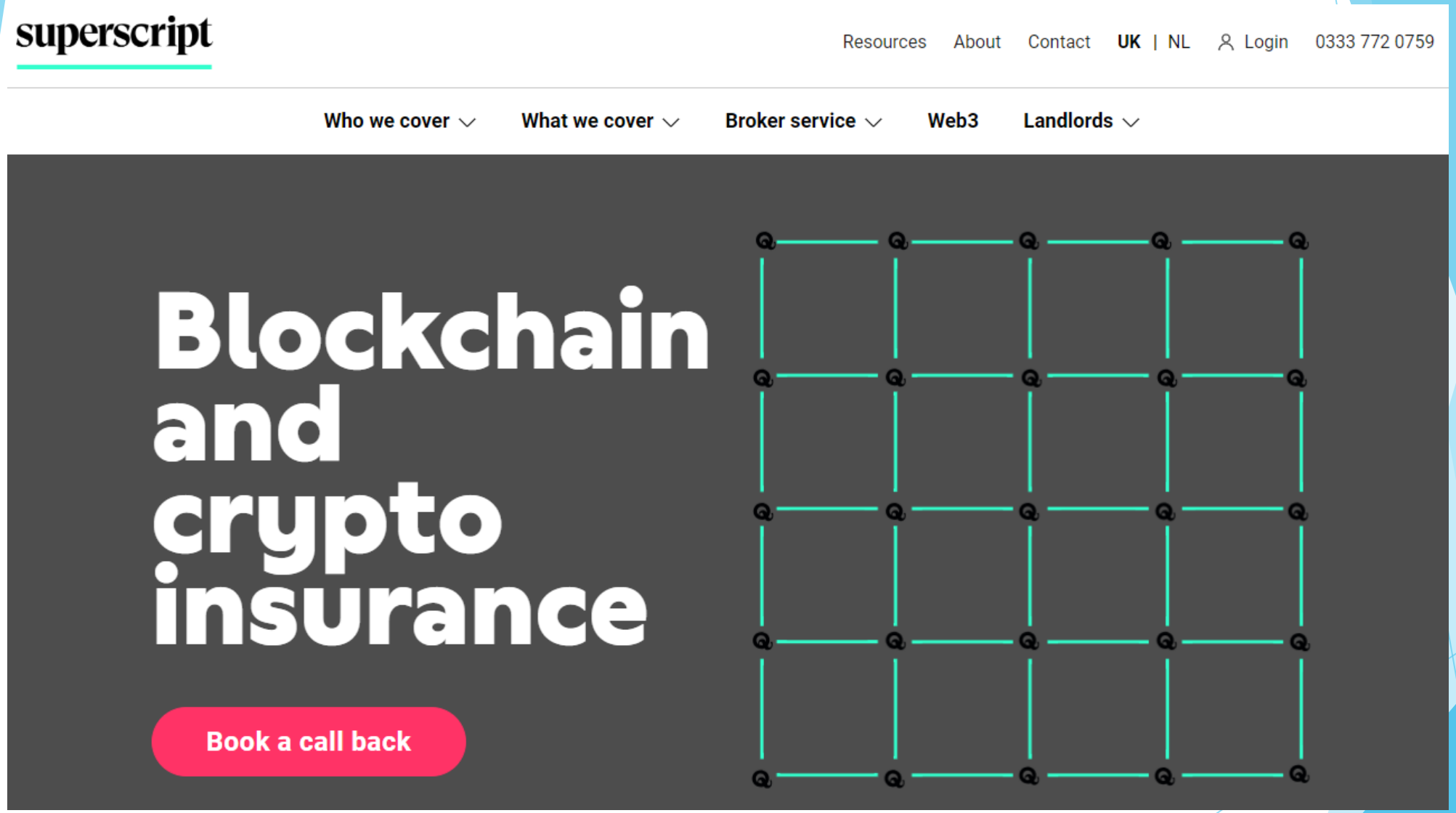
- Wallet insurance (loss & theft)
- Key Management
- E&O, Professional Indemnity/D&O Cover
- Exchange protection
- Counterparty (Trade) Risk
- Mutualisation/p2p
- Custodial Services
- Ransomware/Cyber
- Mining Operations (P&C)

Crypto Insurance



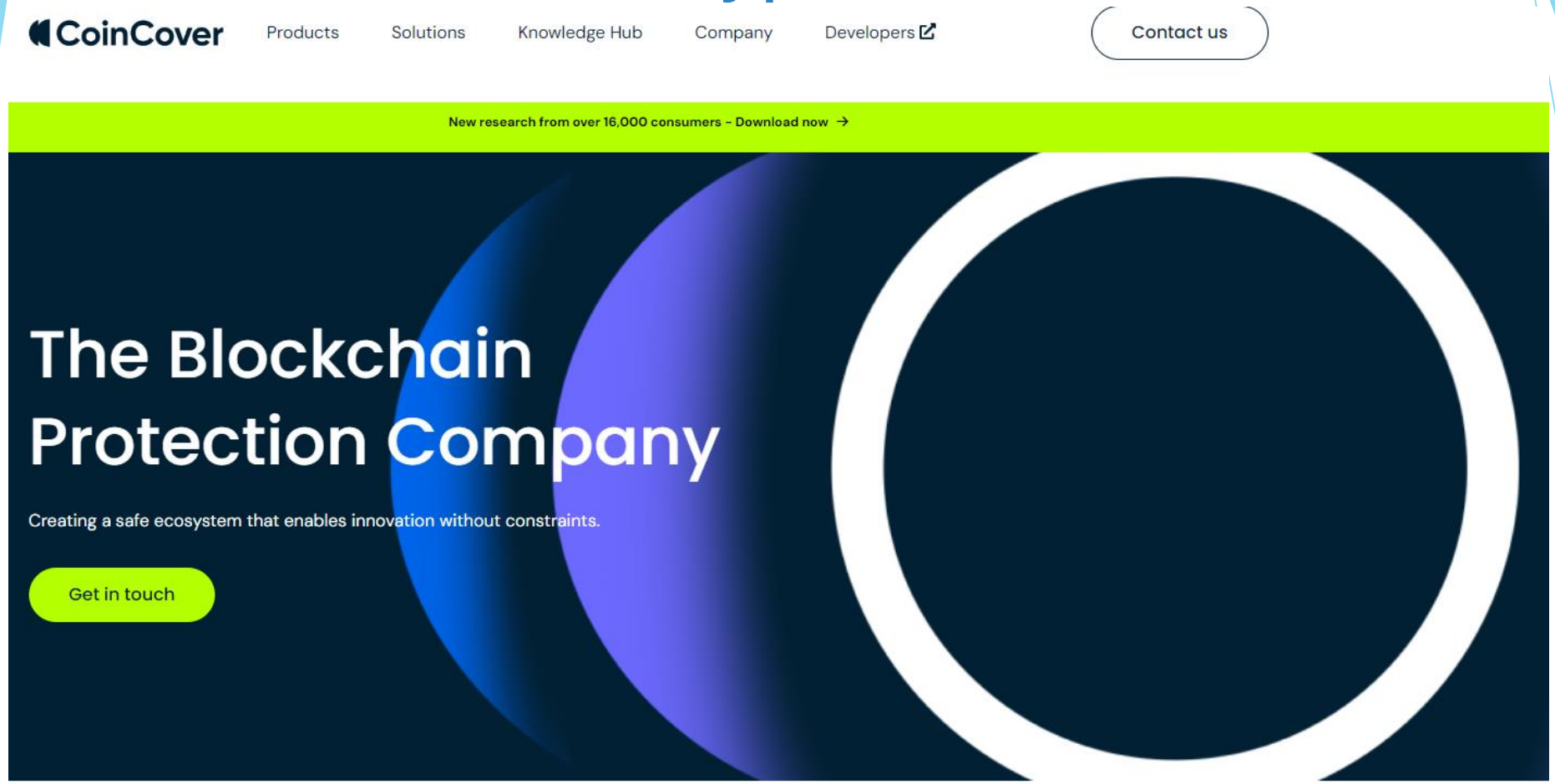
https://www.evertas.com/

Crypto Insurance



https://gosuperscript.com/advised/blockchain-insurance/

Crypto Insurance



https://www.coincover.com/

Agenda

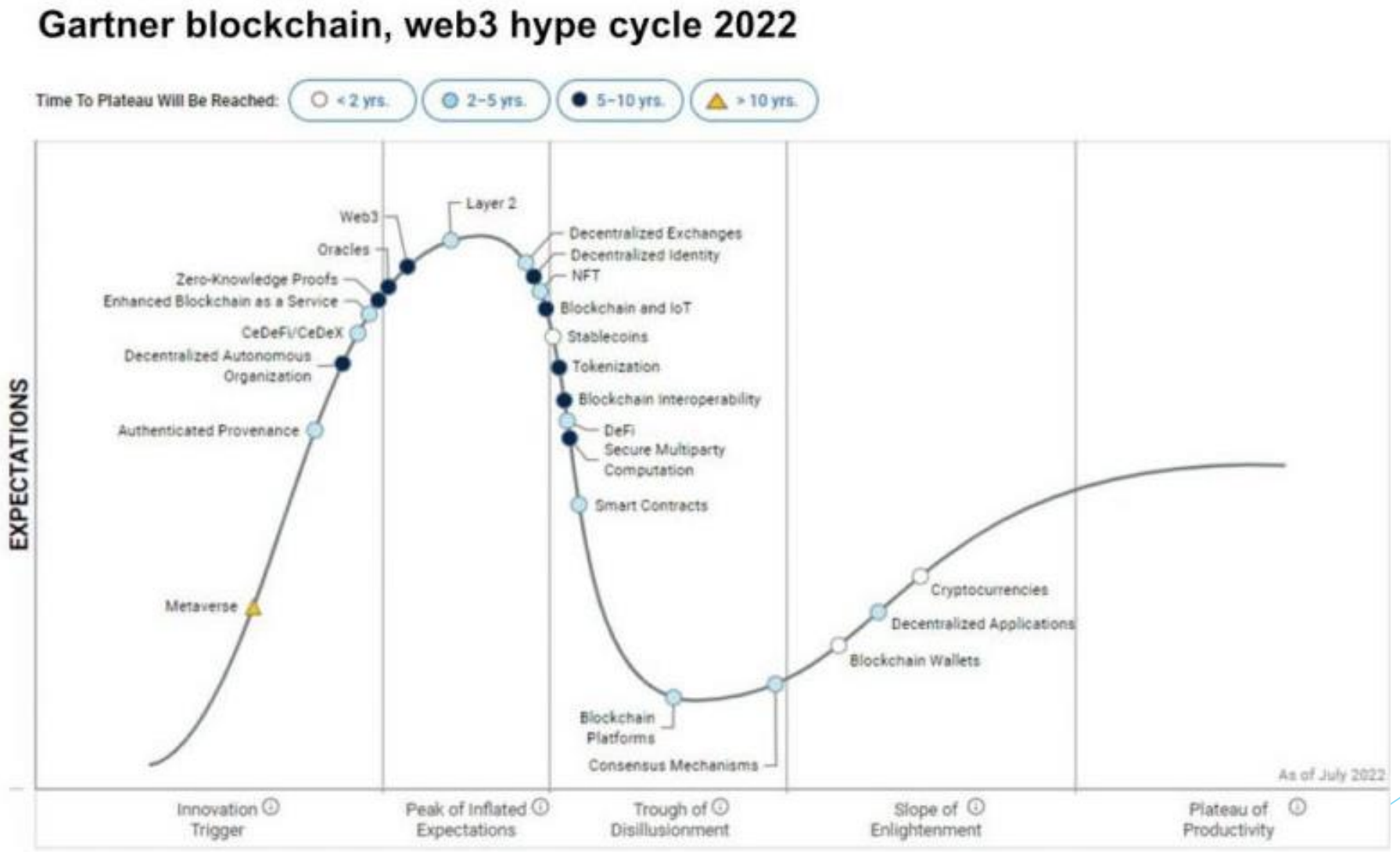
- Introductions
- Blockchain(s)
- Cryptoassets
- Insurance
- **Wrapup / Q&A**

Wrapup

What's next ?

- Government acceptance & regulation
- Project Libra / DIEM / Paypal / Twitter
- Central Government adoption (CBDC's are not cryptocurrencies!)
- Crowdfunding platforms
- Growth in "Crypto Financial Services"
- "DeFi"
- ETF's (Exchange Traded Funds)

Wrapup



https://www.ledgerinsights.com/gartner-blockchain-web3-hype-cycle/

Source: Gartner

Wrapup

Learning objectives

By the end of this event, delegates should now:

- Understand what a Distributed Ledger is
- Be aware of examples of how blockchain is being used across a range of industries
- Know how blockchain is being used in Insurance
- Be aware of the main insurable risks
- Understand what cryptoassets, cryptotokens and cryptocurrencies are

Any questions ?

Gary Nuttall

Contact details:
eMail: gnuttall@distlytics.com
Skype: @gpnuttall
Mobile: +44 (0) 787 614 1273
Twitter: @GPN01

LinkedIn:uk.linkedin.com/in/garynuttall
Web: www.Distlytics.com

Distlytics

Distributed Ledger Analytics

Consultancy & Insight

Distlytics provides education, training, consultancy and advisory services.

Technology domains include blockchain/DLT, Artificial Intelligence, Big Data and Analytics.

Industry expertise includes Insurance, Life & Pensions, Legal, Healthcare, Distribution and much more.

Specific services are dependent upon client needs and existing methodologies. Previous engagements have included:

- Initial team training
- Value chain analysis
- Feasibility study
- Options analysis
- Requirements elicitation
- Workshop planning & execution
- Project filtering & shortlisting
- Vendor selection
- Project Management
- Board papers
- Post-project review & recommendation

If you need help, advice, training or guidance around Blockchain/DLT, then contact gnuttall@distlytics.com to see how we can help.