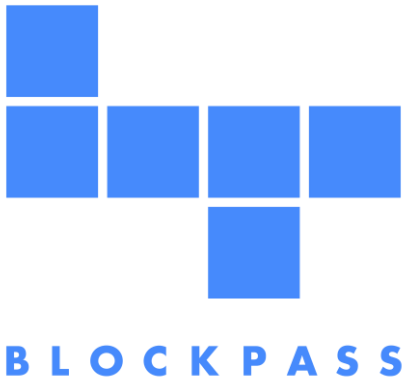


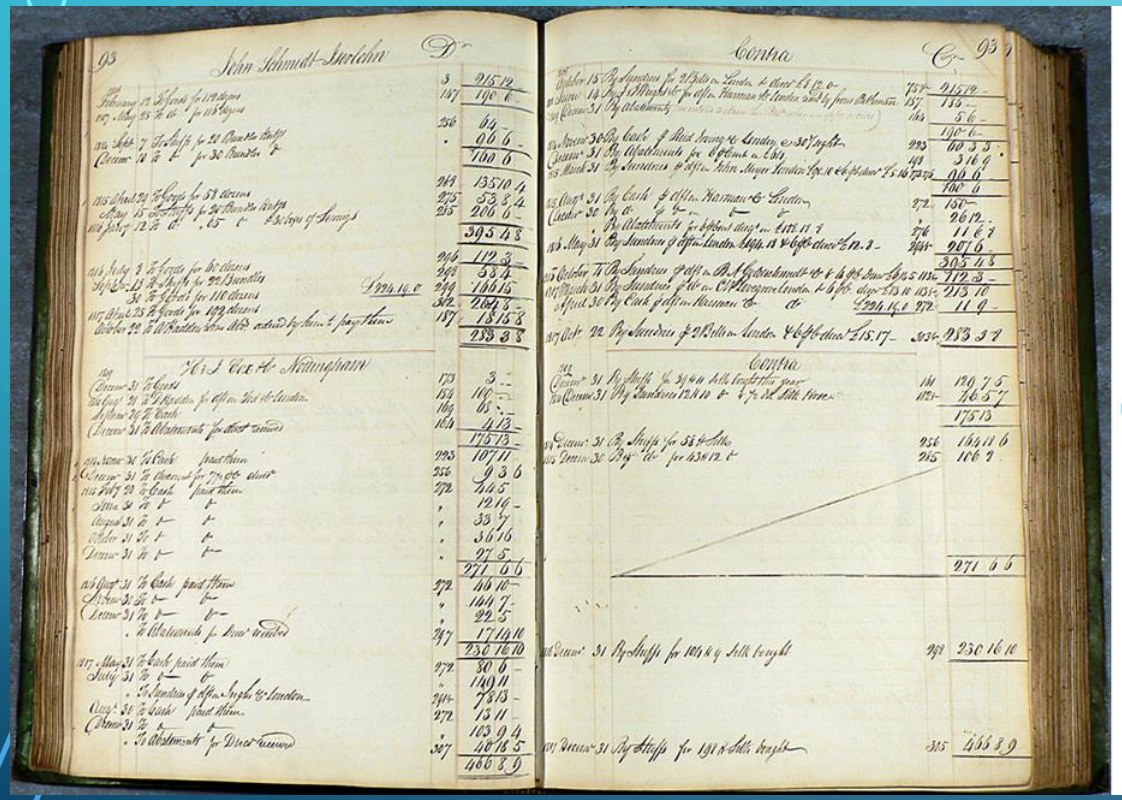
Blockchain for Shipping & Logistics
21 November 2017

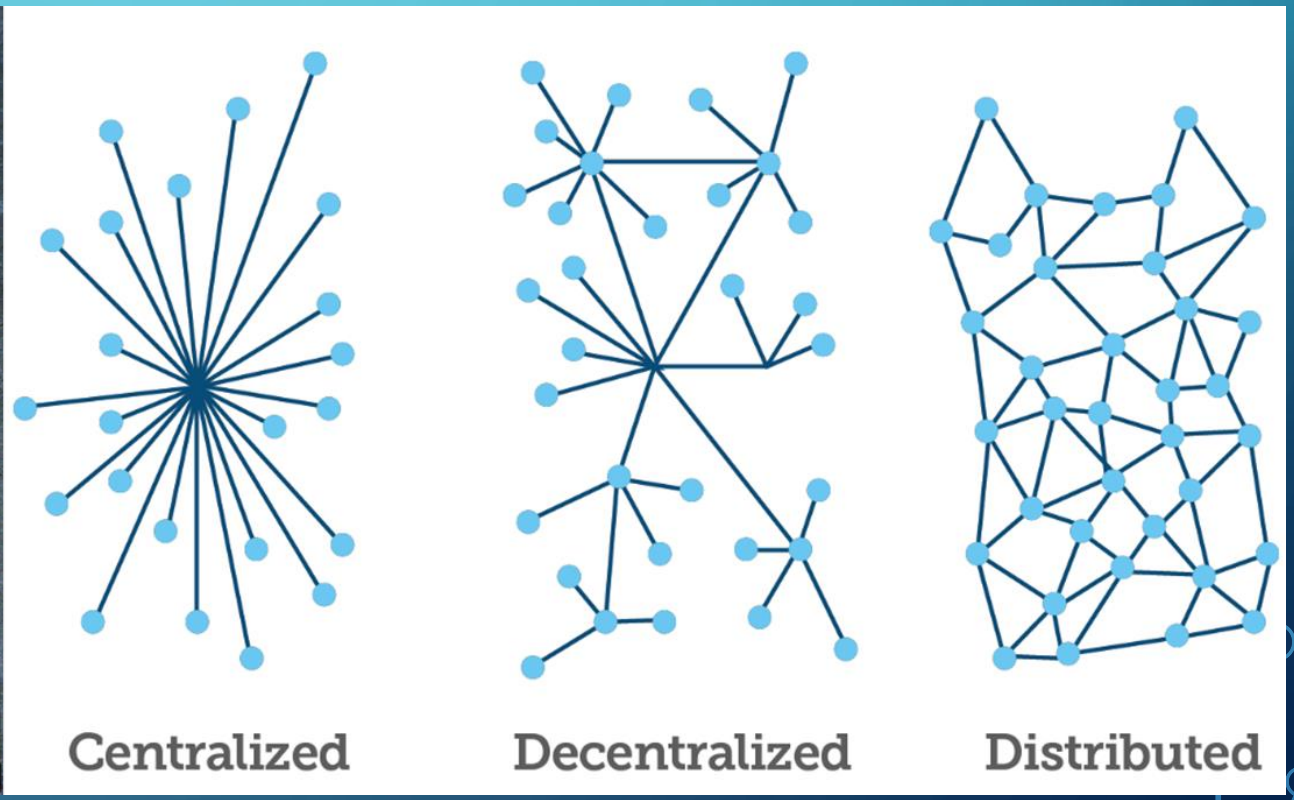
INTRODUCTION TO BLOCKCHAIN TECHNOLOGY AND USES FOR SHIPPING

MATTHEW WARNER

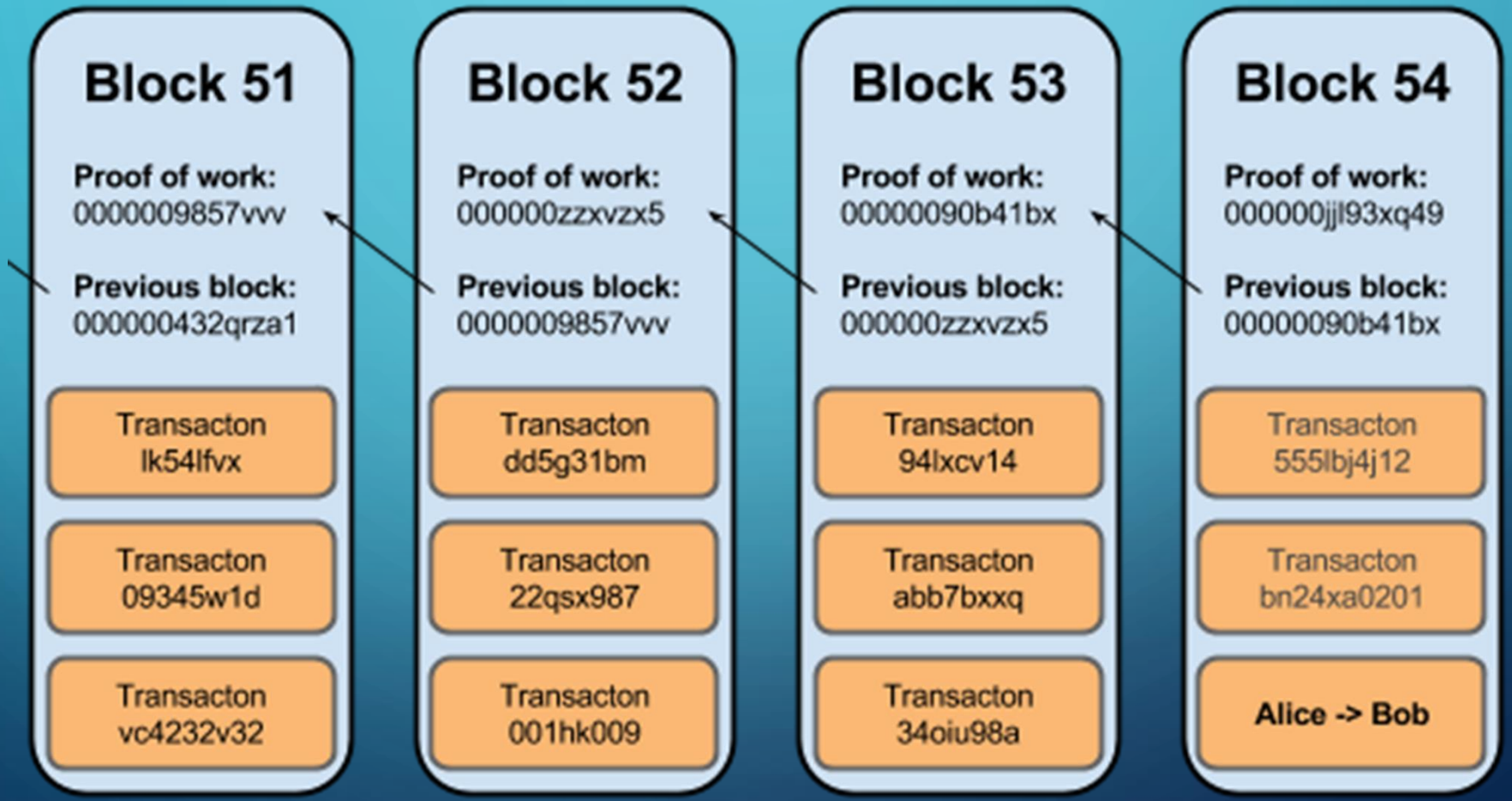
CHAIN FINANCE

WHAT IS BLOCKCHAIN?

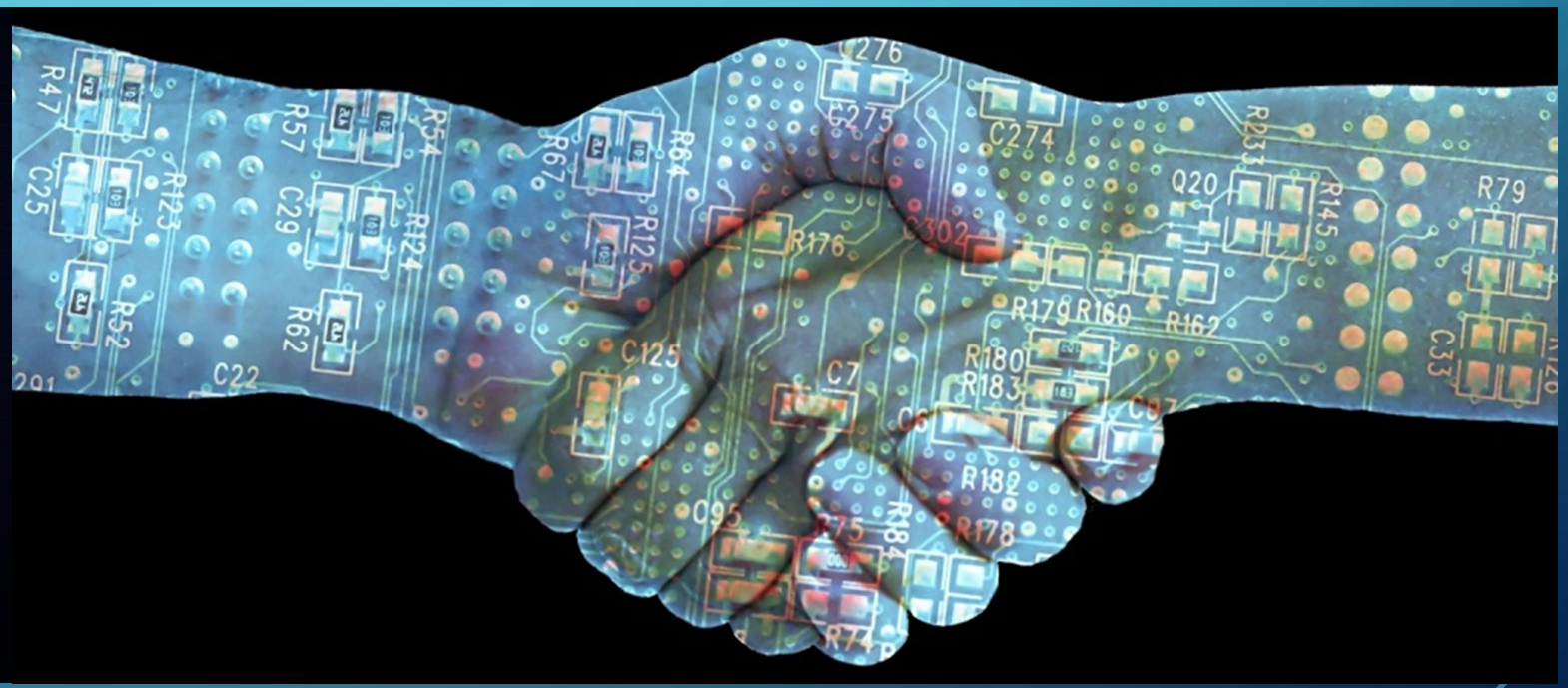




HOW BLOCKCHAIN WORKS – HASHES TO HASHES



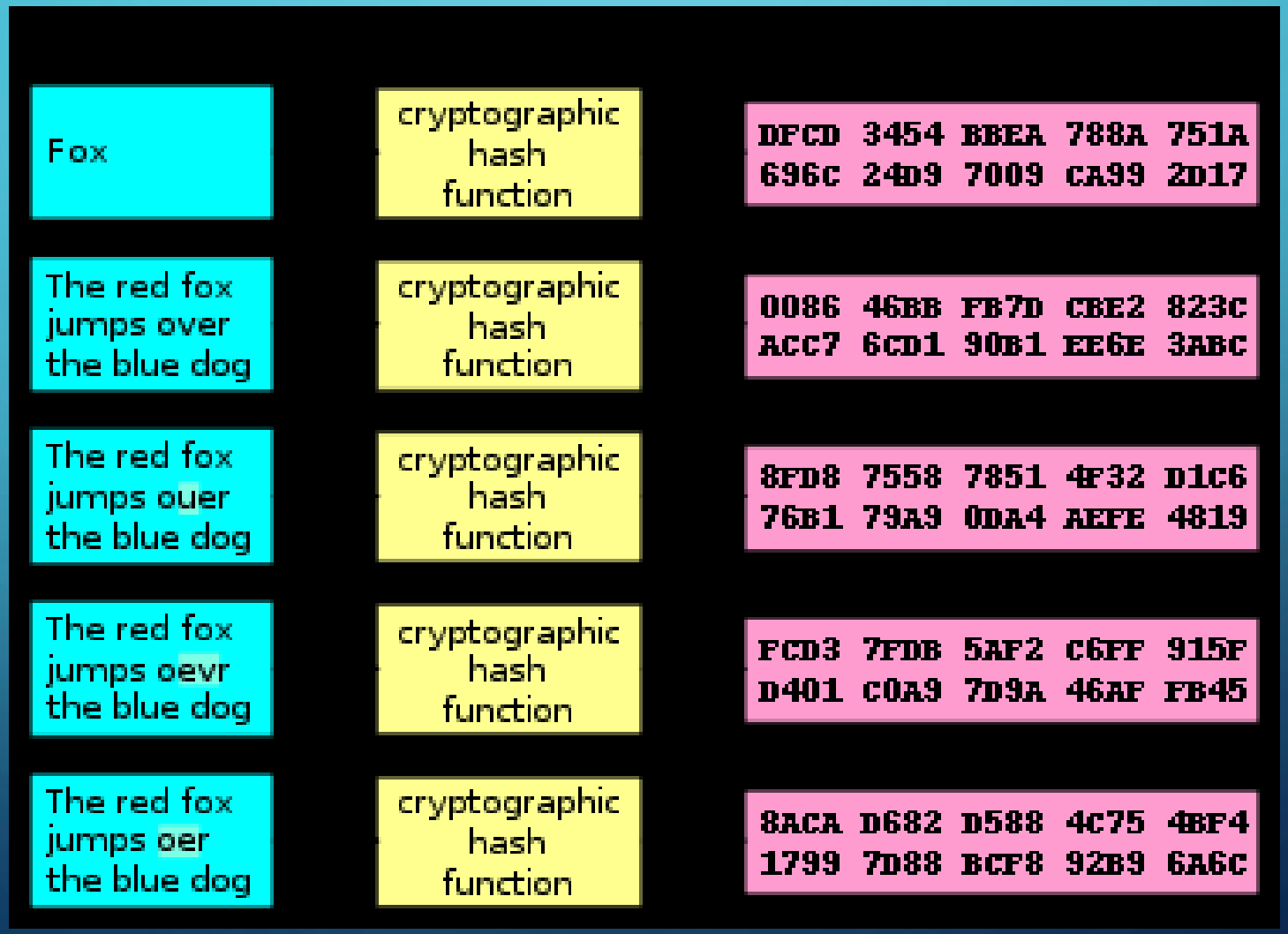
HOW BLOCKCHAIN WORKS – THE GENERAL CONSENSUS



DIFFERENT STYLES

KEY FEATURE - TRANSPARENCY

KEY FEATURE - IMMUTABILITY

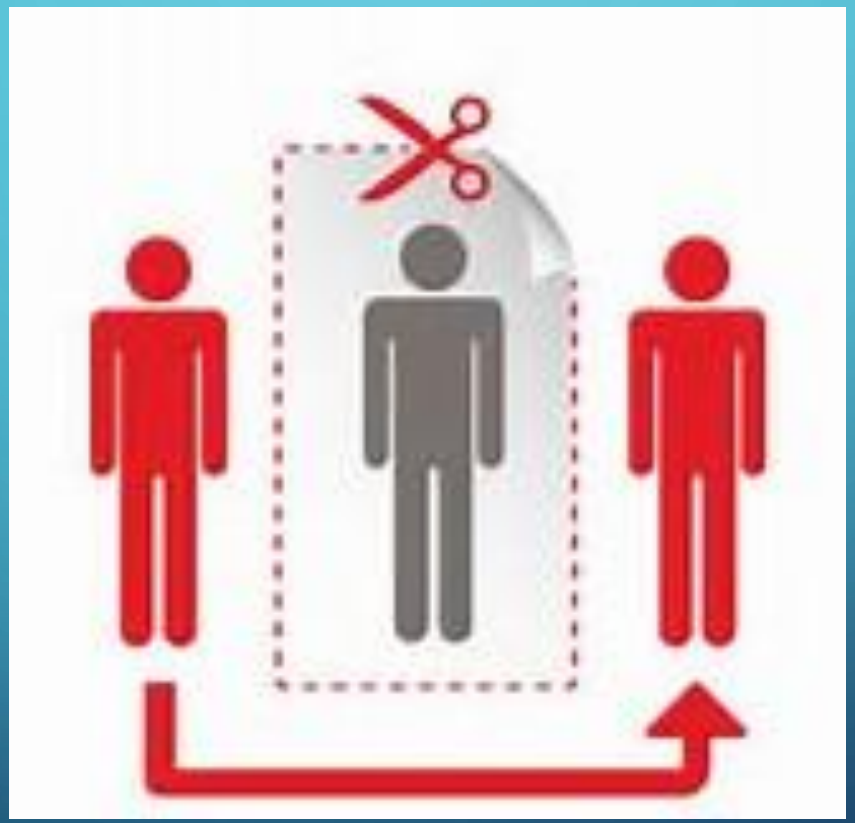


KEY FEATURE - SECURITY

KEY FEATURE - ANONYMITY

KEY FEATURE - TRUSTLESS

KEY FEATURE - DISINTERMEDIATION



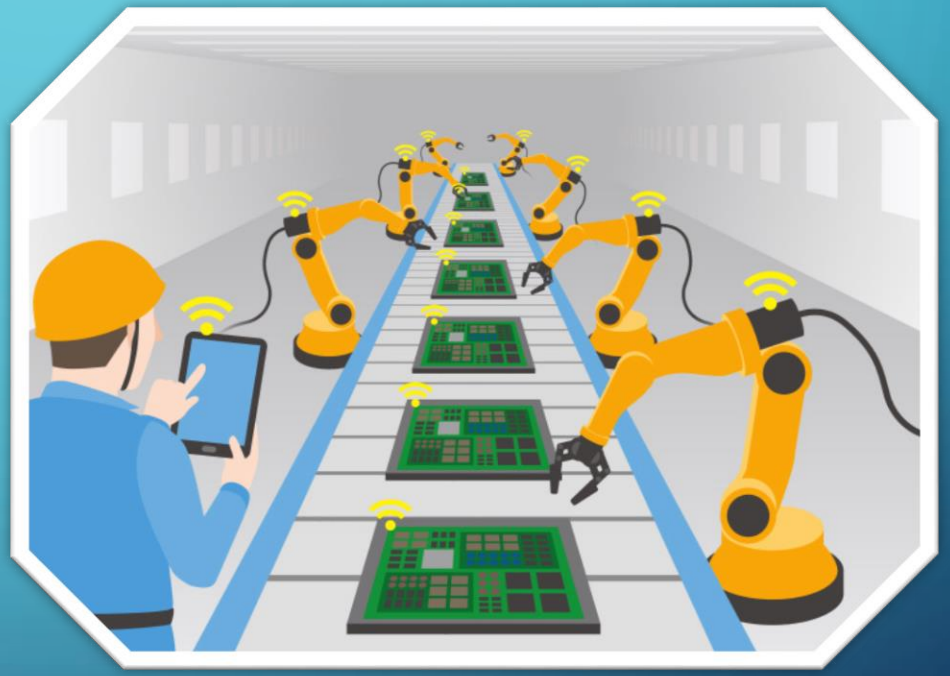
SMART CONTRACTS

EFFICIENCIES AND AUTOMATION

- Time Efficiencies.
- Cost Efficiencies.
- Remove middle men.
- Avoid inefficient processes

or doubling up on processes.

- Automation through smart contracts



AVAILABILITY AND ACCESSIBILITY

- Reduce costs open up services to more markets.
- Global platform.
- Remote access.
- No need for cumbersome

or multiple documents.

ISSUES IN SHIPPING INDUSTRY

- Bills of Lading.
- Paperwork for Supply Chain.
- Proving Cargo Providence.
- Ensuring Cargo Integrity.
- Wasteful and Costly Processes.
- Awkward and Inefficient Systems.

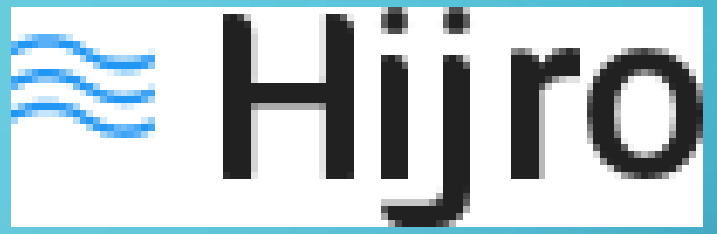
POTENTIAL AREAS TO ADDRESS

- Bills of lading solutions – possible to create a digital record which can self-check and highlight discrepancies.
- Supply chain management – simplify and expedite current processes.
- Data provenance and reliability.

BLOCKFREIGHT

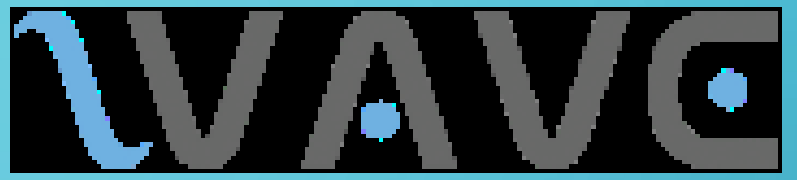
- Launched April 26th, 2016.
- Australian start-up.
- Creating Blockfreight Blockchain.
- Blockchain of global freight - an Open Source network for global shipping and logistics.
- Global trade optimisation technology - tackle inefficiency and variability in data.
- Includes "peer-to-peer gossip network", token sales, a native token (BFT), licensed sales, token exchanges, validators, third party apps.

HIJRO (FLUENT)



- Located in Kentucky, USA.
- Based on Bitcoin architecture.
- Cloud-based financial transaction network.
- Built for global supply chains with specific focus on invoicing and payments.
- Real-time, low-cost, simple and secure invoicing and payments.
- Connects banks, lenders, buyers, and suppliers to streamline and automate settlement, reduce fraud risk and costs.

WAVE



- Formed in 2015.
- Based in Israel and a start-up in Barclays Accelerator.
- Digitises Bills of Lading
- Connects members of the supply chain to a decentralized network and allows them a direct exchange of documents.
- Manages ownership of documents on the blockchain to eliminate disputes, forgeries and unnecessary risks.

SKUCHAIN

- Located in USA- Silicon Valley start-up
- Provides transparency, security and efficiency to the supply chain.
- Working with Hyperledger with Hyperledger.Edu.
- Every member trusted and KYC'd.
- Focussed on intersection of payments, finance and visibility.
- Records the terms of a trade. Automatically executes the flow of money based upon signals resulting from the flow of goods.
- Reducing processing costs. Opens up avenues for innovations.

PROVENANCE

- UK-based start-up.
- Ethereum.
- Make supply chains more transparent.
- Tracks authenticity and social and environmental credentials of goods from source.
- Developing a prototype that uses blockchain technology to enable secure traceability of certifications and other salient information in supply chains.
- Physical products gain a digital ‘passport’ that proves authenticity and origin.

SMARTLOG

Kouvola.innovation

- Based in Finland
- Project designed to streamline the supply chain.
- Funded by the European Union INTERREG Central Baltic.
- Smart contracts to be built into shipping containers. Issue information on location, surroundings etc.
- PoC for the SmartLog project began in September 2016.
- Global blockchain platform for the logistics industry and give containers the ability to organize their own routes.

MAERSK

- Danish shipping company.
- Blockchain-powered bill of lading.
- Took part in proof of concept, with blockchain expertise from the IT University of Copenhagen.
- PoC optimised information flow management.
- Consideration of privacy – Permissioned Blockchain.

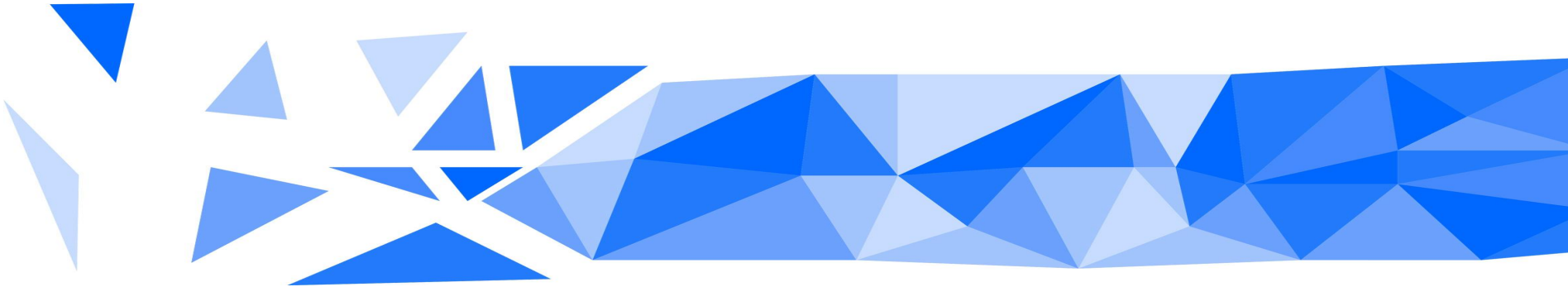
MARINE TRANSPORT INTERNATIONAL (MTI)

- UK Company.
- TrustMe™ Public Blockchain.
- Sharing VGM information for container weighing rules.
- Connect supply chain to allow building of efficient business ecosystems between parties.
- Accelerate the flow of data, reduce reliance on current IT architecture.
- Replaces logs, spreadsheets, data intermediaries and private databases.

Chain of Things

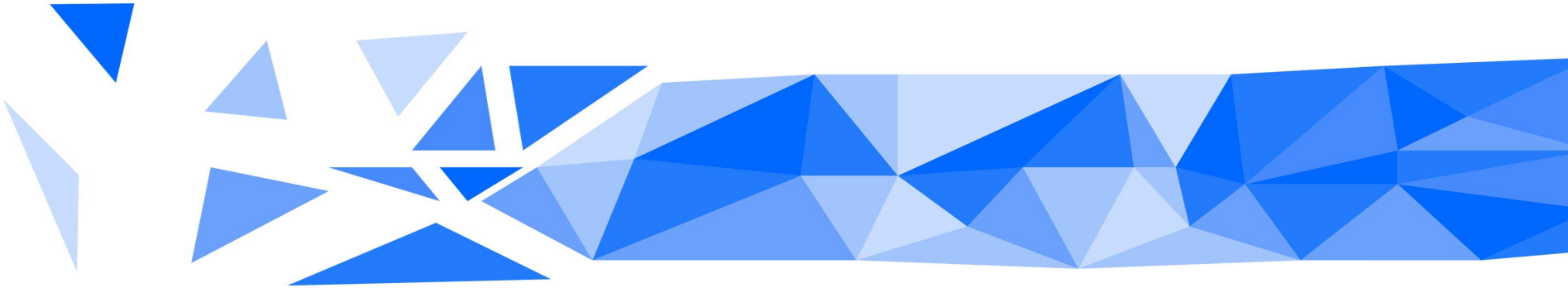
Smart Bill of Lading

Adam Vaziri
Chain of Things
adam.vaziri@chainofthings.com



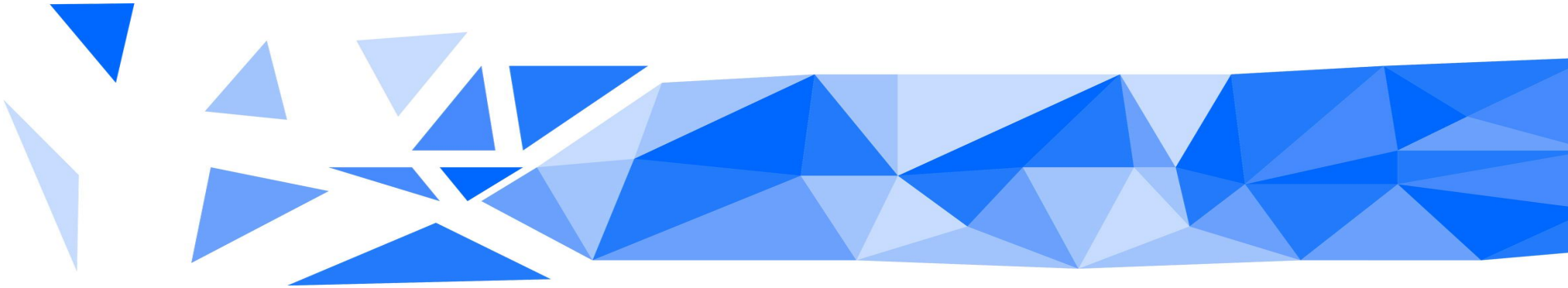
Intro

- Background
- Research into shipping
- Hybrid thesis - make public blockchains robust
- Blockpass JV - built on public ethereum network
- Overview of presentation
  - Public chains
  - Smart contracts
  - Use-case - BoL



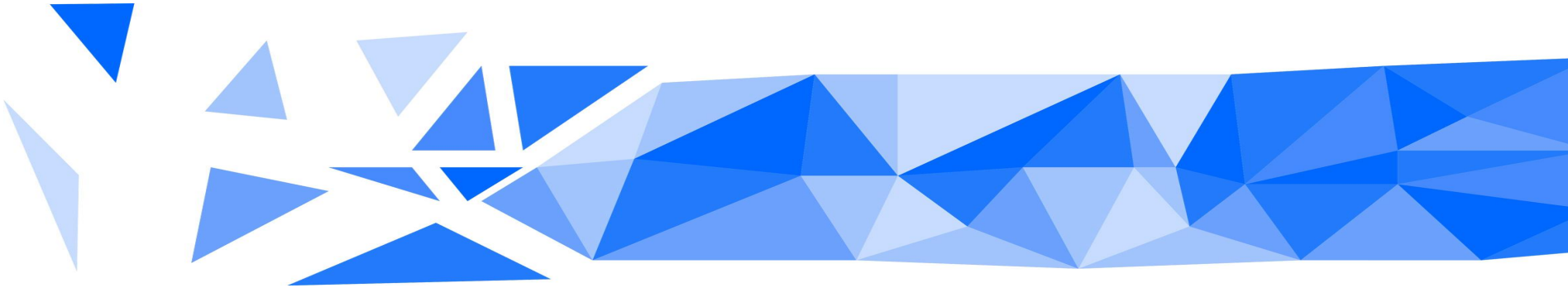
Public network blockchains

- My view that PUBLIC blockchains are best
- No-one wants to use an intranet
- Connectivity, interoperability and access is paramount for blockchains to be useful
- Also public blockchains are the most resilient and secure
- [However, certain database applications may need to run on a private ledger for now]



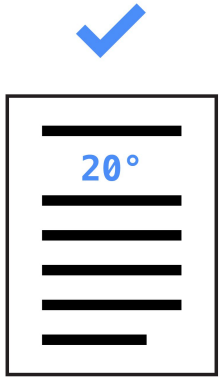
What are Smart Contracts?

1. Software protocols that facilitate, verify, enforce performance of a contract
2. Programmed with contract conditions
3. Ethereum blockchain – specifically developed with Smart Contracts capability
4. Combination of blockchain and smart contracts - powerful for distributed applications



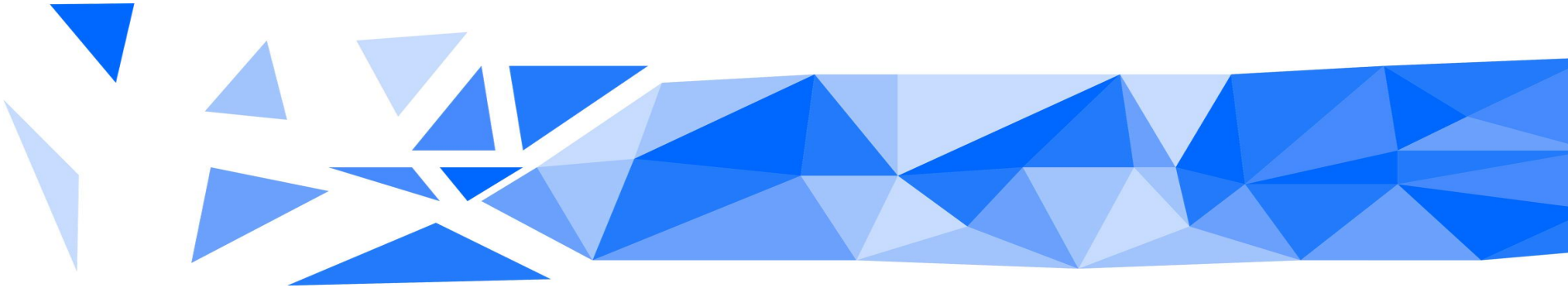
Use-case - Smart Bill of Lading

1. Smart contract Bill of Lading
2. Bill of Lading
   a. Evidence of delivery
   b. Certificate of title
   c. Trade document
3. Repeated originals in triplicate



Use-case - Smart Bill of Lading

1. Legal text containing terms stored on IPFS (distributed database)
2. Rendering of some of crucial terms of BoL in smart contract code on a public chain such as Ethereum
3. Identities of parties on Blockpass
    a. Blockchain enabled identity system (not private chain)
4. Electronic signatures of parties through blockchain wallet

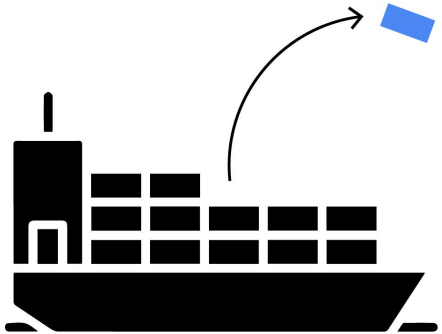


Features: Insurance against loss

1. Deposit funds could be USD tokens issued by a bank
2. Held in BoL smart contract and released in the event of a breach

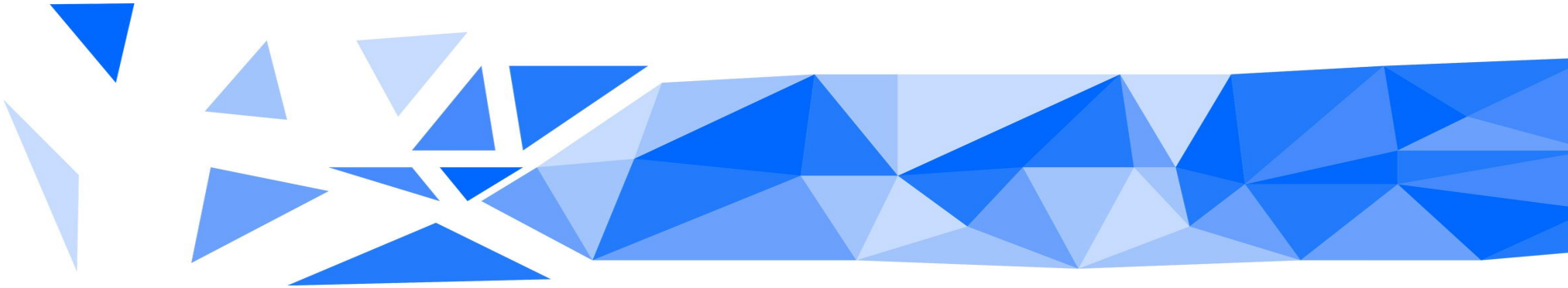
Features: Transfer of asset

1. Asset would be the goods being sold
2. Asset would be in the form of a token in the smart contract
3. Change of ownership happens as a ‘state change’ of the smart contract
4. All transfers are transparent and immutable



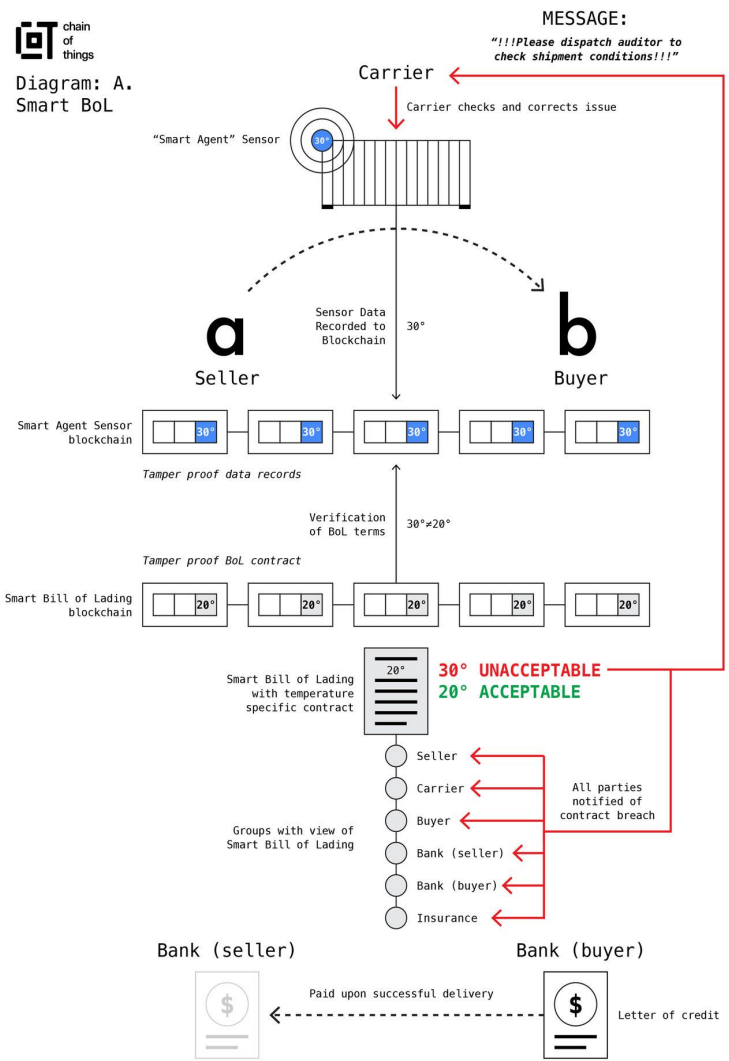
Features: IoT arbitration

1. Lower value sale of goods contracts
2. Use of an IoT sensor as an arbitrator in the event of dispute
3. Resolved through the smart contract - for example payment of a penalty to the defaulting party
4. Arbitration appeal from IoT device to selected panel of arbiters. Decision executed on the smart contract



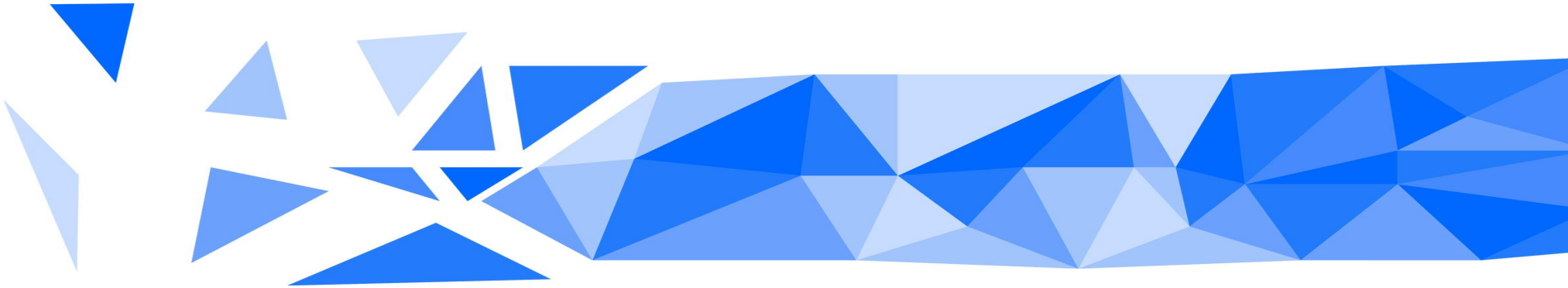
chain of things

Diagram: A.
Smart BoL



Conclusion

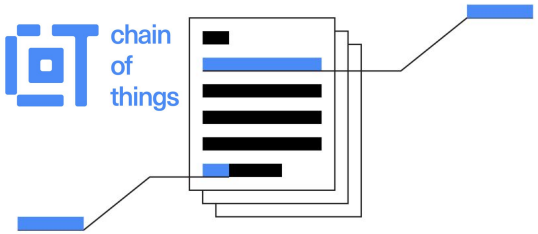
1. Public network blockchain technology is most interesting and useful
2. Requires additional infrastructure
3. Shipping is perfect industry for blockchain innovation as heavy paper based processes
4. Starting point can be lower value trades



Thank you & please contact us to get involved!

If you are interested in getting involved please contact Chain of Things.

adam.vaziri@chainofthings.com



INCISIVE LAW LLC

IN ALLIANCE WITH

INCE & CO | INTERNATIONAL LAW FIRM

Blockchain for Shipping & Logistics

Moses Lin, Director

What is blockchain technology?

What is blockchain technology?

- A **blockchain** is defined as "*a digital database (or ledger) that is distributed across a network of computers (i.e. a decentralised peer-to-peer network) containing data records that are protected by powerful cryptography".*

- Blockchains can be public or private.

- Blockchains form a platform that smart contracts can operate on.

What are smart contracts?

A Smart Contract is computer code.

It may NOT be a contract in the legal sense

- **Definition: "*Event-driven program, which runs on a replicated, shared ledger and which can take custody over assets on that ledger*."**

- Flexible and autonomous, and are used to automate the implementation or performance of natural language legal contracts.

What is the "Internet of Things"?

- A network of hardware that collects real-time data to be transmitted to the blockchain in order for smart contract codes to work.

- E.g. hardware sensors, physical devices, vehicles and other items embedded with electronics, software, sensors, actuators, and network connectivity.

How “smart contract”, “blockchain technology”, and IoT devices work together in the shipping transaction context

- At every point in time, real-time information will be transmitted via IoT devices to all parties encoded in the Smart Contract Code

- Promotes transparency and cost efficiency

- Reduces manpower

Certain Legal Issues which may be resolved by Blockchain Technology / Smart Contracts

Legal issues possibly resolved by the use of Blockchain technology / smart contracts

- Delay in discharging cargo (perishable goods) due to lack of documentation
- Associated issues with releasing cargo pursuant to Letter of Indemnity without the necessary documentation
- Human error in reviewing payment documents (e.g. L/C documentation)
- Forgery of physical documents
- Document fraud (e.g. duplicate documents, uncertainty as to how many copies of shipping documents are in circulation)

New Legal Issues (and possible solutions) that arise from Blockchain Technology / Smart Contracts

Jurisdiction Issues

- Blockchains are distributed over nodes all around the world
- Users on the blockchain can be anonymized by the use of public-key encrypted identities
- Difficulties in identifying governing law in the event of dispute (unless provided for by a main natural language legal contract)

Jurisdiction Issues

Solution:

Essential for parties' agreement to be first recorded in a natural language legal contract which provides for an exclusive governing law and jurisdiction clause.

Smart contract codes merely automate performance of the natural language legal contract.

Regulatory Frameworks

- Local laws may not be fully developed / equipped to deal with "smart contract" transactions, that involve computer code (smart contracts) to execute parties' agreement encapsulated in natural language legal contracts.

- Cyber security, shipping regulations, embargo laws and regulations, export sanctions, anti-corruption and foreign corrupt practices laws, anti-money laundering requirements, anti-boycott laws and regulations and trade remedy laws and regulations.

Compliance with regulations

Solution:

Create a cheat sheet listing out the interplay of the various laws in the jurisdiction of the parties involved in the contract, to:

- Ensure compliance of the proposed "smart contract" system
- Ensure parties know which governing law to opt for in their natural language legal contract.
- Lawyers can work around the conflicts of laws

Enforceability of Smart Contracts

- The key feature of a "smart contract transaction" is that performance of the natural language legal contract is automated by a smart contract code.

- Changing complexion of legal disputes – Legal remedies to reverse transactions automated in accordance with the natural language legal contract / to disgorge wrongfully obtained funds will be more prevalent.

Apportioning the Liability in Smart Contracts

- A smart contract code is merely a set of instructions that automatically executes the parties' agreement when certain conditions are satisfied.

- However, if there are unforeseen circumstances (e.g. code glitch, hackings) it is hard to pinpoint liability.
  - For example, in the US, it has been held that artificial intelligence is not liable for its failings

- Solution: Have a main natural language legal contract to apportion the liability and risk between parties.

Data Protection Issues

- Key advantage of smart contracting: Privacy, once data is stored it cannot be altered.

- Disadvantages of immutable data: Incompatible with certain sectors and regulations (e.g. banking secrecy laws), inability to change the details of a deal

Data Protection Issues

- Issues of confidentiality and privacy
- Data privacy regimes in various jurisdictions (e.g. Personal Data Protection Act (PDPA) in Singapore

Data Protection Issues

Solution:

- Privacy Settings – limit users who can join the blockchain network

- Having said that, blockchain still "virtually unhackable" as there is no single point of failure (unlike in highly centralised systems)

Potential Criminal Activity

- Fraud
- Cybercrime

Possibility of using smart contracts alone?

- Can smart contract codes survive on its own without a main natural language legal contract?

- Smart contracts may automate the execution and performance of legal contracts, but should not be taken as a replacement for the traditional legal contract

INCISIVE LAW LLC

IN ALLIANCE WITH

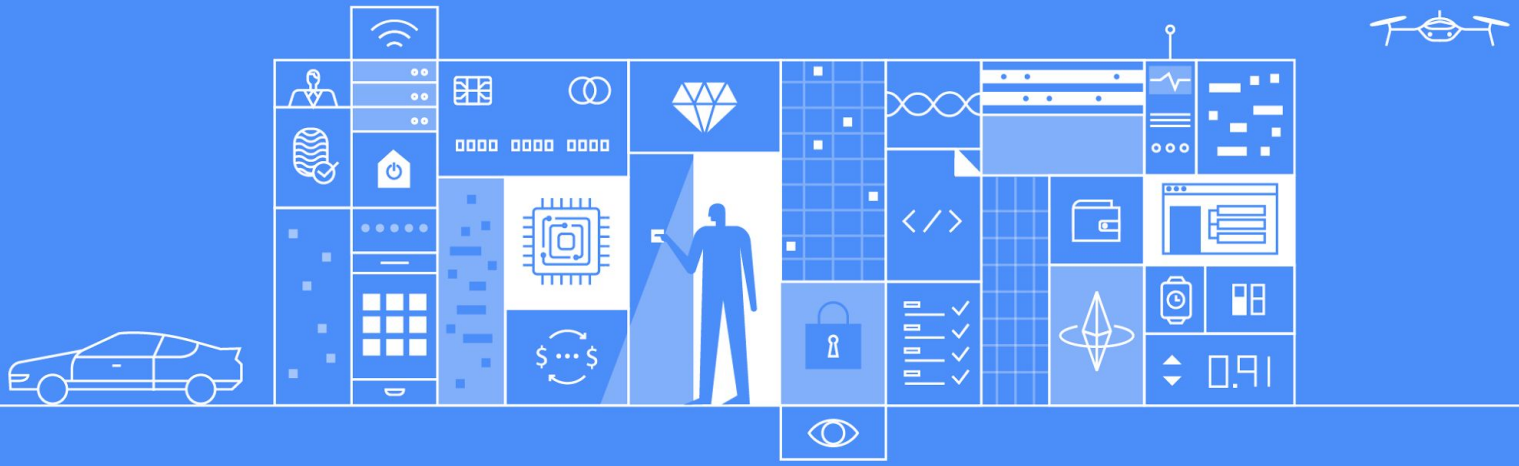
INCE & CO | INTERNATIONAL LAW FIRM

Moses.lin@incisivelaw.com

BLOCKPASS

Passport to a Connected World

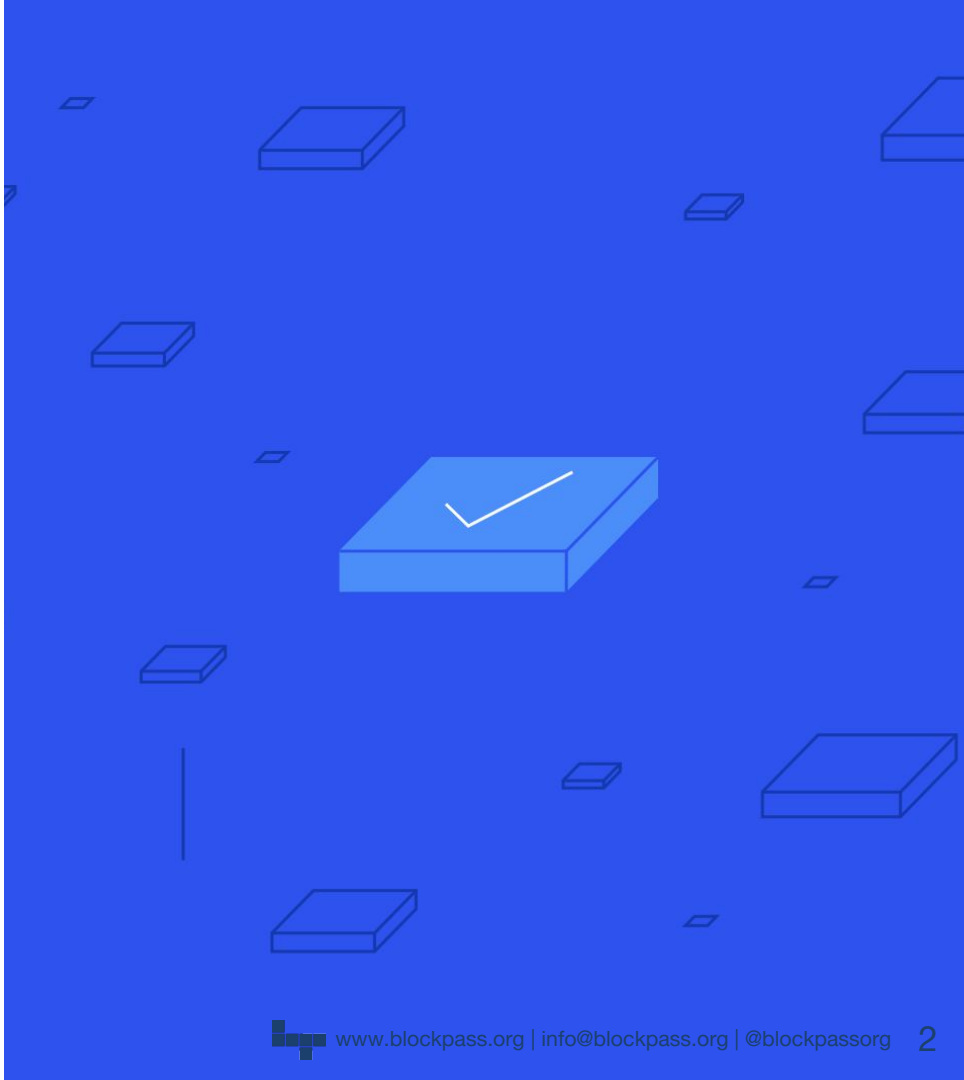
info@blockpass.org | www.blockpass.org | @blockpassorg

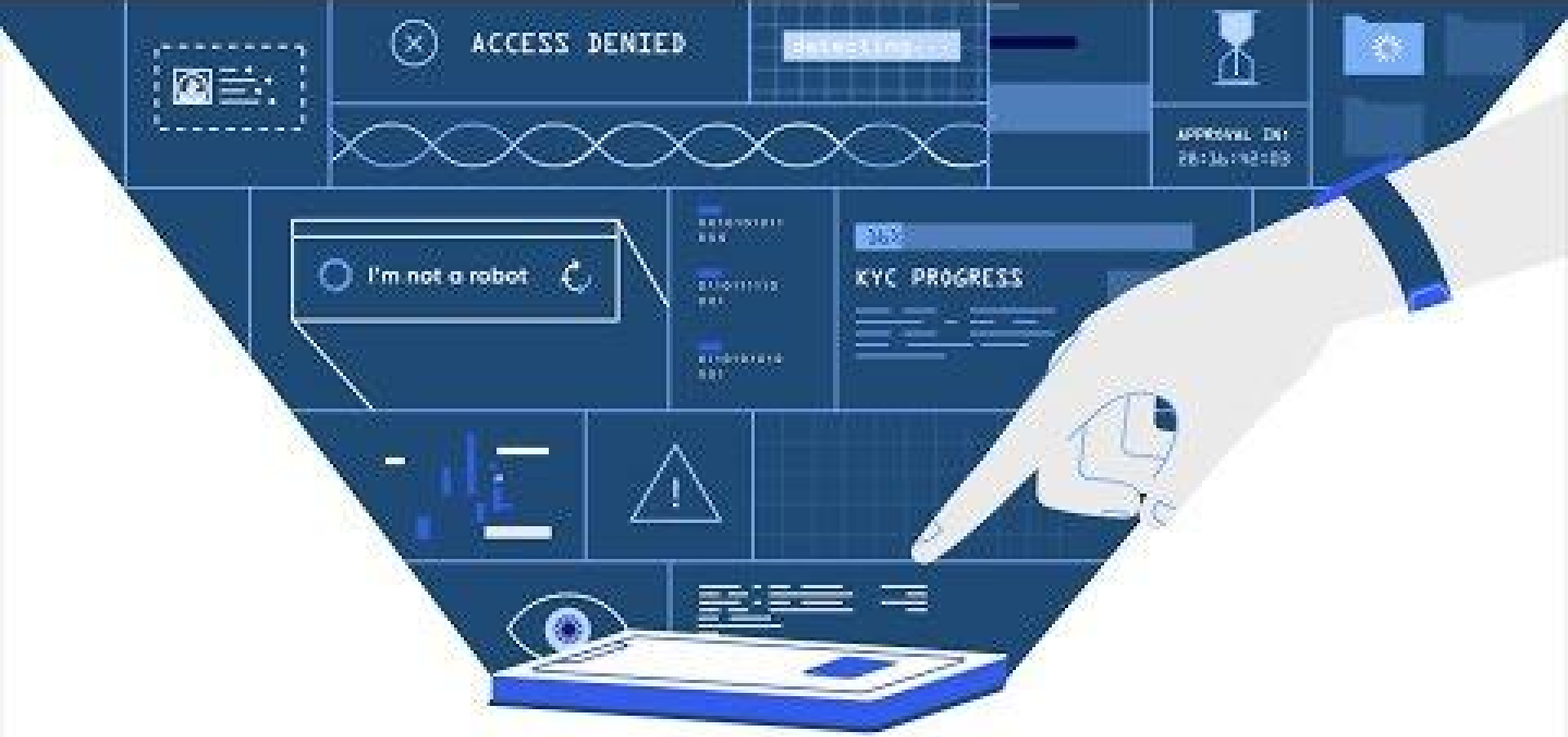


What is Blockpass?

Blockpass is a blockchain identity protocol for the connected world - the Internet of Everything.

The goal of Blockpass is global realization of identity for the Internet of Everything. Through the use of blockchain technology and smart contracts, Blockpass is a platform offering shared regulatory and compliance services for **humans, companies, objects and devices**. As this identity system supports verification of humans (KYC), objects (KYO) and connected devices (KYD), it will enable the development of new applications that rely on a trusted connection between human, corporate, and device identities.





How did we get here?

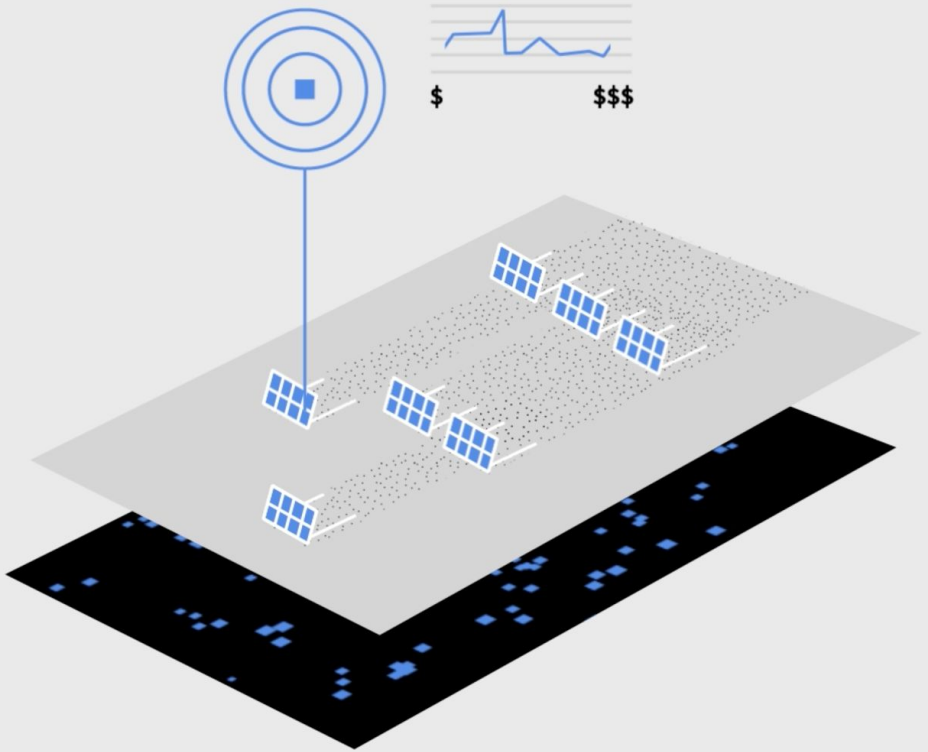
Blockpass was Born from a Solar Project.

Our initial JV was developing a solar DAU - a Decentralized Autonomous Utility.

BUT…

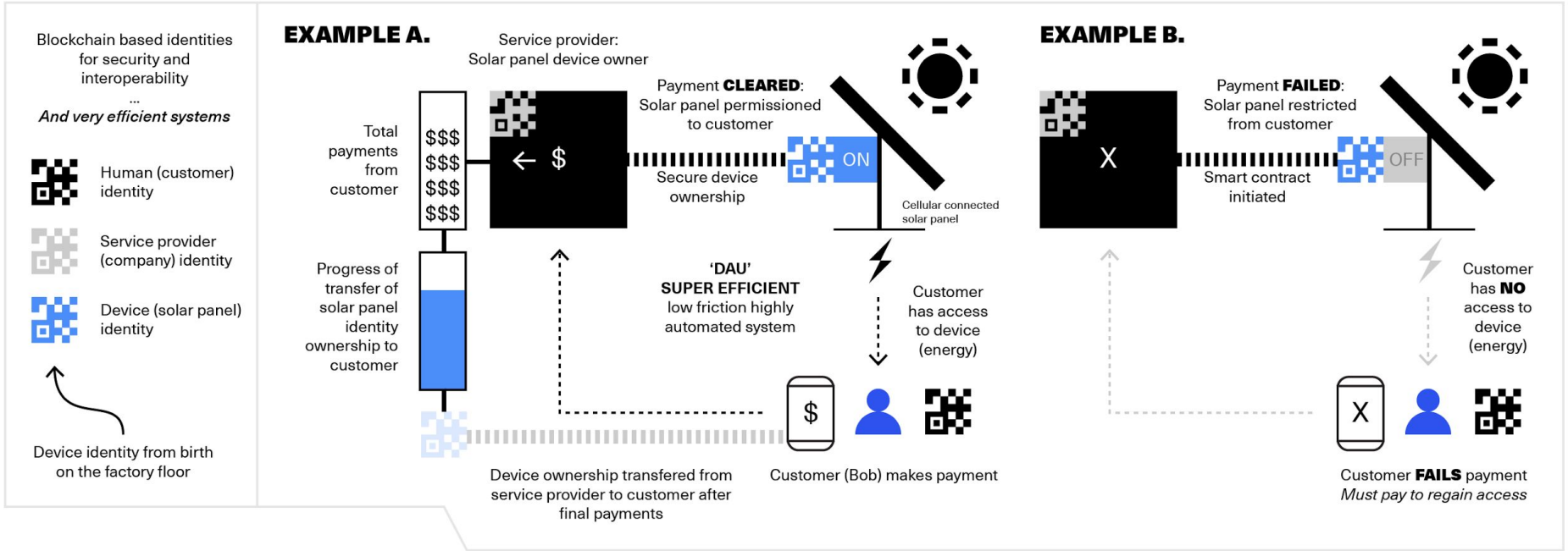
We found that no platform currently exists for connecting **human**, **company**, and **device** identities.

Human Identity (customer) | Company Identity (utility) | Device Identity (solar module)



Solar DAU

Frictionless Utility - Decentralized Autonomous Utility (DAU)



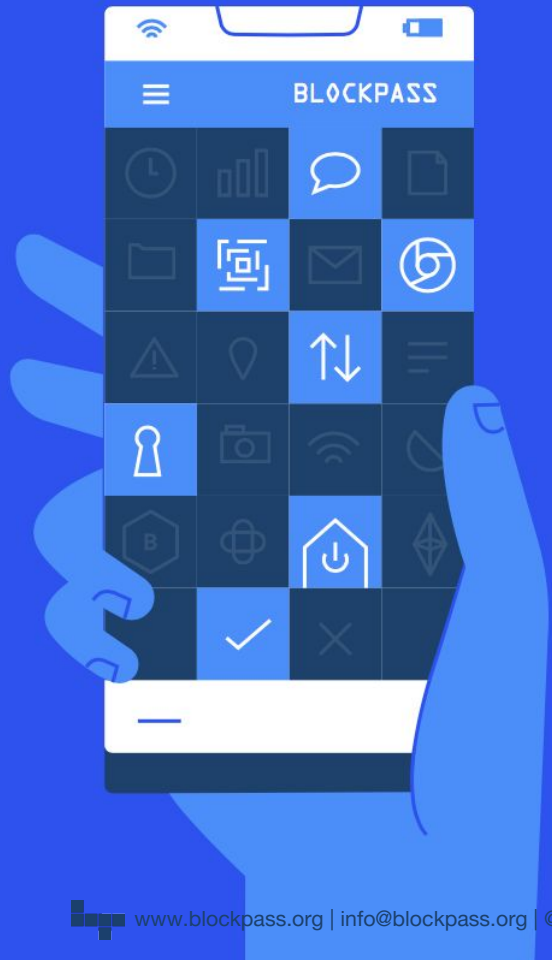
What does Blockpass do?

A safe passport for a connected world.

A secure conduit between individuals, services, objects, and devices.

Blockchain based identity for everything.

A verification oracle for “statements” made by persons or things.



Problems - Compliance A

What large-scale problems are we solving?

- Blockchain will **change the world** but the process is **early and uncertain.**
- Needs **Identity Protocol** to allow for **compliant interactions on public/ permissionless blockchain protocols.**
- **Compliance creates costs** for businesses - blockchain or mainstream
- **identity verification** take several days to complete, therefore causing **significant barriers to entry** and **slowing down user onboarding.**

Problems - Compliance B

What problems regarding public blockchains we are solving?

- **Bitcoin** and o**ther blockchain-based digital currencies** can allow for **easy money laundering (ML)** and **terrorist funding (TF)** because there is **no identity protocol embedded in public blockchains.**

> "Virtual currency transactions, given their anonymous nature, are particularly vulnerable to ML/TF risks." *-MAS Singapore, 13 March 2014*

- **The cost of compliance for blockchain businesses is extremely high.** They can represent **⅛ of their total operating costs.**

> "At Coinbase, **about 20% of our staff works on compliance** in some form." *-Coinbase*

Problems - ICOs & the new Blockchain Ecosystem

What problems regarding ICOs are we solving?

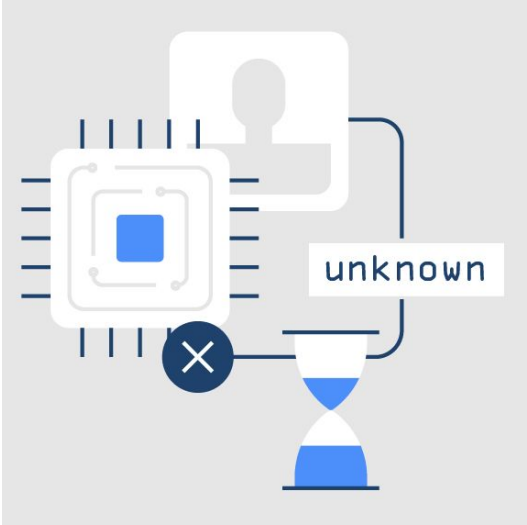
Initial Coin Offerings (ICOs) raise significant funds, but do so **without any Know Your Customer (KYC)** verification efforts. ICOs prohibit US investors but are anonymous so have no way of verifying if US persons are involved.

Examples:

- Tezos and EOS, have raised over USD200 million completely anonymously.
- SEC stated that The DAO fundraising violated securities laws last year.
- In Singapore: “ICOs are vulnerable to money laundering and terrorist financing (ML/TF) risks due to the anonymous nature of the transactions, and the ease with which large sums of monies may be raised in a short period of time.”

Problems - The IoE

What problems regarding the IoE are we solving?



The Internet of Everything (IoE) suffers from potential systemic failures as it scales with disastrous consequences.

Without a standard for trusted IoE interaction, fundamental security risks will become exponentially worse as 50-200 billion cheap connected devices come online by 2020.

The establishment of Blockpass as a secure conduit between humans, companies and devices, will not only allow for greater security and interoperability, but will enable the development of many highly efficient next generation applications.

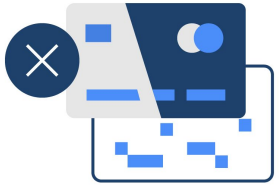
> "With machine-to-machine communication, how does one validate "identities" and secure data at such massive scale. **In the first wave, identities related to people, in the second wave it now includes sensors and devices.**"
> *-Manufacturing Tomorrow, 2016*

Compliance Realities...

No one likes compliance or KYC.

It takes time

It interferes with on-boarding customers



It interferes with switching between merchants

It increases costs

No solutions to these problems presently exist, therefore...

Blockpass will offer a way to:

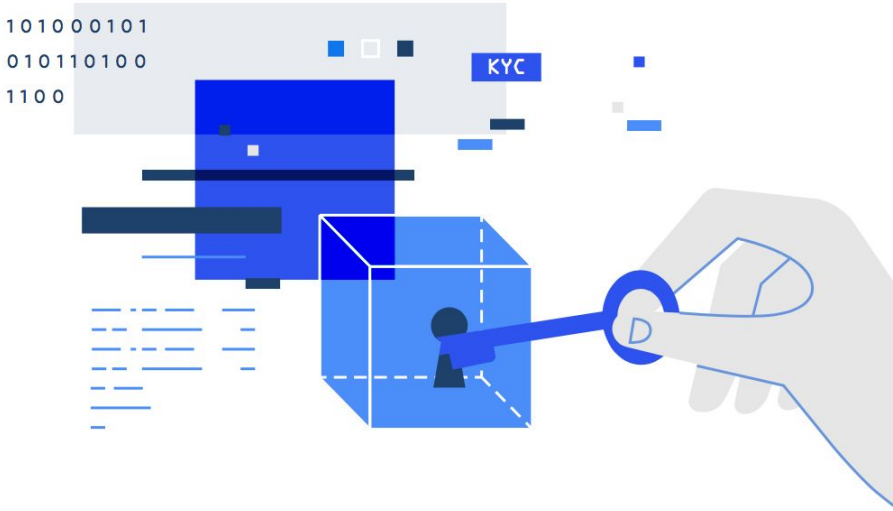
- Help blockchain businesses reduce their compliance costs.
- Protect the identity and personal data of the user of the system.
- Systematically address blockchain's need for regtech and identify verification.
- Provide privacy in the form of an identity verification system that is compliant with next generation data protection regulations.

Blockpass Immediate Product Features

Developers will be able to **design standard tokens** that **plug into Blockpass Protocol** meaning that the transaction can be performed and achieve full compliance in minutes.

Using the protocol, **Ethereum blockchain startups** will be able to **launch a fully compliant token into the market** that permits the onboarding of existing KYC members from Blockpass.

Digital Currency exchanges and other digital currency merchants will be able to **sign up to the Blockpass** with a ‘single sign-on’ for Blockpass users. This means that exchanges and other blockchain merchants will reduce their on-boarding cost substantially.



Immediate Outcomes

Blockpass is going to:

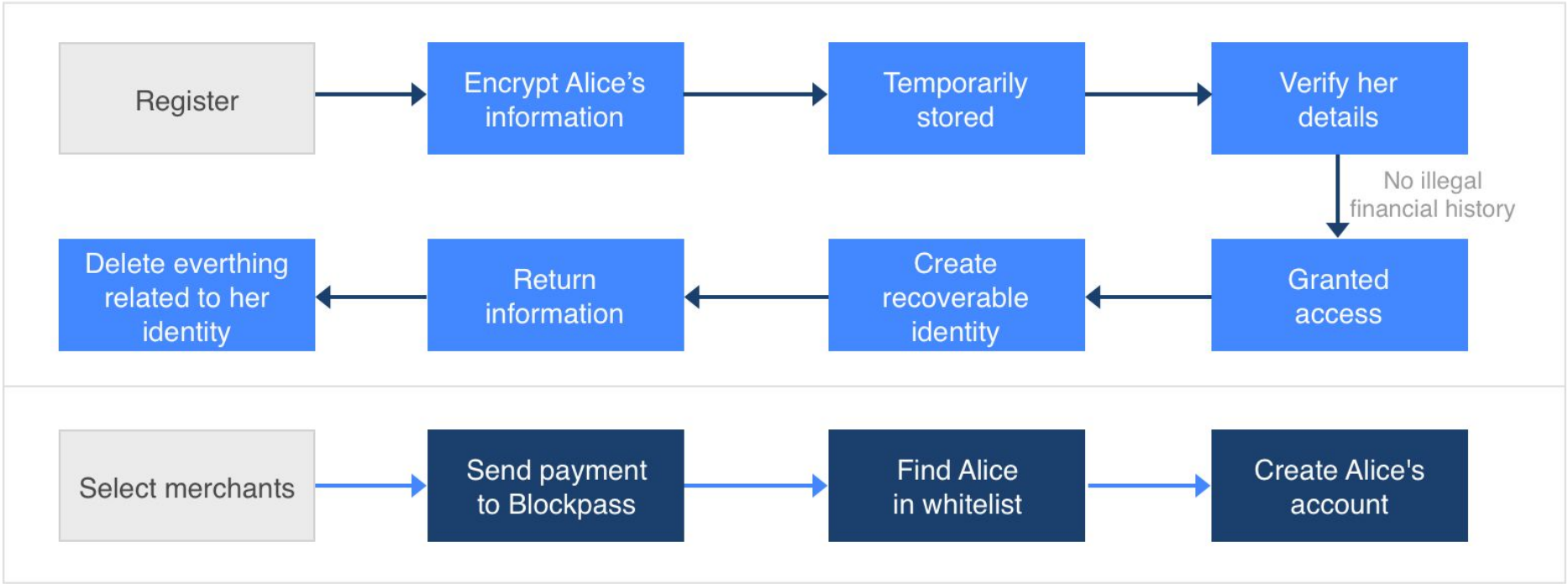
Reduce the cost of compliance significantly for blockchain merchants	**Make compliance attractive for users** through incentive ‘mining’ schemes
Make public blockchain use **safe and compliant**	**Protect the personal** data of users
Create a platform for the **development of compliant, decentralised applications**	**Build a seamless protocol** for interoperability between on-chain identities
Create a seamless and secure environment for human to device interactions	

We don't keep any user data!

Registration Workflow

Alice registers Blockpass to get her information verified. She can then register swiftly any Blockpass-compatible merchants.

Alice | Blockpass | Merchants

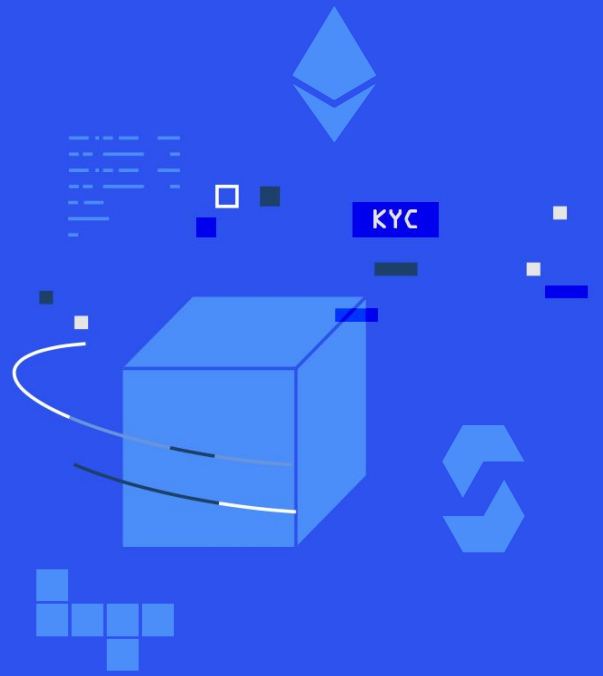


Blockchain

Built on Ethereum Blockchain

- Ethereum blockchain stores most of the business logic of Blockpass
- Identities are stored in a smart contract with built-in recovery procedures.
- Blockpass will maintain several whitelists of addresses already verified in smart contracts
- Payments to access verified information is made with crypto tokens

https://github.com/blockpass-org



Public Release

OCTOBER 2017

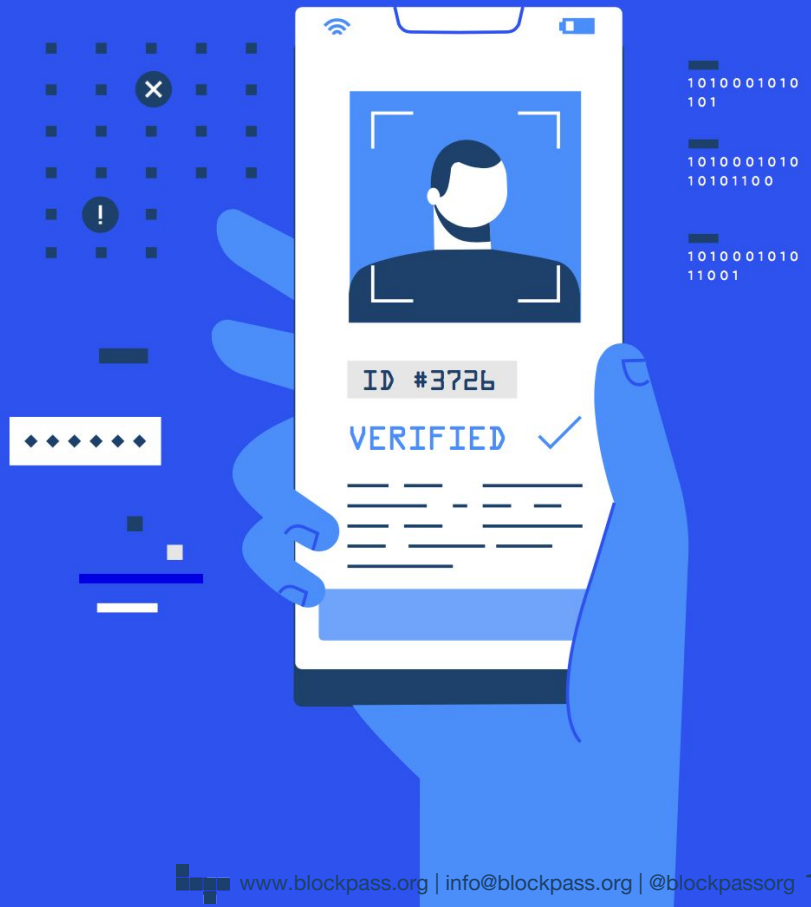
MOBILE & WEB APPLICATION

PROTOTYPE RELEASE

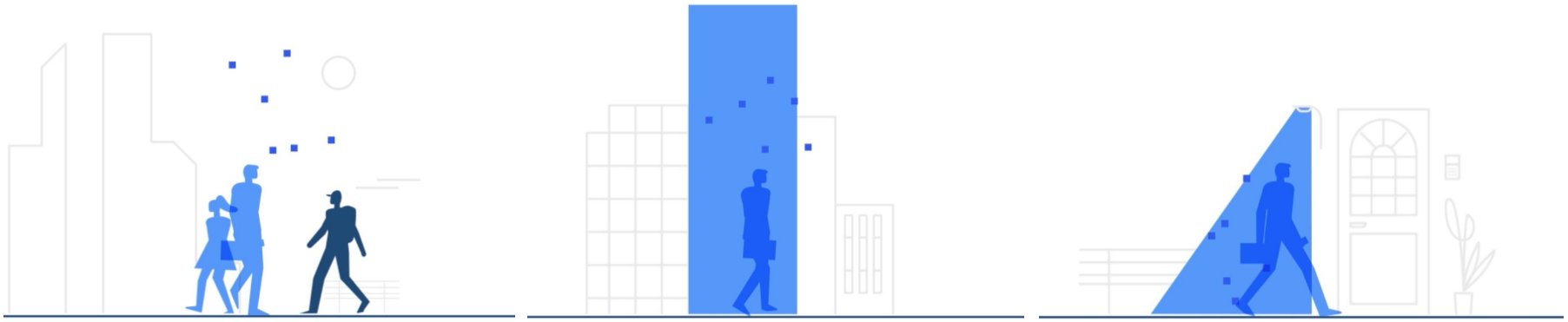
React JS

React Native

HTML



Future Development Path



Once we are able to promote on-chain compliance for humans, then the same can be extended to object or machine to human to machine interaction, thus achieving the greater purpose of the **Blockpass Protocol: seamless, secure and compliant interaction between humans, corporations, and machines.**

Thank You!

thomas.leiritz@blockpass.org
www.blockpass.org

Blockchain for Shipping & Logistics

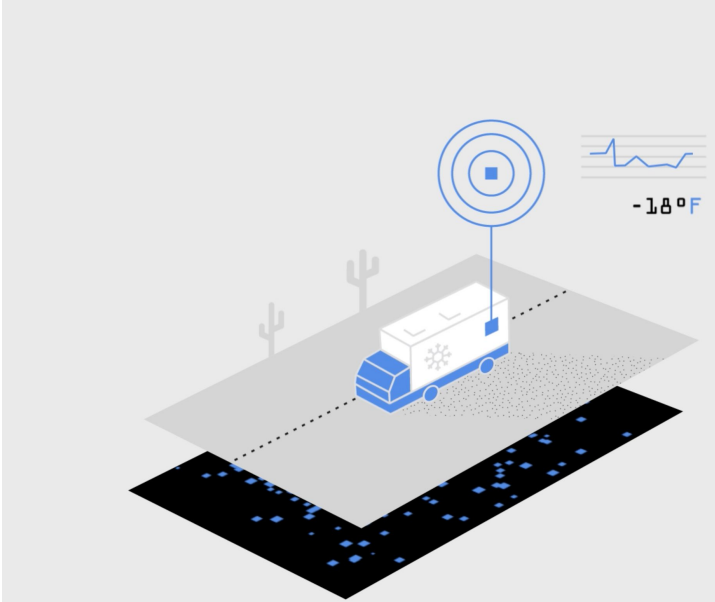
Contact: board@chainofthings.com
Website: www.chainofthings.com

Smart Buckets | Blockchain Simplified Logistics

Simplified logistics, supply chain tracking, transparent provenance, and ownership of objects with unique blockchain based identity protocol.

Conor Colwell
Co-founder, Chain of Things

conor.colwell@chainofthings.com



Chain of Things & Blockpass

Chain of Things (CoT): IoT on the Blockchain.

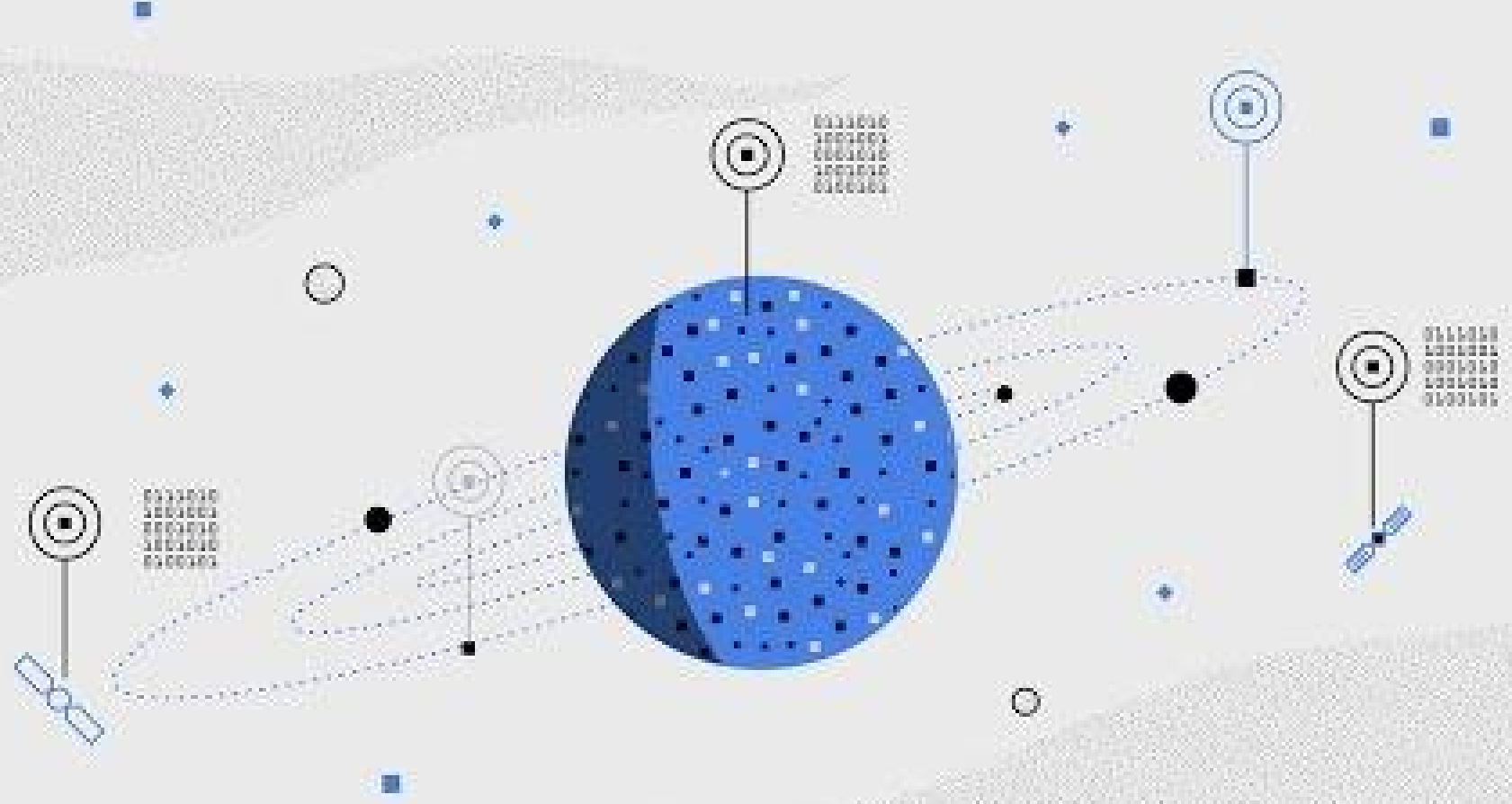
Our goal is to encourage the development of blockchain based IoT standards of **Identity**, **Security**, and **Interoperability**.

We will leverage this technological nexus to deploy brand new **environmental, humanitarian, security, fraud, & efficiency** related applications.

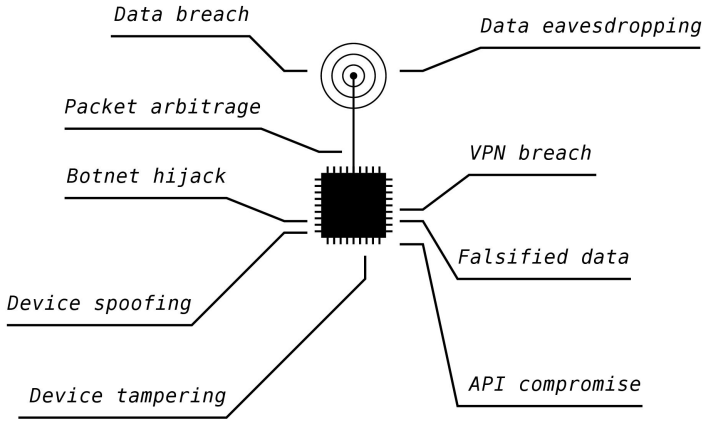
Blockpass: Passport for a Connected World.

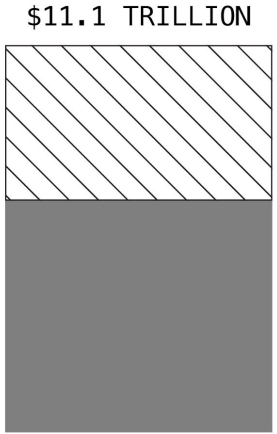
Blockpass is a blockchain identity protocol for the connected world - the Internet of Everything.

Through the use of blockchain technology and smart contracts, Blockpass is a future thinking Regtech platform offering shared regulatory and compliance **services for humans, companies, objects and devices**.



Problems with IoT: **SECURITY** & **INTEROPERABILITY**





Possible economic impact of IoT by 2025

40%

*Of IoT's economic potential **NOT POSSIBLE** without full interoperability.*

McKinsey Global Institute, 2016

CoT Solution - **DEVICE IDENTITY** (from birth)

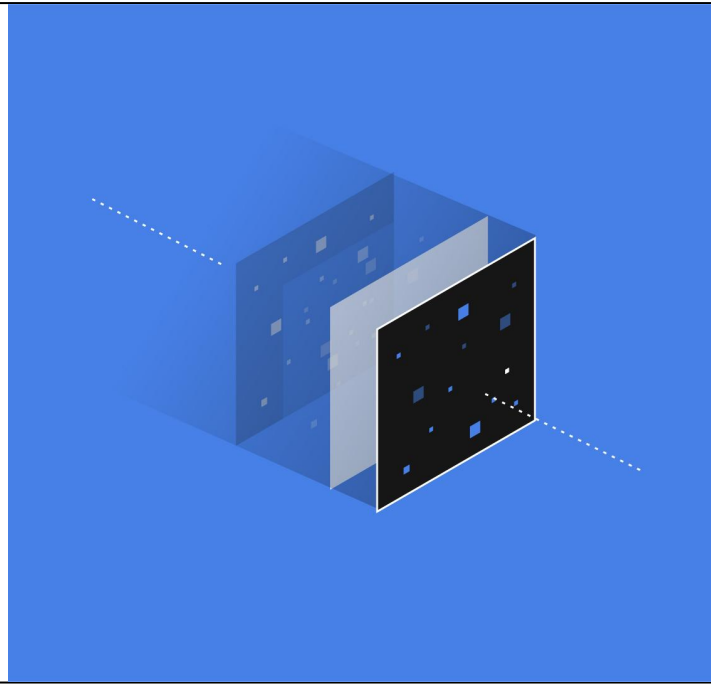
Blockchain based universal system for device identity from its birth on the factory floor.

1. Factory Floor Birth Record Process
2. Device Birth Certificate with Indexable Meta-Hash Data
3. Immutable Registration on Public Blockchain
4. Immutable Registration on Secure Element
5. ***Initial manufacturer ownership of device***

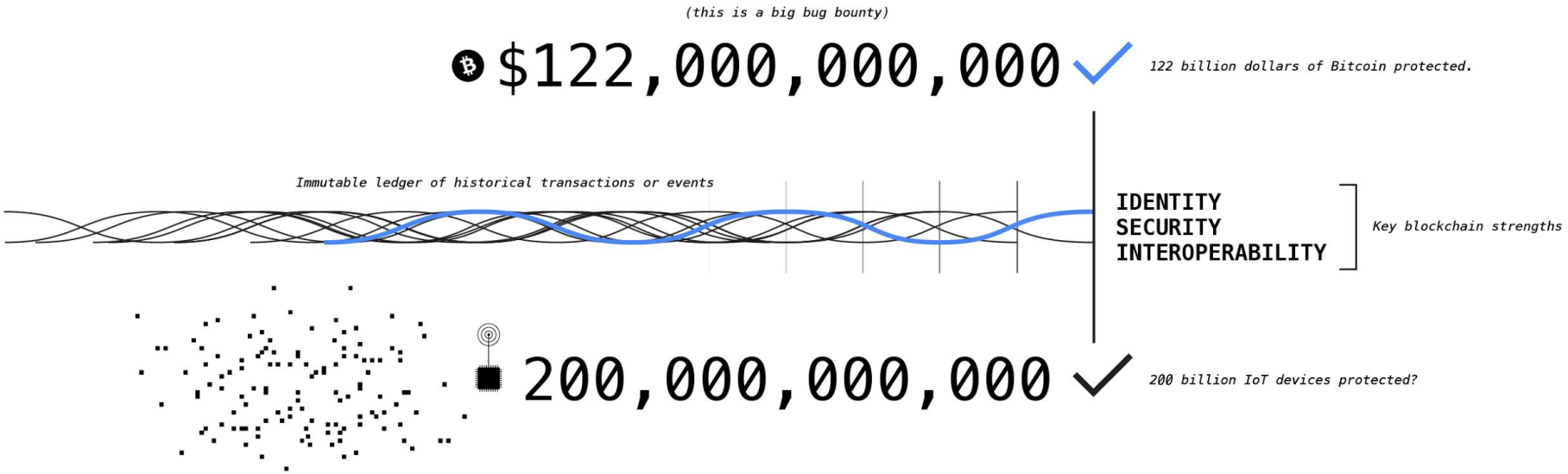
What does Device Identity do?

Identity enables true device **ownership**:

- Human or company ownership of devices
- Permissioned device access data/actuation
- Devices can hold legal weight
- Device reputation
- Emergency consensus brick switch
- Paid access to sensor information
- Consensus based OEM firmware update
- Various smart contract applications
- Artificial Intelligence searchable MetaHash data

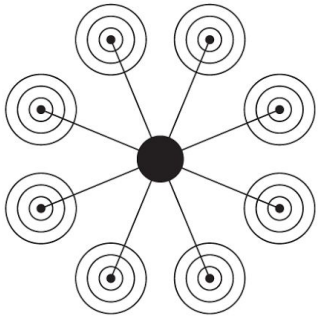


But Why Blockchain?

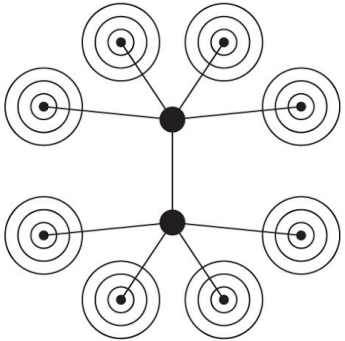


Evolution of Network Configurations

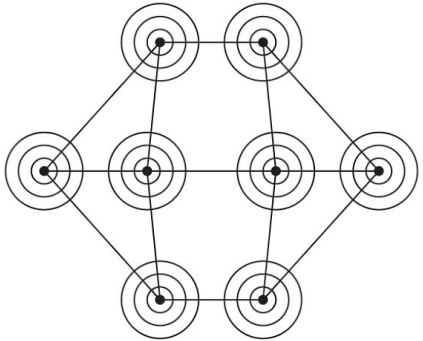
Centralized Network



Cloud Network



Distributed Network



Blockchain Network

Server Node/Point of Failure

Global Network of Bitcoin Nodes

GLOBAL BITCOIN NODES DISTRIBUTION

Reachable nodes as of Thu Nov 09 2017 16:38:10 GMT+0700 (+07).

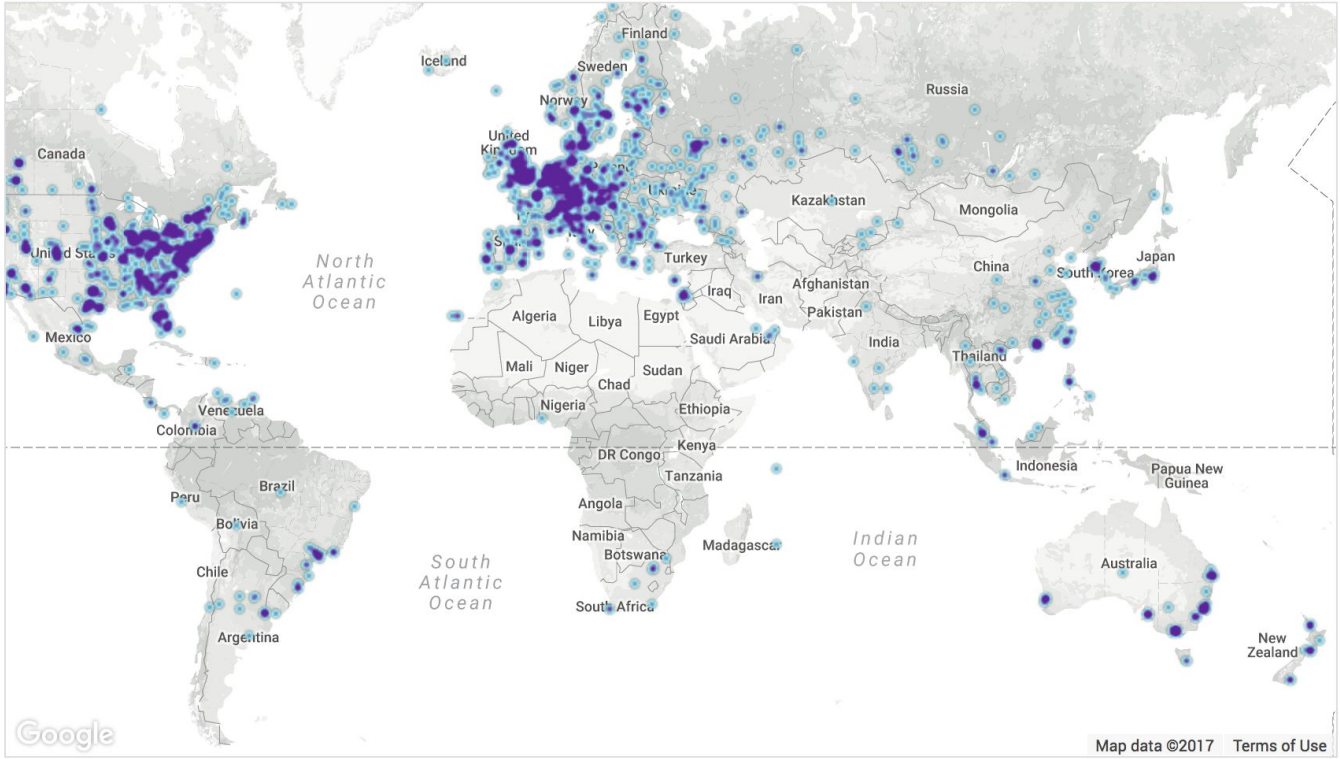
11324 NODES

24-hour charts »

Top 10 countries with their respective number of reachable nodes are as follow.

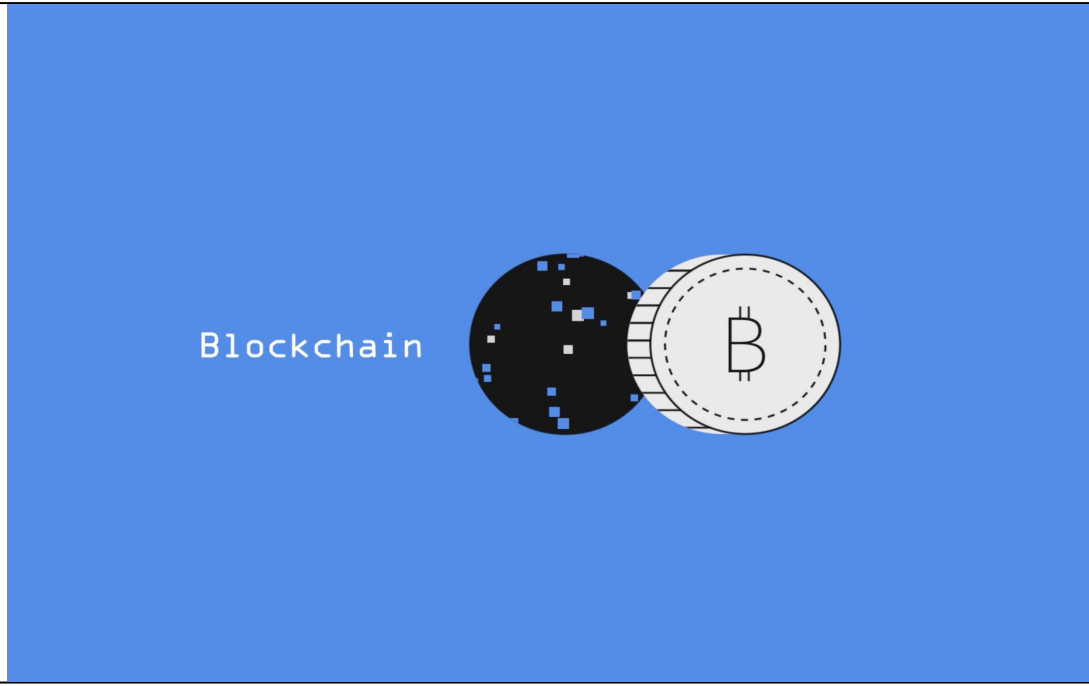
RANK	COUNTRY	NODES
1	United States	3456 (30.52%)
2	Germany	1810 (15.98%)
3	China	656 (5.79%)
4	France	562 (4.96%)
5	Netherlands	518 (4.57%)
6	Canada	456 (4.03%)
7	United Kingdom	415 (3.66%)
8	Ireland	373 (3.29%)
9	n/a	353 (3.12%)
10	Russian Federation	350 (3.09%)

More (96) »

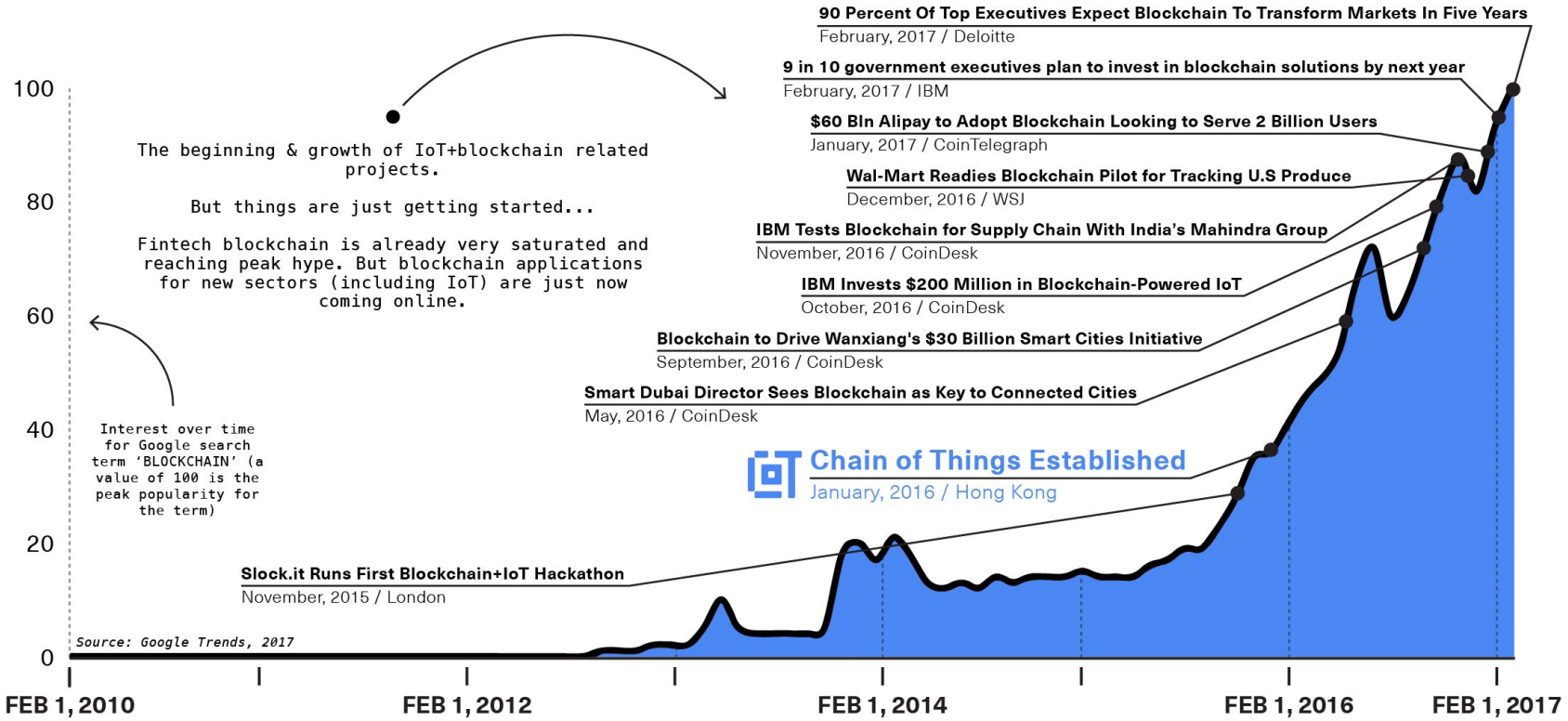


What are Blockchain’s Strengths & Characteristics?

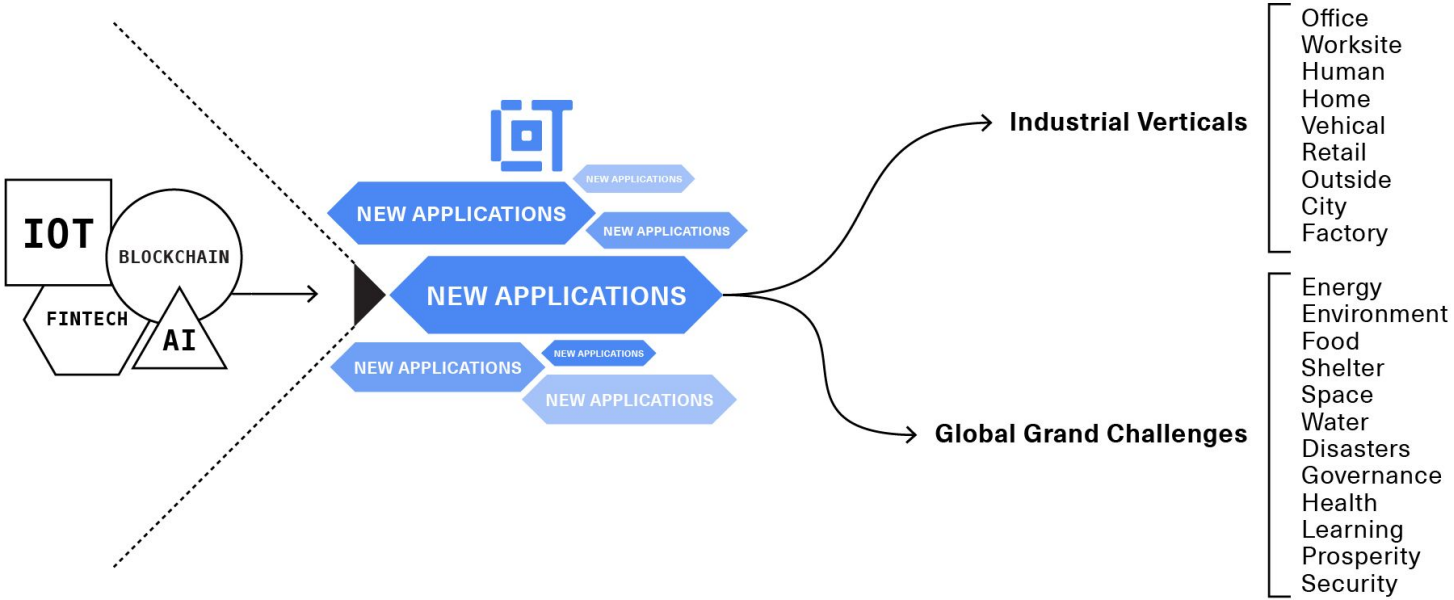
- **Borderless**
- **Neutral**
- **Censorship resistant**
- **Open**
- **Re-establishes trust in intermediaries**
- Immutability
- Security
- Anonymity
- Transparency
- Disintermediation
- Validation / Authentication



Growth Increasing of Alternative Blockchain Applications



Blockchain Industrial Application Verticals

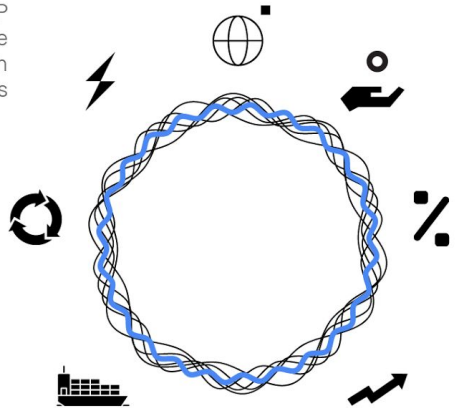


Positive Industrial Blockchain Applications

ENVIRONMENTAL TREATIES
Track real impact and compliance of environmental treaties to decrease fraud and manipulation.

ENERGY
Increase efficiency with P2P electrical grids and improve access to power in areas with poverty or natural disasters

NON-PROFITS
Track where donations are going to decrease inefficiency and bureaucracy in charities



RECYCLING
Encourage recycling by providing tokenized reward track and evaluate efficacy

CARBON TAX
Calculate tax for products based on carbon footprint and create a reputation system for companies based on emissions

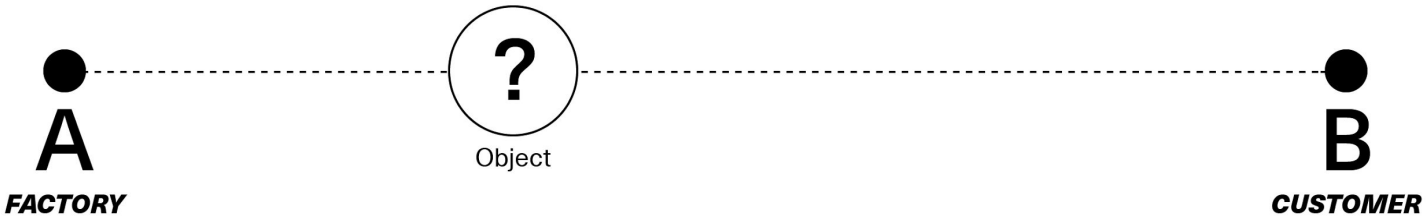
Smart Buckets → **SUPPLY CHAINS**
Transparently track products from origin to store shelf to reduce carbon footprint and unsustainable practices

CHANGING INCENTIVES
Align incentives with sustainable practices and create incentives for people to act in sustainable ways

Source Futurethinkers.org & BCDC.online

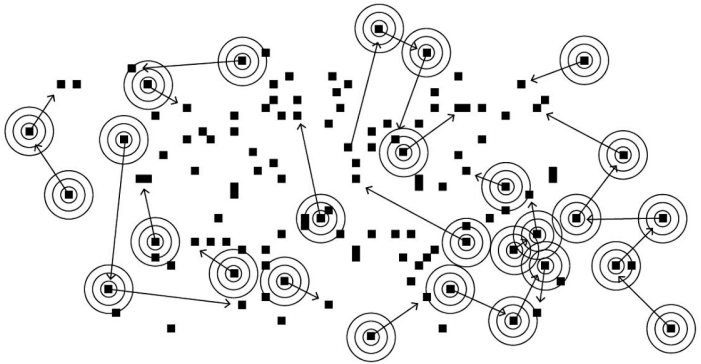
Supply Chains: The Problems

- Comprehensive supply chain tracking, transparency, ownership
- Multiple parties that do not trust each other
- Disruption of paper, creation of smart, digitized custody of title (Smart Bills of Lading)
- Clean reporting of object provenance, carbon footprint, environmental efficiency
- Secure, identified, interoperable devices
- Initial platform for Vendor Rating; other reputation based identity applications

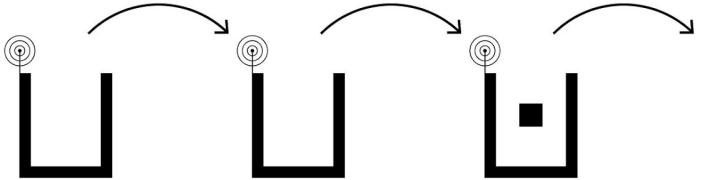


Possible Blockchain Solutions?

1. Track everything with BILLIONS of sensors
2. Simplified tracking based on '**Smart Bucket**' zones



VS.

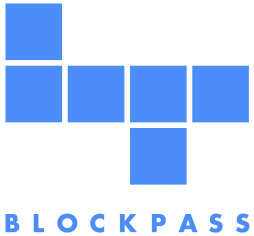


Smart Buckets Powered by **Blockpass Identity Network**

Chain of Things is helping to develop Blockpass: **a blockchain identity protocol for the internet of everything.**

Blockpass acts as the secure conduit between **human, company, object, and device identities**.

This will enable the development of highly efficient new applications that rely on a trusted connection between parties that may not know or trust each other.



Shipping Stack Identity Profiles

Blockpass is a blockchain identity protocol for the internet of everything.

Blockpass acts as the secure conduit between **human, company, object, and device identities**.

This will enable the development of highly efficient new applications that rely on a trusted connection between human, company and device identities.

Blockchain based identities for all involved parties

Dumb Object (Object Identity)

Smart Bucket (Device Identity)

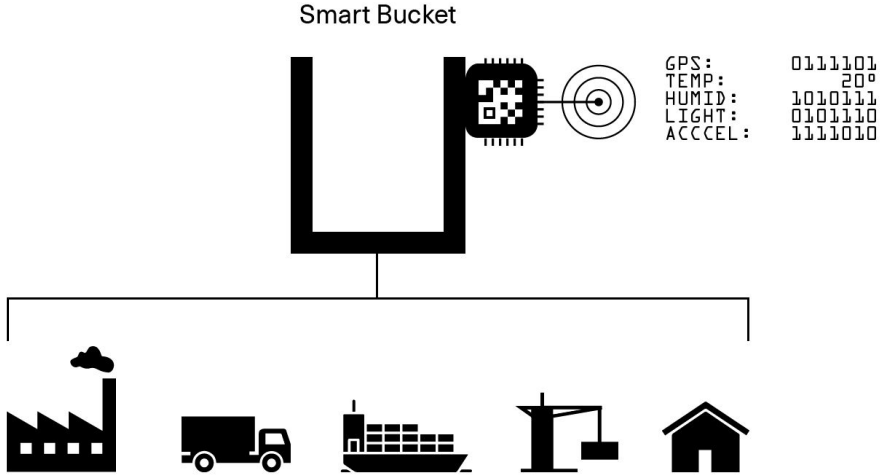
Company (Company Identity)

Human Identity (Human)

What is a Smart Bucket?

A Smart Bucket is a physical **‘zone’** in which simple objects in transit are currently inside of - such as a factory, pallet, container, truck, ship, etc.

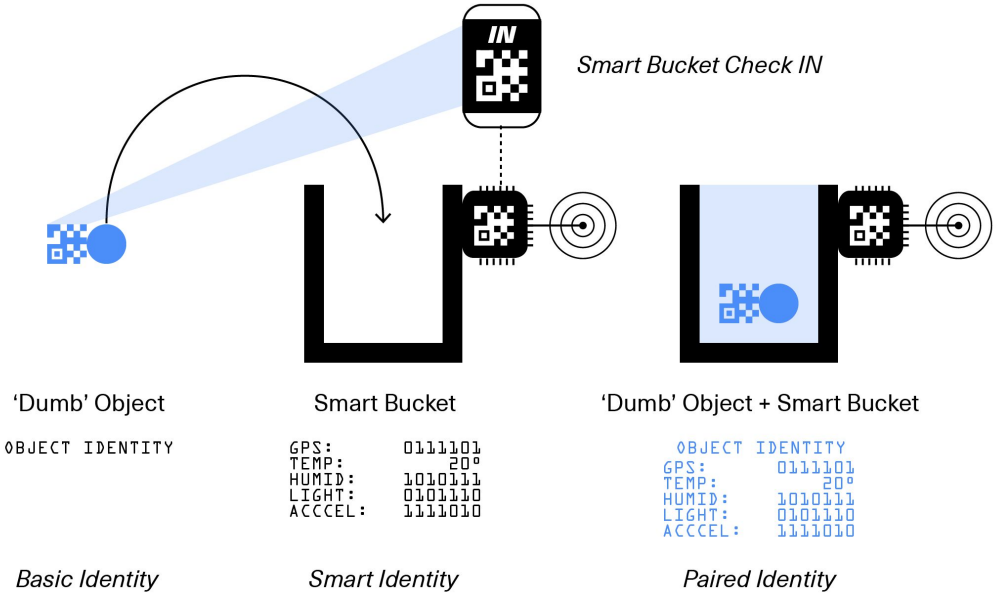
Sensors on each Smart Bucket report the ongoing environmental status of that respective stage in the supply chain; location, temperature, humidity, light, acceleration, etc.



How does it work?

A ‘dumb’ object’s blockchain based identity adopts the detailed environmental status of the current Smart Bucket that it is contained within.

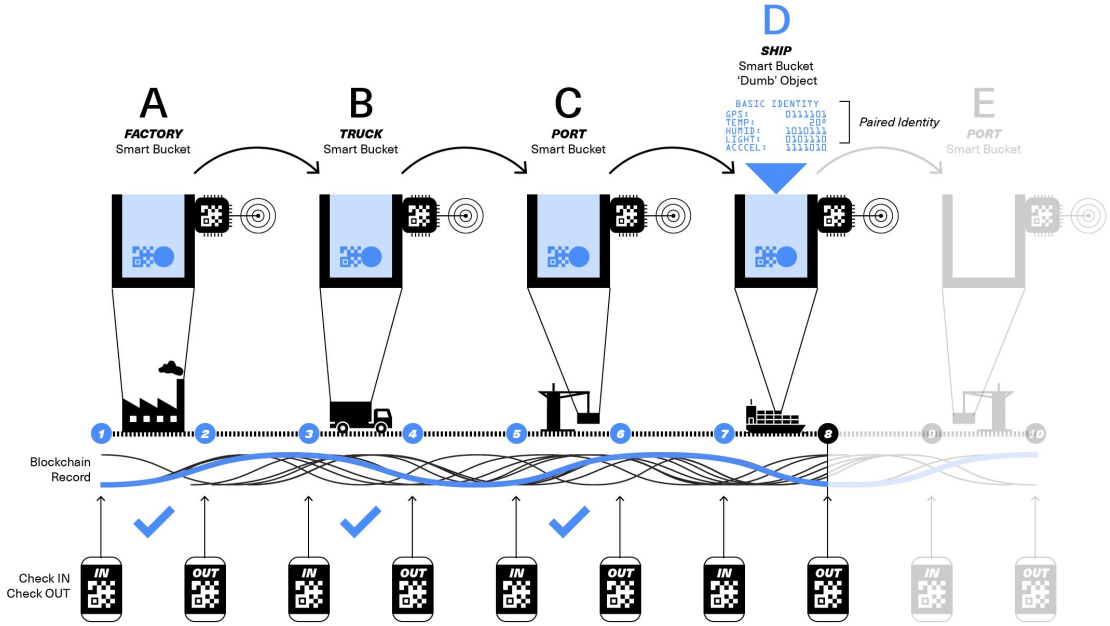
This forms a ‘paired’ identity in which the dumb object reflects the detailed live sensor data of the current Smart Bucket host.



Dumb Object Journey

‘Dumb’ objects are checked in and out of Smart Buckets as they travel along the various stages of their logistical journey.

The paired metadata is recorded to a blockchain and keeps a decentralized and immutable log of an object’s transit history and treatment.



Smart Bucket Process

1 Object

Object tagged & registered with unique QRC or NFC identifier.

2 Smart Bucket

The object is checked into a Smart Bucket and begins to reflect the live metadata of that Smart Bucket.

3 Transmission

Live Smart Bucket sensor data collected and transmitted.

4 Blockchain Record

The Smart Bucket data, and corresponding object ID data, is recorded to a private blockchain channel.

5 Smart Bucket Metadata Record

Smart Bucket Metadata shows the current environmental details (location, temperature, light, etc.) of the Smart Bucket.

6 Live Object Metadata

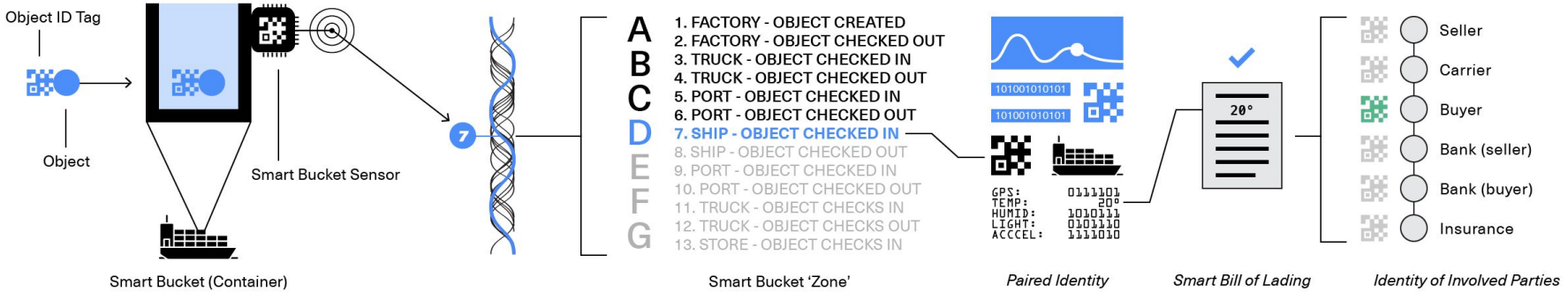
Object will adopt and display via dashboard metadata of the Smart Bucket it is currently checked in with.

7 Smart Bill of Lading

Smart Bill of Lading monitors object metadata for environmental changes that violate contract.

8 Notifications

Parties have permissioned access to view dashboard of the object's current state and will be notified if object conditions deviate from contract.



Smart Bucket (Container)

Smart Bucket 'Zone'

Paired Identity

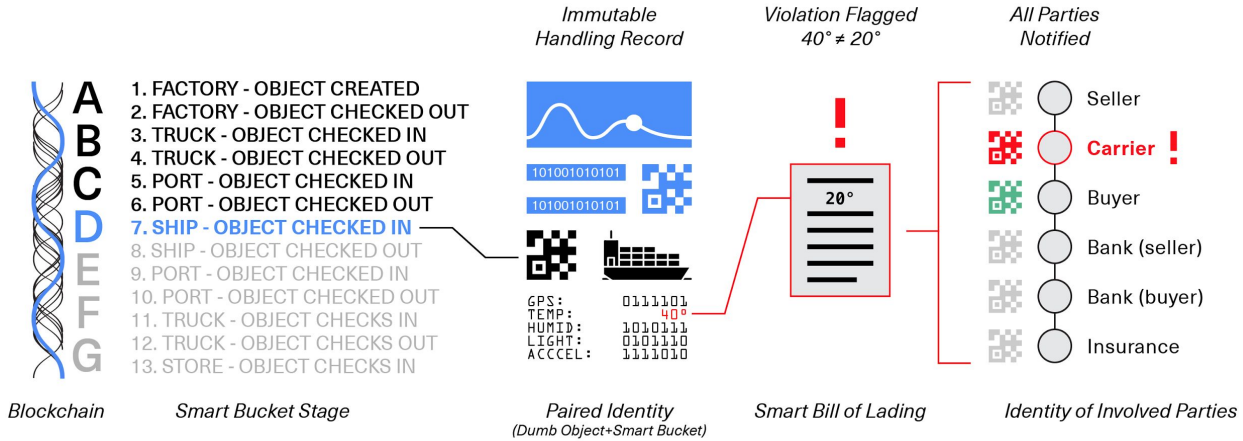
Smart Bill of Lading

Identity of Involved Parties

Smart Buckets & Smart Bills of Lading **VIOLATION!**

Live Smart Bucket data is permissioned to the identities of all parties involved in the object's existence and journey.

Any violations of the Smart Bill of Lading are flagged by the Smart Bucket's environmental sensors and relayed to all parties for review and correction.

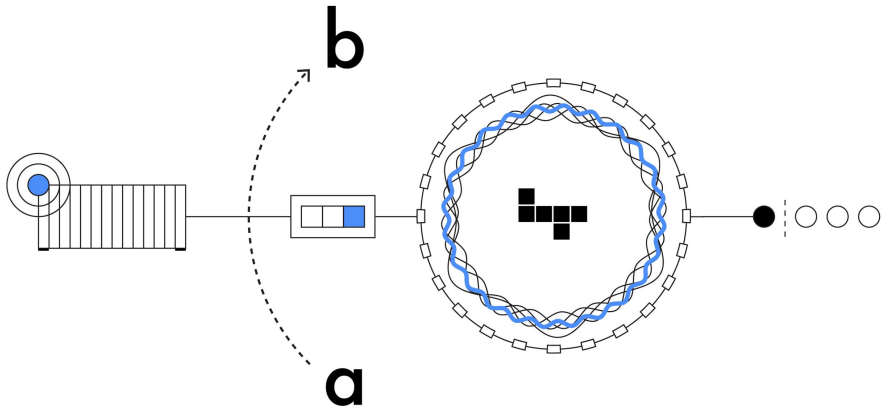


Key Benefits of the Smart Bucket Model

- Comprehensive supply chain tracking, transparency, ownership
- Clean and efficient reporting of product provenance
- Secure, identified, and interoperable objects and Smart Buckets
- Initial platform for Vendor Rating and other reputation based applications
- Greater efficiency and loss prevention due to increased frictionless transparency

Next Steps

- Potential Shipping Identity Network (IDN)
  - Objects
  - Devices
  - Companies
  - Humans
- Live Blockpass PoC with industry partners
- Development of scalable Blockpass solution



Thank You!

Please Contact Us:

conor.colwell@chainofthings.com

info@chainofthings.com
info@blockpass.org

Chainofthings.com
Blockpass.org