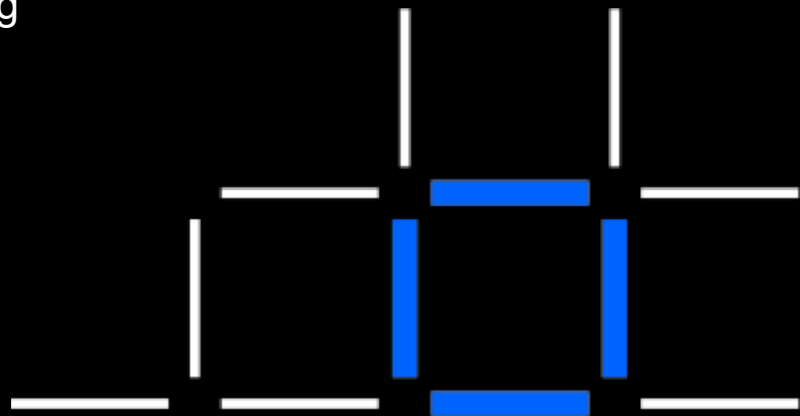








What's New

Recent developments in blockchain and what's coming

Jason Hunt
IBM Distinguished Engineer
@DJHunt



Blockchain Explained Series

-  Blockchain Explained
-  IBM Blockchain Platform Explained
-  Solutions Explained
-  Garage Explained
-  **What's New**
-  Next Steps

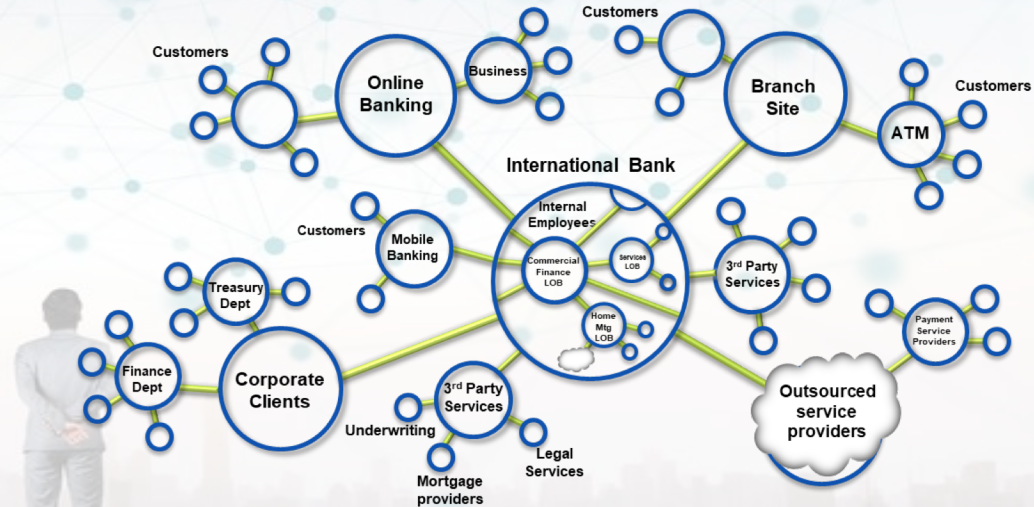
1 March 2019

IBM Blockchain



Blockchain builds on basic business concepts

- **Business Networks** connect businesses
- **Participants with Identity**
- **Assets** flow over business networks
- **Transactions** describe asset exchange
- **Contracts** underpin transactions
- **The ledger** is a log of transactions



Blockchain provides an immutable, shared, replicated ledger



10%

of global GDP will be stored on blockchains or blockchain related technology by 2025

Source: World Economic Forum



US\$ 176 billion

business value added by blockchain by 2025, then surging to exceed \$3.1 trillion by 2030

Source: Gartner



66%

of banks expect to have commercial blockchain applications by 2020

Source: IBM



US\$ 23 billion

estimated size of the blockchain technology market by 2021

Source: MarketsandMarkets

Blockchain in 2019



Technologies

- Bitcoin
- Ethereum
- Hyperledger
- Corda
- Ripple
- BigChainDB
- Quorum
- Stellar
- +++

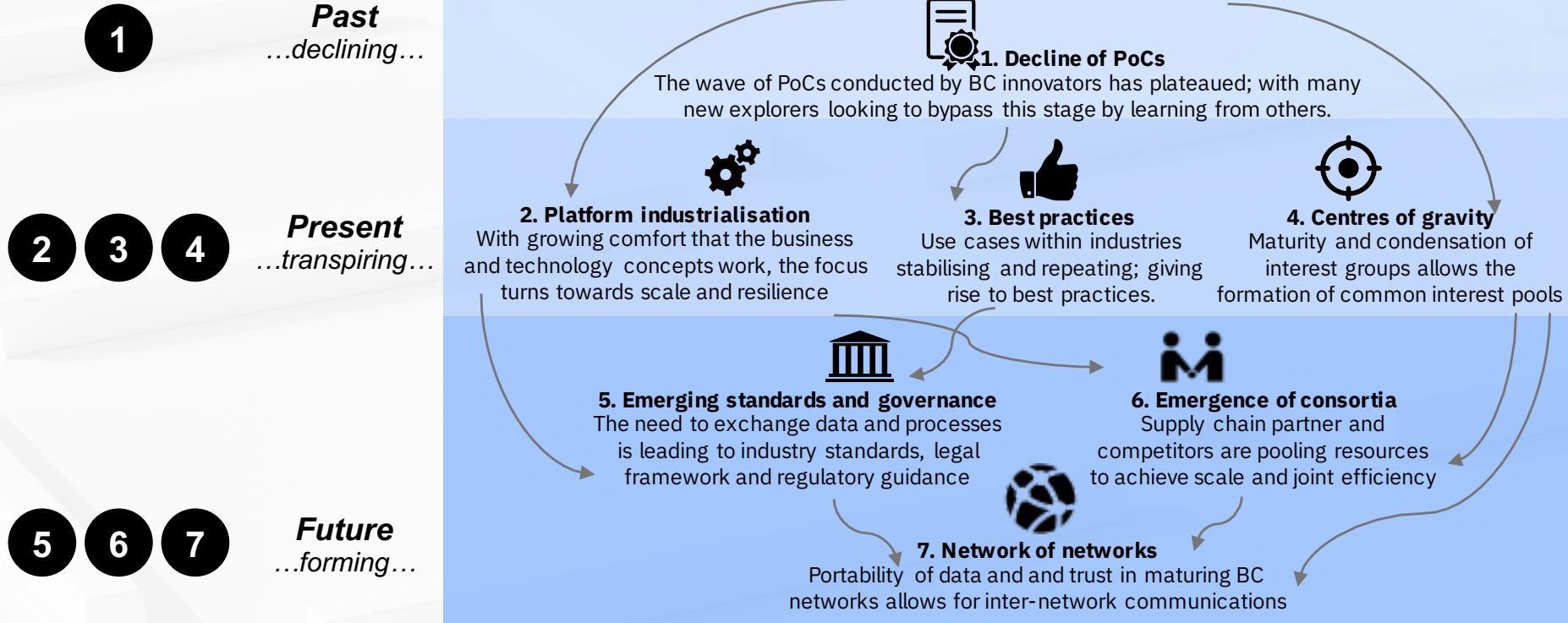
Topics

- Shared Ledger & smart contracts
- Public, private
- Permissioned, permission-less
- Tokens and incentive mechanisms
- Identity and Zero Knowledge
- Consensus mechanisms
- On-chain, off-chain
- Systems integration
- Inter-ledgering
- Physical-digital with IOT

Communities

- Bitcoin
- Ethereum
- Linux Foundation / Hyperledger
- EEA
- ISO/TC 307 – Blockchain & DLT
- IEEE Blockchain
- W3C Blockchain Community
- Accord Project
- Sovrin
- DIF

Blockchain adoption: seven emerging patterns



Blockchain is real for business with cross-industry solutions and over 100 active networks.



Unlisted Securities



Clearing & Settlement

Provenance



stellar



Bank Guarantees



Trade Finance



Universal Payments

BBVA



Global Trade

Healthcare



Belastingdienst



Food



Identity



Insurance



Government



Distributed Energy



Re-imagining digital business processes



TRADELENS



- **Connects the ecosystem:** brings together ports, terminals, ocean carriers, government authorities, etc
- **Drives true information sharing:** real-time and seamless actionable insight
- **Fosters collaboration and trust:** automate cross-org business processes
- **Shared visibility** and shared state for shipments



IBM Food Trust™



- **Manage quality risk:** enable rapid, low cost, food recalls
- **End to End transparency:** data sharing extends beyond 'one up, one down'!
- **Trust and Audit:** ensure provenance with easily trusted, auditable records.
- **Consumer confidence:** comprehensively communicate with end consumer



World Wire



- **24x7 payments:** payment support regardless of size, origination, destination or asset type
- **Higher visibility:** for streamlined transactions with reduced disputes and reconciliation needs
- **Regulatory compliance:** enhanced through improved transparency
- **Secure network:** with interaction and eligibility criteria & robust access control



we.trade

more trust. more trade.



- **Trade finance platform:** backed by a consortium of major international banks
- **Full function:** enables accurate trading posture information, order to settlement control, risk coverage, track and trace options
- **Near-real time:** exchange of information
- **Discovery:** Allows buyers to discover trusted sellers and vice-versa

TRADE+LENS : digitizing the global supply chain

The cost of global trade is estimated at \$1.8 trillion annually¹ with potential savings from more efficient processes of ~10%



More than \$16 trillion in goods are shipped across international borders each year



80% of the goods consumers use daily are carried by the ocean shipping industry



By reducing barriers within the international supply chain, global trade could increase by nearly 15%, boosting economies and creating jobs²



In many cases the administrative cost of moving a container is higher than the cost of physically moving it



we.trade
more trust. more trade.



Rabobank



NATIXIS
BEYOND BANKING



- **We.trade** is a blockchain-based international trading platform for a consortium of major world banks
- Enables accurate trading posture information, order to settlement control, risk coverage, track and trace options
- Near-real time exchange of information
- Allows buyers to discover trusted sellers and vice-versa

IBM Food Trust addresses key issues in the food ecosystem

Food safety



1 out of 10 contract foodborne illness each year

Supply Chain



80% of CPG business is paper based

Food waste



One third of global fresh food is thrown away

Consumer demand



Only 1 in 4 consumers trust today's food system

IBM Food Trust

Blockchain Technology

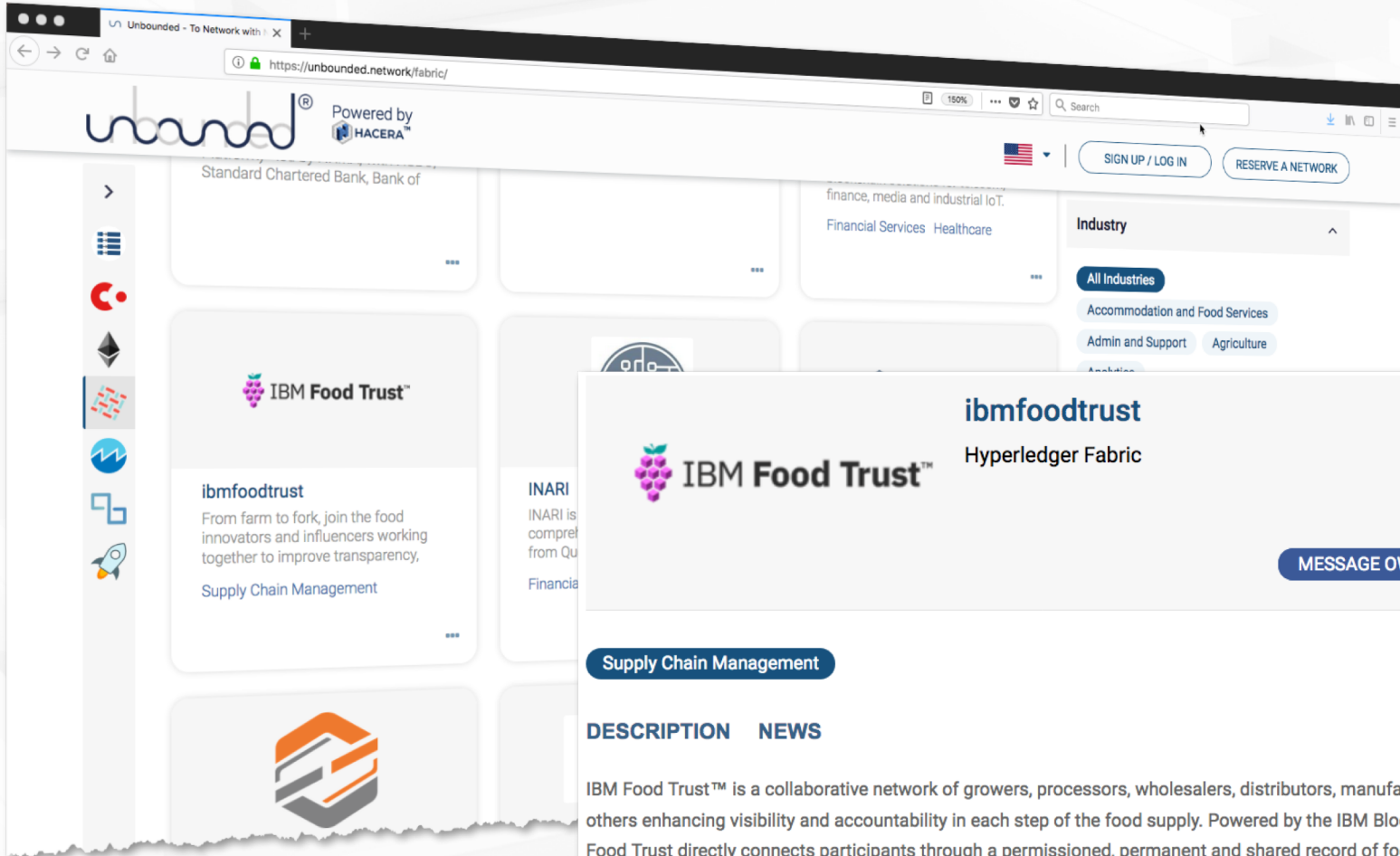



Food Supply Chain Ecosystem



IBM Food Trust leverages blockchain's unique properties to create a secure, shared, and permissioned transaction record

The result is a safer, smarter, and more sustainable food supply chain





ibmfoodtrust

Hyperledger Fabric

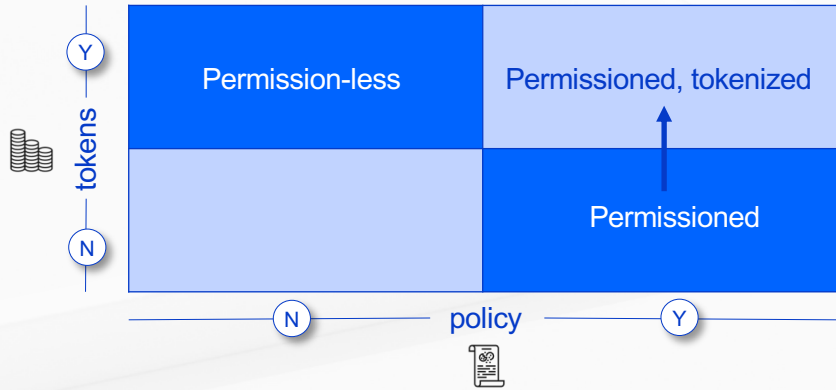
[MESSAGE OWNERS](#) [JOIN](#)

[Supply Chain Management](#)

DESCRIPTION **NEWS**

IBM Food Trust™ is a collaborative network of growers, processors, wholesalers, distributors, manufacturers, retailers and others enhancing visibility and accountability in each step of the food supply. Powered by the IBM Blockchain Platform, IBM Food Trust directly connects participants through a permissioned, permanent and shared record of food origin details, processing data, shipping details and more.

Governance of blockchain networks



Blockchain and Identity



Commission and its priorities | Policies, information and services

European Commission | English EN | Search

Home > Law > Law by topic > Data protection > Reform > Rights for citizens

Rights for citizens

Find out how your personal data is protected, the rights that help you take back control of your data and what to do if things go wrong.

How is my personal data protected?	My rights	Redress
<p>How is data on my religious beliefs/sexual orientation/health/political views protected?</p> <p>Can personal data about children be collected?</p> <p>Can my employer require me to give...</p>	<p>What are my rights?</p> <p>What information should I receive when I provide my personal data?</p> <p>How can I access my personal data held by a company/organisation?</p> <p>My data is incorrect, can I correct it?</p> <p>Can I ask a company/organisation to...</p>	<p>What should I do if I think that my personal data protection rights haven't been respected?</p> <p>What are Data Protection Authorities (DPAs) and how do I contact them?</p> <p>Can a non-governmental organisation (NGO) make claims on my behalf?</p>



Your stolen Facebook account can be bought for just \$3.90 on the dark web

THE recent Facebook hack affected 50 million users. But it's what criminals can do with our data that is the most terrifying.

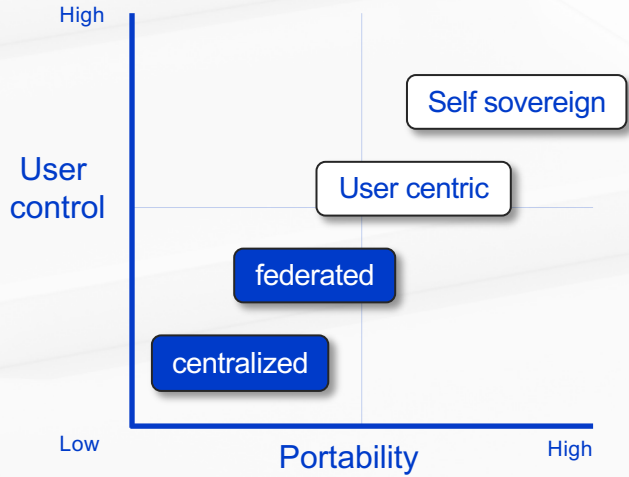


SECURITY

Equifax data breach may affect nearly half the US population

Hackers steal sensitive personal information on as many as 143 million people from the credit reporting firm.

Self-Sovereign Identity: Status and Standards

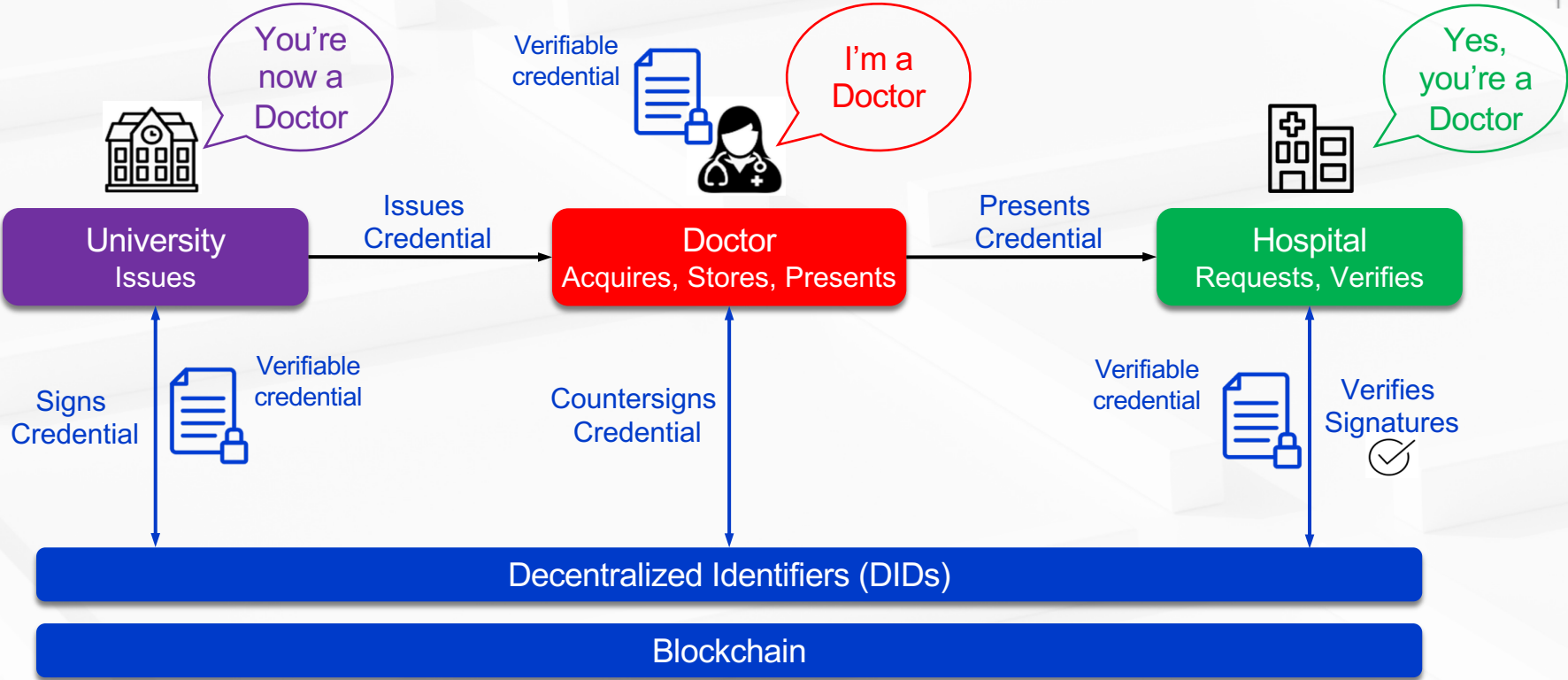


The central diagram features five logos arranged around a central hub:

- SOVRIN** identity for all: Non-profit foundational network
- DIF**: Self sovereign identity providers
- OASIS**: Decentralized key management system
- W3C**: Standards specification for specifying and verifying credentials
- HYPERLEDGER**: Linux Foundation: Project Indy Open source implementation

At the center of these logos is a circular logo with the text: **OPEN Interoperability & standards**

Self-Sovereign Identity example



Energy Usage of Blockchain

MARKETS

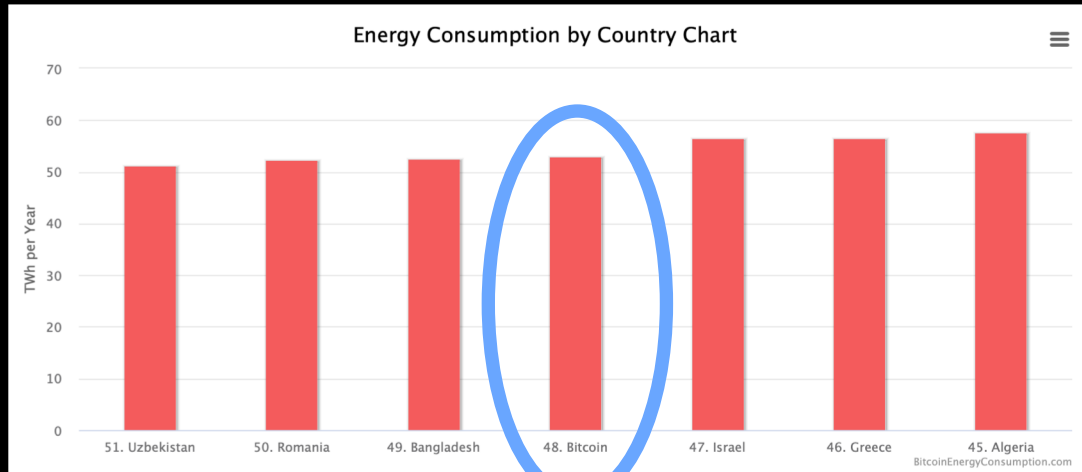
Bitcoin in the Wilderness

On a Canadian oil field, natural gas with nowhere to go powers a bitcoin-mining operation

By *Stephanie Yang*










Updated March 29, 2019 11:56 a.m. ET

<https://www.wsj.com/articles/bitcoin-in-the-wilderness-11553860802>



Consensus Approaches

TABLE 1. COMPARISON OF PERMISSIONED CONSENSUS APPROACHES AND STANDARD PoW

	Permissioned Lottery-based	Permissioned Voting-based	Standard Proof of Work (Bitcoin)
Speed	 GOOD	 GOOD	 POOR
Scalability	 GOOD	 MODERATE	 GOOD
Finality	 MODERATE	 GOOD	 POOR


The future belongs to a
“network of networks”




Thank you

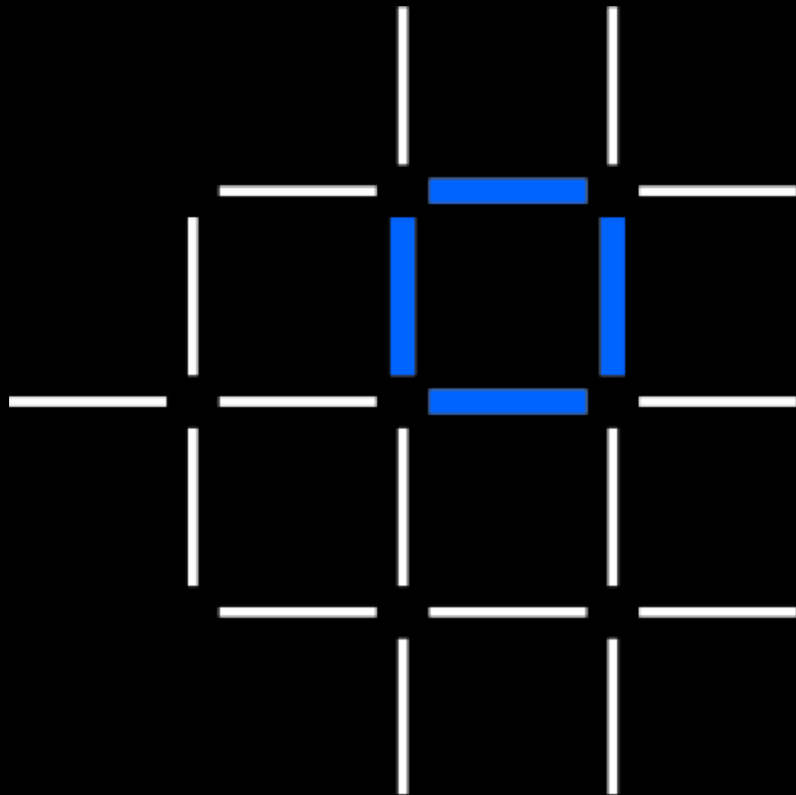
*Special thanks to
Matthew Golby-Kirk,
Global Blockchain Enablement*

*Questions? Tweet us or
go to ibm.com/blockchain*

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 IBM Blockchain

 IBM Blockchain





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