HYPERLEDGER
BLOCKCHAIN TECHNOLOGIES FOR BUSINESS

Blockchains in Telecom

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#MWC18

HYPERLEDGER

BLOCKCHAIN TECHNOLOGIES FOR BUSINESS

Hyperledger is a collaborative and global open source software project, hosted by The Linux Foundation, advancing blockchain technologies for business.

The Linux Foundation is Much More than Linux

Security

We are helping global privacy and security through a program to encrypt the entire internet.

Let's Encrypt

Networking

We are creating ecosystems around networking to improve agility in the evolving software-defined datacenter.

ONAP OPEN NETWORK AUTOMATION PLATFORM

Cloud

We are creating a portability layer for the cloud, driving de facto standards and developing the orchestration layer for all clouds.

CLOUD NATIVE COMPUTING FOUNDATION

Automotive

We are creating the platform for infotainment in the auto industry that can be expanded into instrument clusters and telematics systems.

AUTOMOTIVE GRADE LINUX

Blockchain

We are creating a permanent, secure distributed ledger that makes it easier to create cost-efficient, decentralized business networks.

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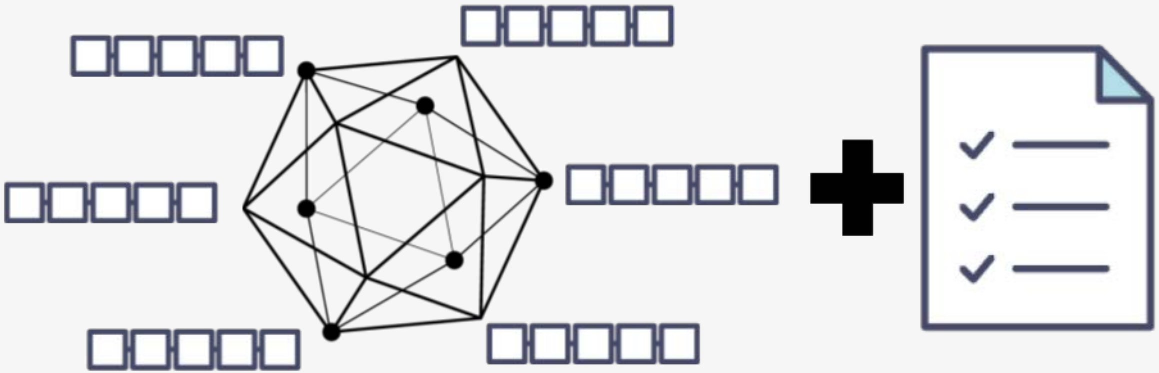
Web

We are providing the application development framework for next generation web, mobile, serverless, and IoT applications.

node JS

We are regularly adding projects; for the most up-to-date listing of all projects visit tlfprojects.org

What are blockchains?



Distributed Ledgers and Smart Contracts

Creating an immutable, shared system of record and automated multiparty business workflow

Blockchains are more than cryptocurrency

Cryptocurrencies are one particular use of a blockchain platform, using the ledger to record who owns what, and prevent double-spend.

But there are many other uses...

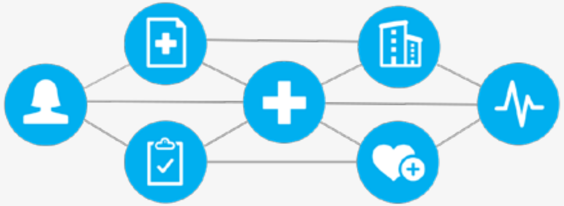
A Network of Ledgers

Financial Services

Bank wires. Equity trading. Mortgage underwriting. KYC/AML. P2P Lending. Collateral trades. Insurance and reinsurance.

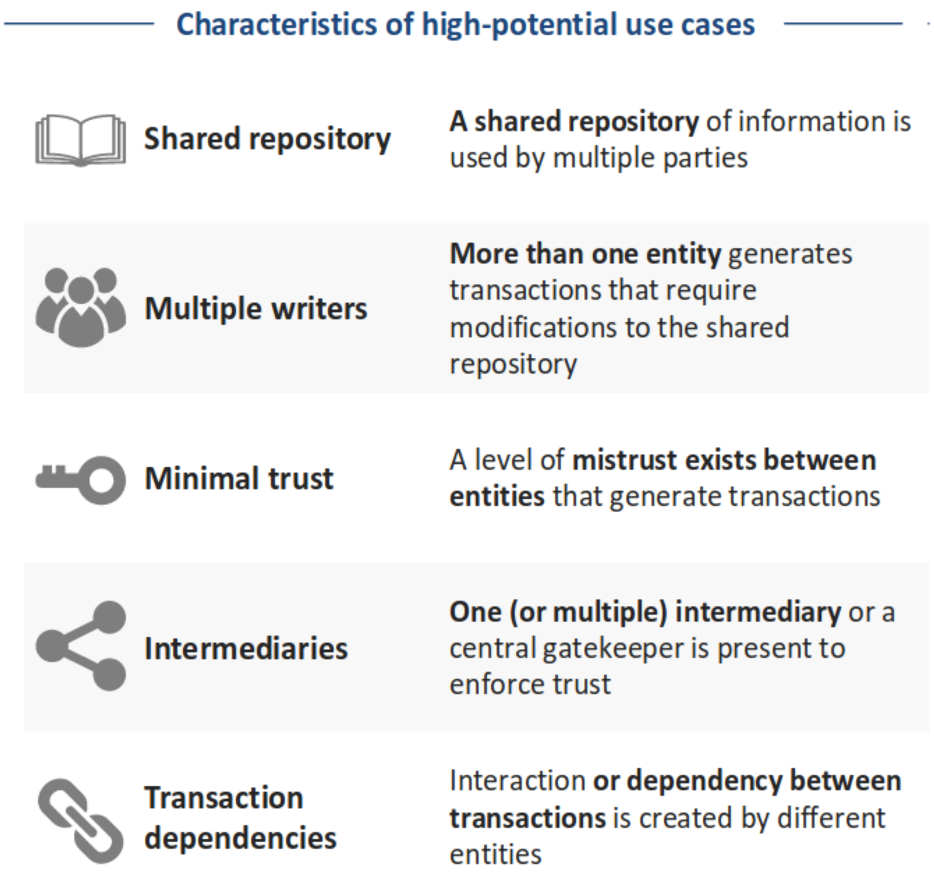
Supply Chain

Provenance tracking. Trade Finance. Cutting bureaucracy at ports and customs. IoT to detect poor shipping conditions. Title tracking for high value goods.



Healthcare

Provider directories and certification. Patient-driven health record sharing. Insurance claims processes. Pharma supply chain.



Characteristics of high-potential use cases

Shared repository	**A shared repository** of information is used by multiple parties
Multiple writers	**More than one entity** generates transactions that require modifications to the shared repository
Minimal trust	A level of **mistrust exists between entities** that generate transactions
Intermediaries	**One (or multiple) intermediary** or a central gatekeeper is present to enforce trust
Transaction dependencies	Interaction **or dependency between transactions** is created by different entities

Source: “Blockchain Beyond the Hype: Whether Blockchain”, World Economic Forum, April 2018

Public, Private, Permissioned and -less

Permissionless Public	*Permissionless Private?*	**Permissioned Public**	**Permissioned Private**
Bitcoin, Ethereum	*Public Polls?*	Land titles, University degrees	Medical records

Public vs. Private: Who can read from a blockchain (visibility)
Permissioned vs. Permissionless: Who can write to a blockchain (accessibility)

Roaming Fraud Prevention

Problem: Roaming fraud cost telcos north of $38B annually.

Roaming fraud occurs when a subscriber accesses the resources of a host network (HPMN) while on a roaming network (the VPMN), but the HPMN is unable to charge the subscriber for the services provided, ***and*** is obliged to pay the VPMN for the roaming services. Roaming fraud exploits the delays in confirming HPMN resources.

Solution: A permissioned blockchain could be implemented across a network of operators with roaming agreements. Designated nodes from both operators broadcast and verify each transaction on the network. The roaming agreement can be a smart contract triggered when a transaction containing the CDR data is broadcast on the network. Then, the terms of the agreement are executed immediately, and the right to provision service can be confirmed. This avoids delays and even the need for data clearing houses.

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5G Enablement

Problem: Carriers will need to handle heterogeneous access nodes and diverse access mechanisms. Selecting the fastest access node for every user or machine will be a central challenge. The current system is centralized in a client-server model where the rules stored on the server (ANDSF) are pushed to the device.

This causes delays and does not allow for seamless provisioning between access networks for the device. Also, the provisioning of rules is not a real-time process – meaning the rules cannot be changed dynamically.

Solution: The various access networks (LTE, GPRS, WiMax, WLAN, WiFi) in a given area can be networked via a distributed ledger. Each access point (WiFi router, SP cell tower, etc.) can serve as a node in the network monitoring the devices. Rules and agreements between the various access providing networks can be coded as dynamic smart contracts. When a device broadcasts its location, the access node that can best provide service to the device is called upon to do so.

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Identity Management

Problem: Digital identities are a mess. Systems today are overly centralized, and force end users to manage their data and documents across different data silos. The EU's new General Data Protection Regulations, which are not likely to stay an EU-only thing, will force service providers and every commercial entity with PII to gather consent from end users and allow it to be revoked. Digital engagement of citizens is hindered by skepticism over the role government should play in managing identity.

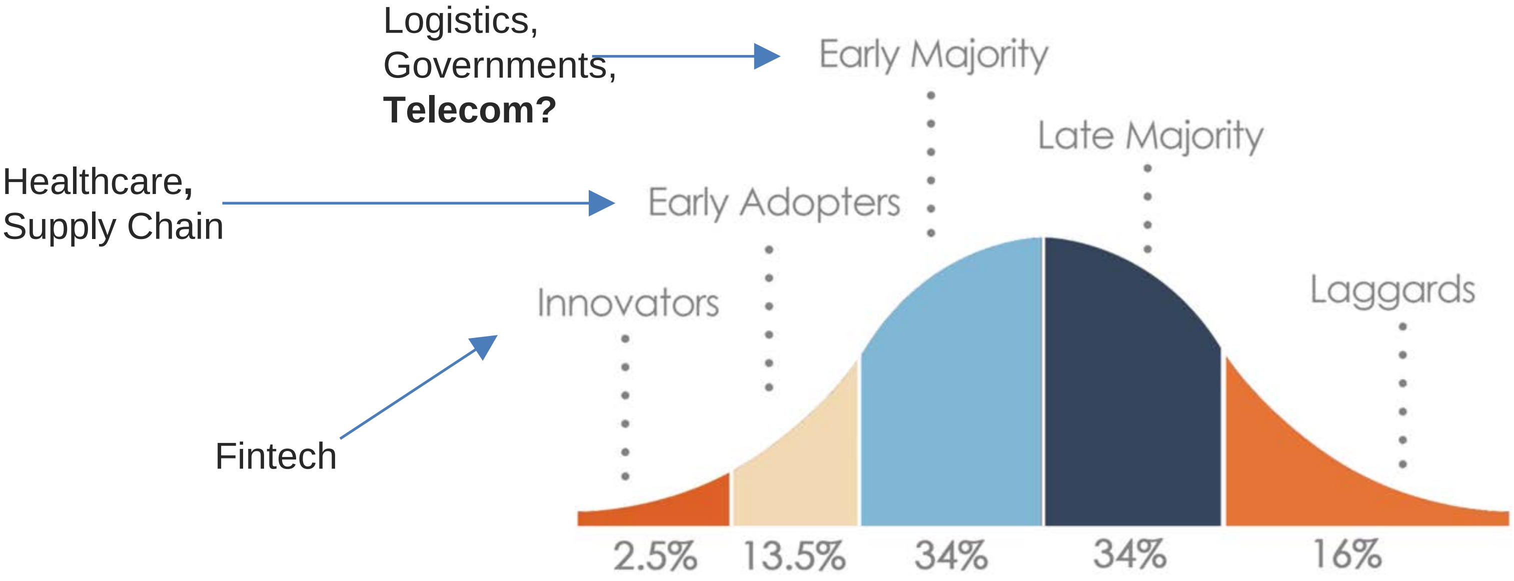
Telecom service providers currently do not play a significant part in identity and authorization services, even though they possess subscriber data and have retail touch points with every consumer.

Solution: Self-Sovereign Identity systems using blockchains offer a way for citizens to manage their personal data, and data about them, in GDPR- compliant ways. Such systems record public keys, signatures, and other data that can vouch for the integrity of identities and claims on the blockchain, but not PII. Telecom service providers are a natural provider of such systems.

What You Should Do Now

1. Monitor PoC’s, pilots, and trials in your sector.
2. Engage upstream suppliers, downstream customers, industry associations, and even your competitors in use case generation and brainstorming.
3. Get your innovation teams, most importantly software developers, up to speed on the emerging blockchain technology landscape. Send them to conferences. Have them build what they think might work. Trust their instincts. Then learn from them.
4. Stop hitting reload on “coinmarketcap” - this is about something bigger.

Now Is The Time To Invest In This



Logistics,
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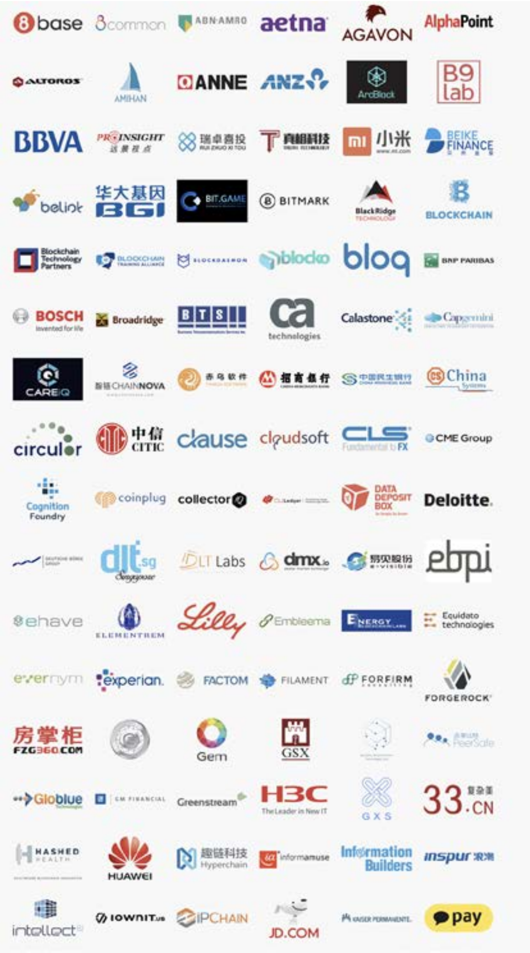
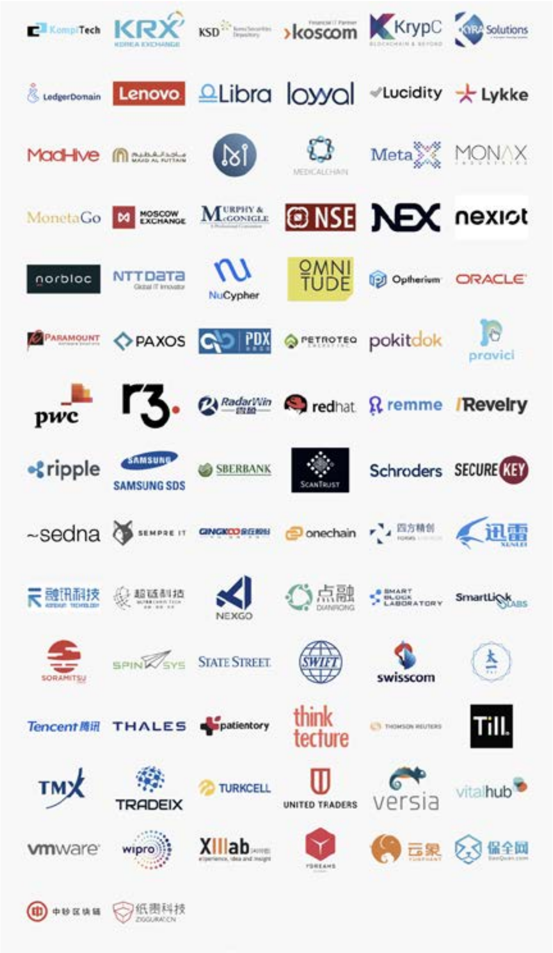
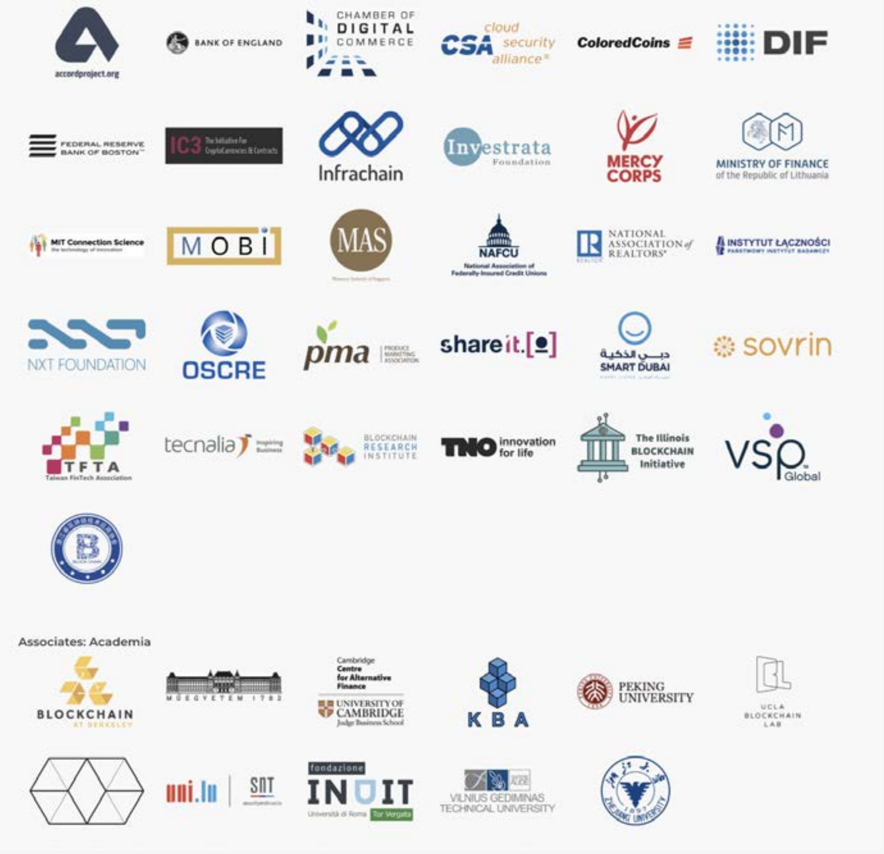




Hyperledger Associate Members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WHO WILL YOU

TRUST

WITH YOUR TRUST NETWORK?

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