



Enterprise blockchain

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Growth Predictions

“Blockchain has been the No. 1 search term on gartner.com since January 2017”

Business value 2025

\$176B

The business value-add of blockchain will grow to slightly more than \$176 billion by 2025 (Gartner)

Business value 2030

\$3.1T

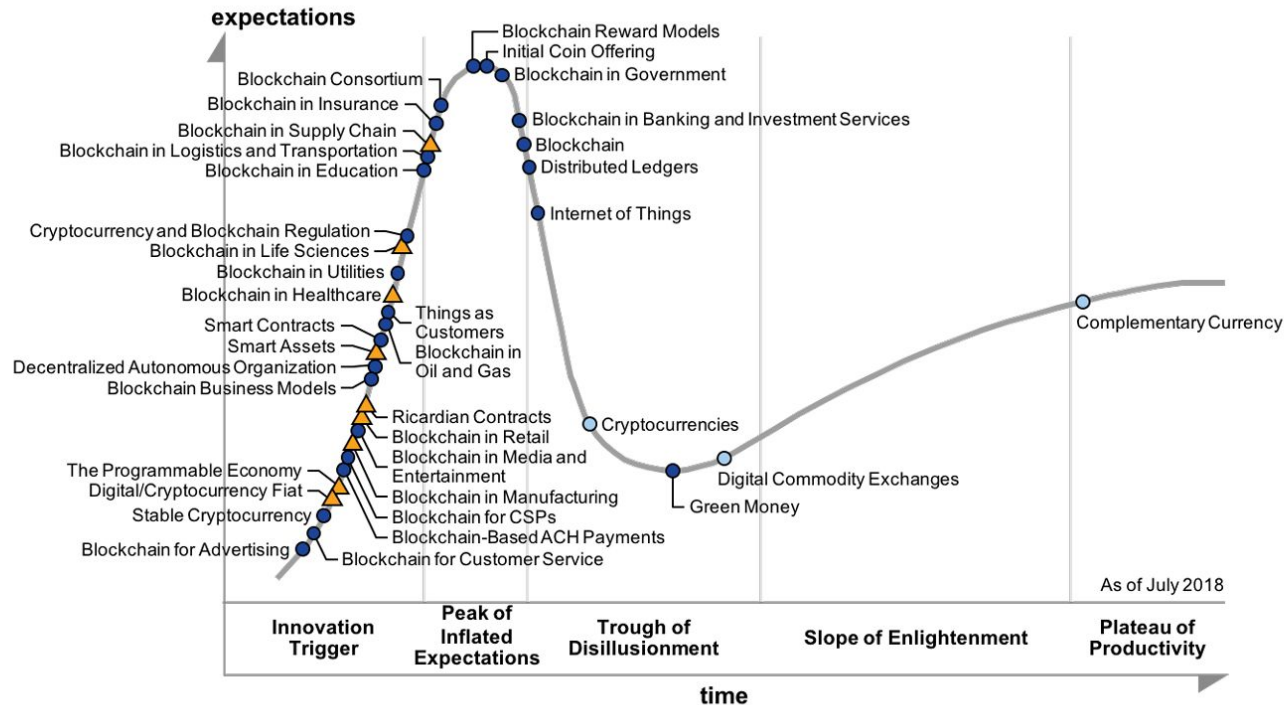
Blockchain will create \$3.1T in business value by 2030 (Gartner)

Worldwide spending 2021

\$9.7B

Worldwide blockchain spending to grow to \$9.7 billion in 2021. (IDC)

It's still mostly hype.



Plateau will be reached in:

○ less than 2 years

○ 2 to 5 years

● 5 to 10 years

▲ more than 10 years

○ obsolete

⊗ before plateau



2019 - the Year of the Blockchain

Deloitte: 2018, 95% of companies across different industries were investing in blockchain tech projects. In 2019, those pilot projects are finally moving from the test stage to the end users.

PwC: 2018 'cleared the noise' in the blockchain space, and 2019 will be the year when big players enter the crypto world.

IDC: Geographically, the United States is forecast to be the biggest spender in 2019 (\$1.1 billion) followed by Europe (\$674 million) and China (\$319 million).

IDC: The top three sectors for spending in 2019 will be **finance** including insurance at \$1.1 billion, **manufacturing** and resources sector (\$653 million), and **retail and professional services** (\$642 million).

TOC

1. What is blockchain?
2. Enterprise - why & what?
3. Consortium & private
4. Examples
5. Discussion



What is blockchain?





What is a blockchain?

1

Ledger. All transactions are appended onto a ledger to provide full transactional history.

2

Secure. Blockchains are cryptographically secure. Anyone can attest that the blockchain has not been tampered with.

3

Shared. The ledger is shared amongst multiple, potentially millions, of participants. Full transparency across all nodes in the network.

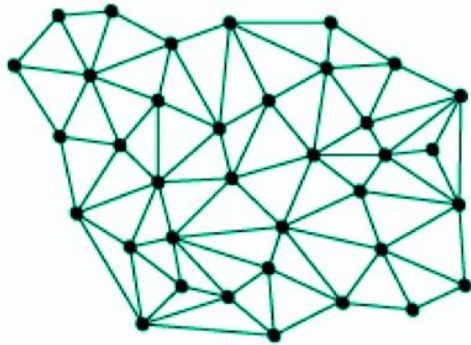
4

Distributed. the blockchain can be distributed. This allows for scaling the number of nodes of a blockchain network to make it more resilient to attacks by bad actors.

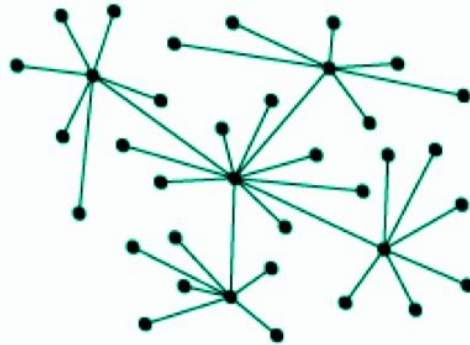


Types of blockchain

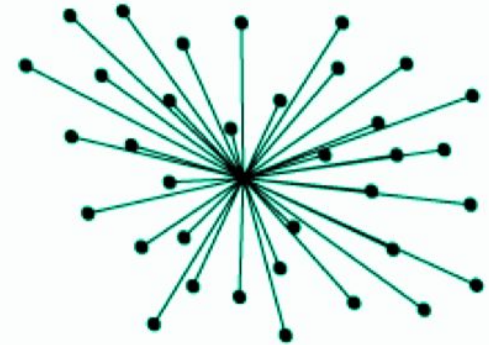
1. Open / public
2. Consortium / federated
3. Closed / private



Public



Consortium



Private

What is a public blockchain?

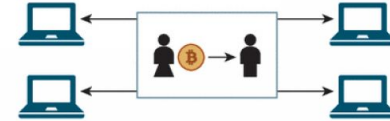
For sure

Bitcoin's blockchain, simplified

1 Alice wants to send Bob some bitcoin



2 The proposed transaction is broadcast to everyone in the network



3 "Miners" verify proposed transactions and bundle them into blocks



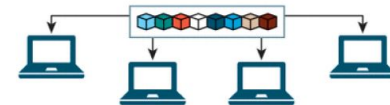
4 They race to work out the answer to a cryptographic puzzle



5 The winner adds his block to the chain, which now cannot be altered. He collects a reward in bitcoin



6 Everyone in the network receives a copy of the updated chain, and the transaction is complete



Source: *The Economist*

The Economist



What is the double spending problem?

A potential flaw in a digital cash scheme in which the same single digital token can be spent more than once.

Prevention:

1. Centralized: a trusted third party keeping track of tokens.
2. Decentralized: a public ledger, blockchain, and the amendment of the blockchain via parties showing proof-of-work.



What is a smart contract?

A smart contract is a computer protocol intended to digitally facilitate, verify, or enforce the negotiation or performance of a contract. Smart contracts allow the performance of credible transactions without third parties. These transactions are trackable and irreversible.

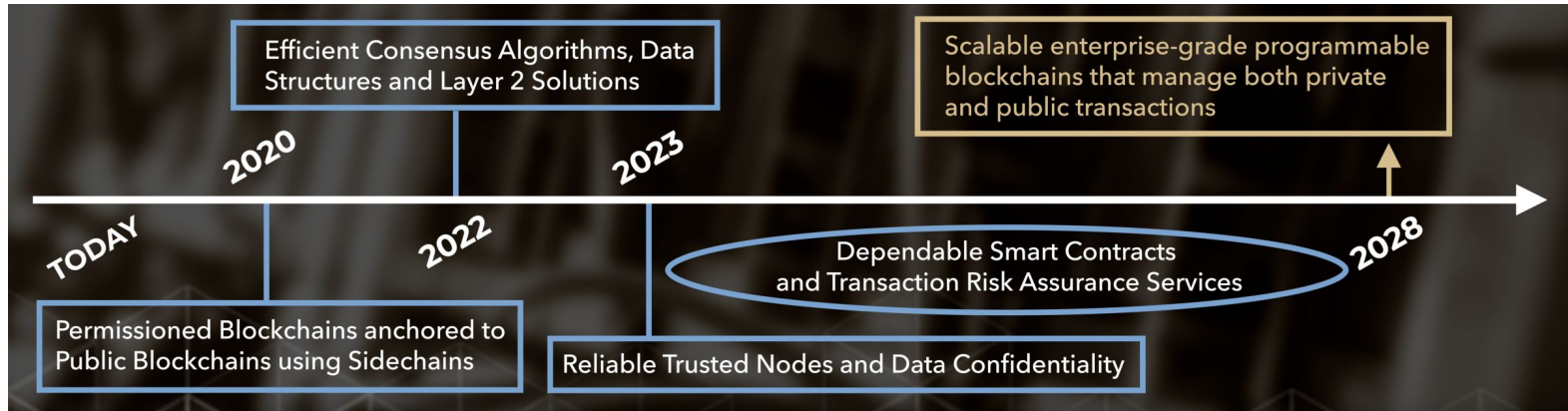
- Self verifying
- Self-executing
- Tamper resistant

- Code is law, or is it?
- On-chain vs. off-chain?





Timeline





Enterprise – why and what?





General view of enterprises on competition:

#1 cash is king

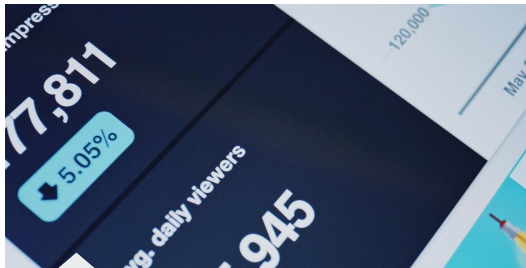
#2 communicate

#3 buy or bury the competition.

– Jack Welch, General Electric



Enterprises want control



Control of the market

Enterprises hate surprises in their core markets. They want liquidity, stability and a preferential arrangement over all smaller and if possible all other competitors.

Control of the technology

Core technology is rarely a field to innovate in. Safe solutions that will be around for decades are preferred to alternatives seen as more risky.

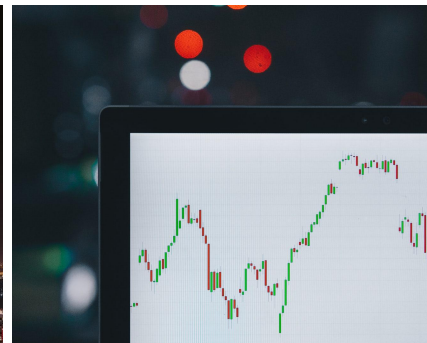




Control of the market

Only exceptional businesses, such as trading operations or insurers want volatile markets. All mainstream enterprises look for:

- 01 | Sufficient volume
- 02 | Predictable legal treatment
- 03 | Non-volatile pricing
- 04 | Equal or preferential terms to other market participants
- 05 | Large base of large volume counterparties

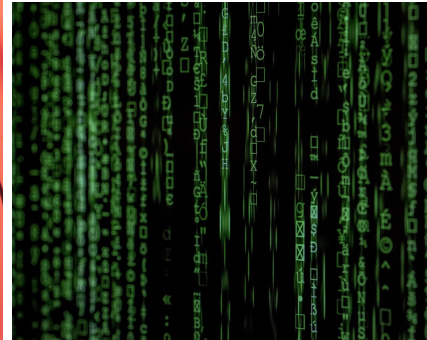
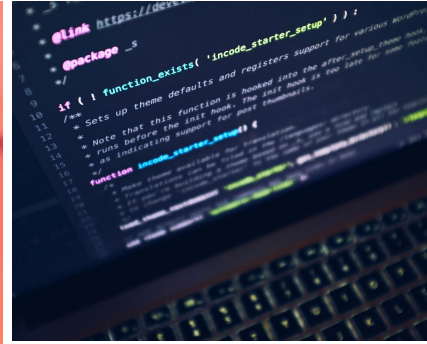




Control of the technology

Technologies chosen by large enterprises need to be dependable. This is typically not an area to compete in, rather it's an area to choose the most used partners, technologies and solutions

- 01 | Security
- 02 | Continuity
- 03 | Scalability
- 04 | Integration
- 05 | Visibility of road-map



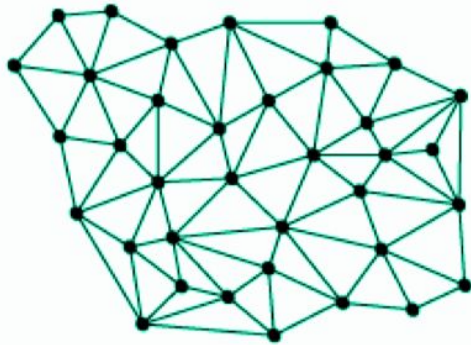


Consortium & private



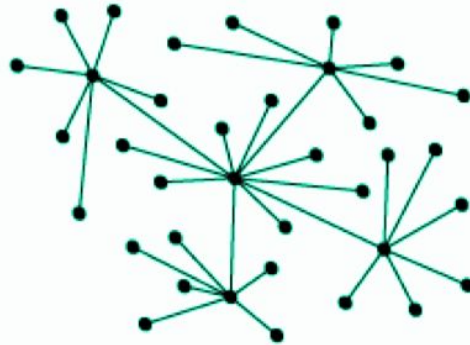


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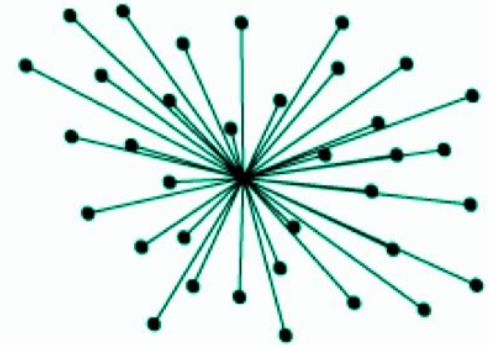


Public

Enterprise



Consortium



Private



Private “blockchain”

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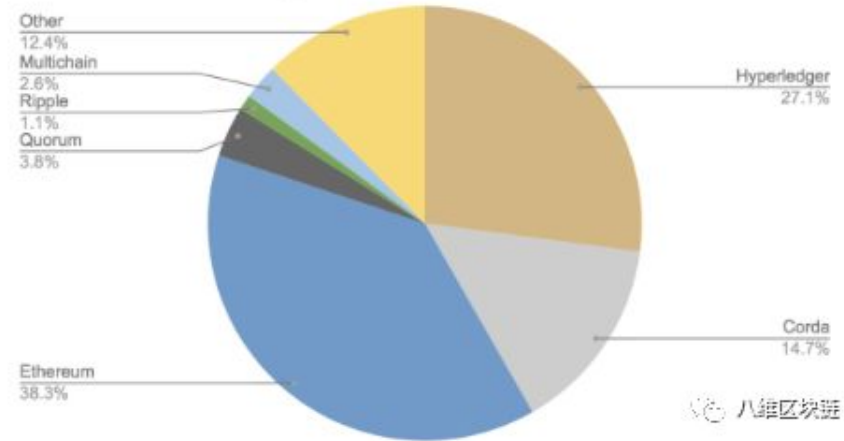
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Consortium blockchains


- **Hyperledger** is the current frontrunner family of technologies.
- Hyperledger is 100x faster than Ethereum
- Trusted members ... accountability and legal protection
- Rules can be changed upon business need
- No need to create a cryptocurrency ... technological platform without business model innovation
- Amendable to legal requirements like GDPR

Blockchain Technologies Used in POCs in 2018



Case studies





Digital CarPass Volkswagen

“Report card for a vehicle,” i.e verified real time records of critical car data, such as mileage, parts numbers and batches and emission data.

Why blockchain?

Multiple parties involved, many of which may have self interest in fraudulent data, including Volkswagen itself (emissions fiasco.)



Share & charge

Innogy

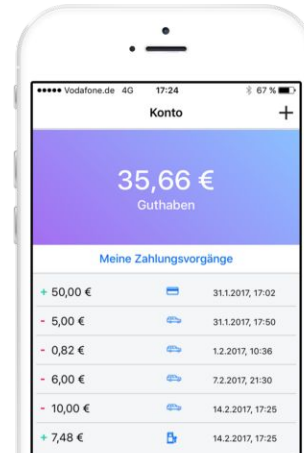
Peer to peer renting of charging stations. Each station gets to define its own pricing structure and the middleman takes a modest fee.

Goal is to extend usage to renting of electric vehicles.

Why blockchain?

No central party, no need for trusted third party.

(* current status uncertain)



Ethereum

The payments are implemented as Ethereum transactions but back one to one by real Euros held in escrow.





Yian

IBM & Heija

Trade finance for small pharmacies in developing nations is difficult. It's hard to prove the value of your assets, as both the contents and the origin of drugs is suspect.

By being able to prove the drugs are not counterfeit, it's easier to finance a pharmacy.

Why blockchain?

No central party, no need for trusted third party, possible for the end customer to verify drugs provenance.



Hyperledger

The blockchain is a consortium, i.e no-one has to trust IBM or Heija as long as there are enough trusted nodes on the network.





Uniswap

Uniswap.io

So called market making, or promising to buy or sell various Ethereum -based tokens improves the liquidity of the coins and thus their value.

Uniswap is a set of smart contracts that anyone can join by offering both ETH and some ERC-20 coins.

In exchange for promising to either buy or sell the ETH-20 coins, the market maker receives a 0,3% commission.





Dai stablecoin

Maker.dao

Maker DAO is a decentralized autonomous organization within the Ethereum blockchain. Maker works to minimize the volatility of DAI, its stable token, compared to the U.S. dollar, with holders of MKR tokens governing DAI.

Highly volatile crypto assets are difficult for actual usage, as for example Bitcoin value has decreased by 25% on some days and increased by 300% on others.



Ethereum

DAOs are specific entities with the sole duty of following programmatic rules or the rules that a decentralized consensus grants it.



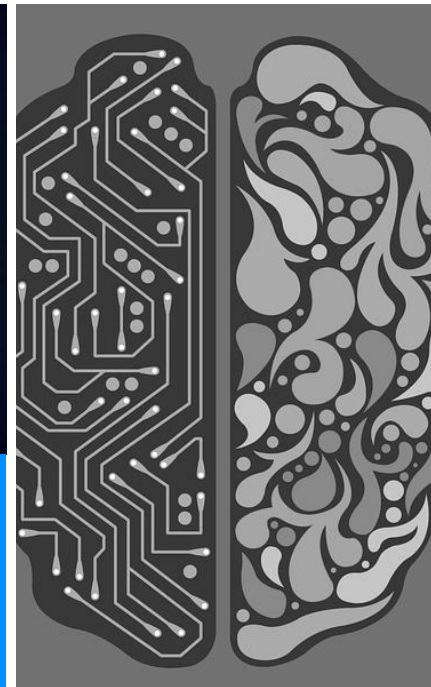
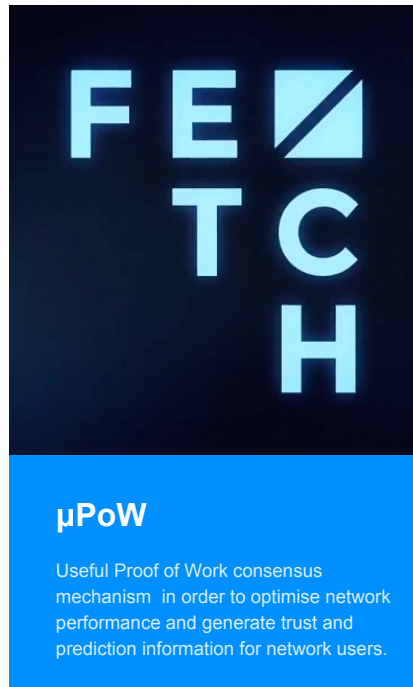


Fetch

Fetch.AI

An economic network that facilitates decentralized interactions between humans and various other entities in line with AI and machine learning.

Fetch.AI agents can be thought of as digital entities that represent things, such as data, services, hardware, humans or infrastructure segments. They are able to make decisions on their own behalf as well as on behalf of their stakeholders who may be individuals, private enterprises, or governments.



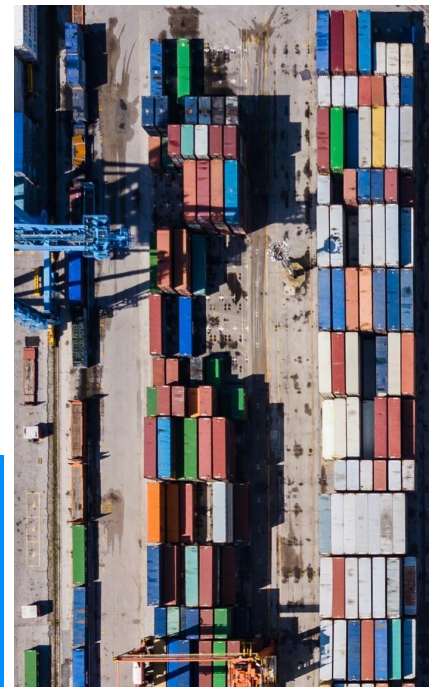
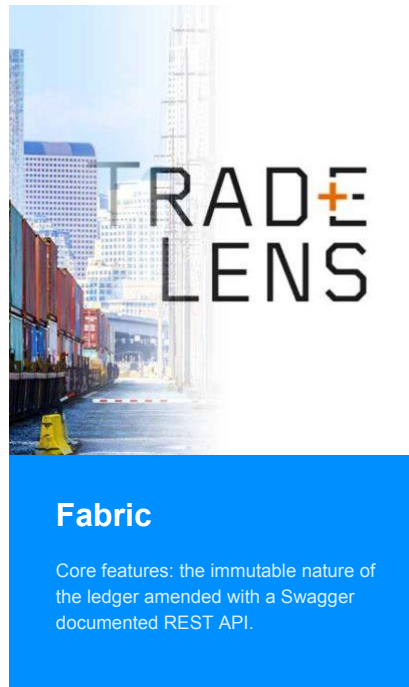


Tradelens

Maersk, IBM

A trade platform for containerized shipping, connecting the entire supply chain ecosystem. TradeLens manages the documents involved with a consignment and helps in submitting filings for the import and export of goods.

Hard to say what is more important, the data structure, immutability and the REST API:s or the blockchain itself.



A decorative horizontal bar with a teal segment on the left and an orange segment on the right, positioned in the upper left area of the image.

Thank you.

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